VII. The financial sector in the advanced industrial economies

Highlights

The period under review was characterised by generalised stress in the financial sector of the advanced industrial economies.

Several years of growth and enhanced profitability for financial firms came to an abrupt halt in 2007 as strains stemming primarily from exposures to residential real estate spread throughout the financial system. Mounting defaults in the US subprime mortgage market led to outsize writedowns in the securitised mortgage portfolios of many institutions. The situation deteriorated in waves after the summer months, with many firms facing funding constraints in the interbank market. It was punctuated by the near failure of sizeable financial firms, prompting intervention by the public sector to avert potential systemic disruptions from a disorderly collapse.

The severity and speed of spreading strains represented a major stress test for the robustness of many innovative structures introduced in the financial sector over the past few years and also highlighted the degree of interconnectedness between markets and institutions. What had started as a problem specific to a segment of the US mortgage market became a source of losses for financial firms worldwide that were holding related securities. Uncertainty about the size and distribution of losses was exacerbated by the complexity of the new structures used in the securitisation process. Retrenchment from risk-taking led to illiquidity, exposing weaknesses in the funding arrangements of many financial firms.

With many financial institutions nursing weakened balance sheets, even as the macroeconomic environment continues to worsen, a turn in the credit cycle seems likely to imply persistent headwinds for economic activity. How the situation will evolve depends critically on the dynamic interactions between the financial sector and the macroeconomy. Reduced credit availability, due to efforts by the financial sector to preserve its capital base, could prolong the period of weak profitability by affecting aggregate spending, economic activity and asset quality. These effects can also be transmitted across borders as weakened banking systems tend to cut back on their international exposures. Beyond the cyclical implications, this period of intense stress also heralds some structural shifts. Financial firms are revisiting assumptions that supported a move towards a business model focused on origination and distribution of loans through securitisation. At the same time, policymakers are reviewing aspects of the prudential framework that failed to perform as intended.

The financial sector under stress

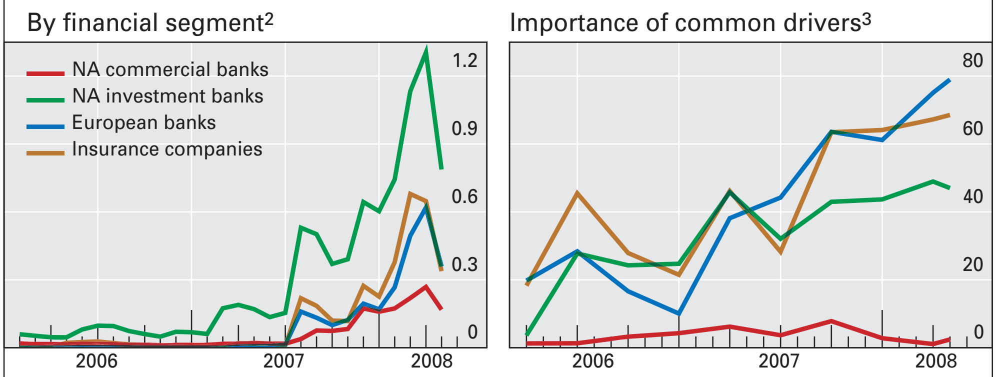
To varying degrees, the turmoil affected firms in practically all segments of the financial sector of advanced industrial economies. Compared to other episodes of stress in recent memory, it has proved to be both more persistent and more complex. Market participants and policymakers alike have been surprised by how far stresses spread across firms and markets, and by the limited effectiveness of standard policy instruments. The price of insurance against sizeable declines in the asset value of the largest financial firms is a measure of both the degree to which market participants reassessed the likelihood of systemic risk and their waning appetite to bear it. Proxies of this price based on credit derivative prices jumped to unprecedented heights in summer 2007 and remained high throughout the rest of the period under review in all segments of the industry (Graph VII.1). The jump can be attributed to market participants' keener perception of failure risk as well as their view that common drivers of this risk were at play across the different segments of the industry.

Persistent and complex market turmoil ...

This period of intense stress was characterised by three interconnected elements. The first was rates of default on residential real estate loans that were well in excess of the expectations incorporated into loan prices. The second was the failure of many market participants to fully appreciate the inherent complexity and opacity of highly structured financing arrangements, which made exposures difficult to value. As firms scrambled to reprice risks on their balance sheets, they became aware of the sensitivity of valuations to changes in the assumptions underlying their pricing models. Finally, market participants' uncertainty about the size of the underlying losses and their distribution across the system led to a generalised drain on market liquidity, which in turn exacerbated the pricing uncertainties and made for increasingly difficult funding conditions.

... raised the perceived riskiness of financial institutions

Price of insurance against systemic distress[1]



[1] In per cent. Based on credit default swap (CDS) spreads for 10 commercial and eight investment banks headquartered in North America (NA), 16 universal banks headquartered in Europe and 14 insurance companies headquartered in the United States and Europe. [2] Risk neutral expectation of credit losses that equal or exceed 15% of the corresponding segments' combined liabilities in 2006 (per unit of exposure to these liabilities). Risk neutral expectations comprise expectations of actual losses and preferences. [3] Asset return correlation implied by the co-movement of CDS spreads for the selected financial firms.

Sources: Bankscope; Markit; BIS calculations. Graph VII.1

Commercial banking

Banks, whether classified as commercial or universal, were among the institutions hit the hardest during this episode of stress. The writedowns related to US mortgage exposures reported over the period under review made a large dent in the profitability of the industry. Banks' earnings for the calendar year 2007, in which the first wave of writedowns occurred, were at best flat, but in most countries declined compared to previous years (Table VII.1).

A significant drop in profits was reported by US banks ...

The pronounced deterioration in bank profits in the United States reflected a general worsening of individual components of income. Net interest margins declined and operating costs rose, reversing a number of years of cost containment. All indicators of credit-related costs moved higher. Loan loss provisions saw their largest increase in 20 years, reflecting the problems in the mortgage markets and, potentially, the gradual slowdown in economic activity and higher delinquency rates. Even so, reserves failed to keep pace with non-current loans, with the result that the cover ratio fell below unity for the first time since 1993.

... as well as by Swiss and German banks

The picture in Europe was more mixed. While profits generally dipped, operating costs in a number of countries continued on the downward trend of recent years. Loan loss provisions were stable in most countries, and lower profitability seemed to be more closely associated with a decline in net interest margins. The increasing reliance of European banks on market and wholesale sources of funding, the price of which tends to be more sensitive to yield curve movements and risk than the retail deposit base, is a likely factor behind declining interest margins. In some contrast to the overall picture, Spanish banks recorded improved profits, including from interest margins, despite an appreciable increase in loan provisions. The profits of Swiss and German

Profitability of major banks[1]

As a percentage of total average assets

	Pre-tax profits			Loan loss provisions			Net interest margin			Operating costs		
	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007
Austria (3)	0.85	1.64	1.29	0.30	0.38	0.28	1.64	1.90	2.24	2.10	2.40	2.40
Australia (4)	1.52	1.62	1.67	0.14	0.13	0.15	1.92	1.96	2.01	1.70	1.64	1.63
Canada (5)	1.01	1.32	1.27	0.10	0.10	0.14	1.79	1.64	1.68	3.00	2.56	2.57
Switzerland (6)	0.66	0.87	0.31	0.00	0.00	0.01	0.63	0.53	0.45	1.67	1.73	1.70
Germany (7)[2]	0.38	0.55	0.28	0.06	0.07	0.04	0.65	0.68	0.52	0.96	1.32	0.98
Spain (5)	1.15	1.51	1.65	0.23	0.33	0.41	1.55	1.78	1.94	1.70	1.91	1.96
France (5)	0.76	0.87	0.41	0.06	0.06	0.09	0.93	0.76	0.47	1.47	1.43	1.28
United Kingdom (8)	0.87	0.97	0.67	0.23	0.27	0.23	1.23	1.26	0.94	1.59	1.70	1.36
Italy (4)	1.23	1.12	0.88	0.23	0.26	0.25	1.95	1.93	1.71	2.34	2.34	2.01
Japan (13)[2]	0.66	0.67	0.50	0.12	0.15	0.13	0.89	0.97	0.75	1.05	1.15	0.80
Netherlands (4)	0.58	0.57	0.38	0.05	0.10	0.10	1.09	1.17	0.99	1.29	1.48	1.37
Sweden (4)	0.90	1.06	0.98	0.01	–0.03	0.01	1.03	1.08	1.07	1.07	1.11	1.07
United States (11)	1.93	1.82	1.02	0.20	0.20	0.56	2.72	2.50	2.47	3.44	3.12	3.51

[1] All values are IFRS; the number of banks included is shown in parentheses. [2] Values are a mix of local and US GAAP.

Sources: Bankscope; FitchRatings. Table VII.1

banks declined very significantly even as loan loss provisions remained fairly flat, arguably because the sources of strain were concentrated primarily in their securities portfolios rather than their loan book. The discovery of the biggest ever incidence of trader fraud in a leading French bank exposed weaknesses in internal controls, but the €4.9 billion loss did not lead to an implosion of the institution.

Funding problems led to the nationalisation of a UK institution ...

Banks in the United Kingdom announced significant writedowns from exposures to US real estate, but did not report major overall losses for the year. However, the retail depositor run on Northern Rock, after news surfaced about the bank's difficulties in financing its mortgage portfolio in the wholesale money market, provided an enduring image of a banking system under stress. The rapid deterioration of the bank's liquidity triggered intervention by the national prudential authorities. This initially took the form of an injection of liquidity backed by illiquid collateral. Eventually, however, the lender had to be nationalised in an effort to preserve its value until market conditions improved. To stem any further spread of depositor panic, the government announced a blanket guarantee of deposits with all UK banks. The turn of events also prompted an extensive review by UK policymakers of the institutional arrangements for dealing with distressed banks.

... whereas Japanese banks were less affected by the turmoil

While Japanese banks saw profits decline in the period under review, they were less affected by the turmoil than their European and North American peers. The ratio of non-performing loans to assets continued to shrink. The decline in provisions was limited primarily because of exposures to consumer finance companies. Overall, Japanese banks' capital adequacy was not affected too severely and their access to funding was not impaired, partly thanks to their large deposit base.

Capital and liquidity ratios of major banks[1]

	Tier 1 capital/risk-weighted assets			Non-performing loans/total assets			Net loans/total deposits		
	2005	2006	2007	2005	2006	2007	2005	2006	2007
Austria (3)	7.7	8.9	8.1	2.3	2.1	1.8	56.4	58.1	63.2
Australia (4)	7.5	7.2	6.8	0.1	0.2	0.2	88.3	89.8	85.1
Canada (5)	9.9	10.4	9.6	0.3	0.2	0.2	58.3	56.2	57.2
Switzerland (4)	11.7	11.7	9.8	0.2	0.2	0.1	25.2	26.1	27.3
Germany (7)	8.4	8.4	8.0	1.0	0.6	0.8	36.2	30.4	25.4
Spain (5)	7.9	7.6	7.9	0.5	0.5	0.6	69.9	76.7	76.1
France (4)	8.1	7.9	7.4	1.2	1.2	1.3	32.3	36.5	25.8
United Kingdom (7)	7.5	7.9	7.6	0.8	0.7	0.8	54.8	54.5	51.1
Italy (4)	4.7	5.0	6.6	4.0	3.2	3.1	42.7	49.6	70.9
Japan (10)	7.3	7.9	7.4	1.1	1.0	0.9	53.1	55.1	62.5
Netherlands (4)	10.4	9.4	10.0	0.6	0.6	0.4	54.1	55.8	55.1
Sweden (4)	7.1	7.2	7.1	0.4	0.4	0.3	71.7	74.2	74.9
United States (11)	8.4	8.6	8.0	0.3	0.3	0.6	63.4	63.6	61.5

[1] Weighted averages by banks' total assets; in per cent; the number of banks included is shown in parentheses.

Source: Bankscope. Table VII.2

Investment banking

Acute problems of investment banks …

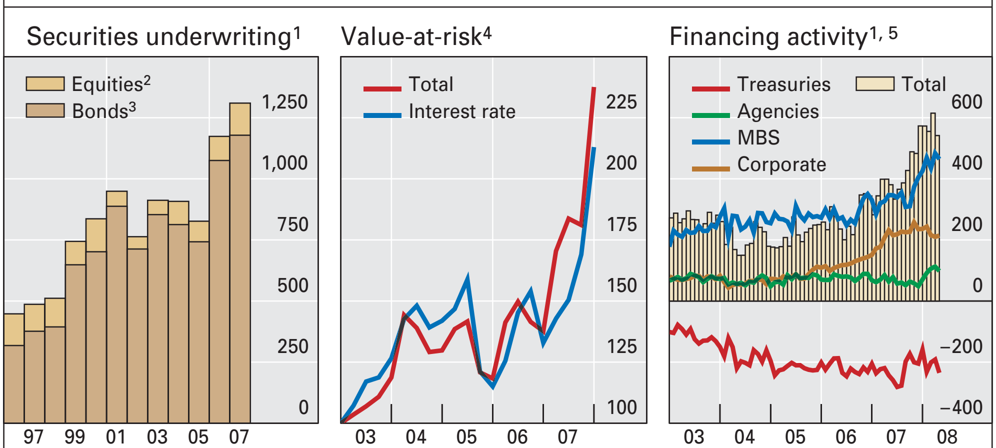
Investment banking operations have arguably been the segment of the financial sector most affected by the turmoil. Profits declined dramatically, and a number of institutions found themselves needing to raise substantial amounts of new capital. The near failure of one of the largest Wall Street firms marked a low point in the unfolding of events. At the same time, the response of the US authorities in terms of providing liquidity support to the sector signalled a change of attitude that could have long-standing implications for the design of prudential policy.

Investment banks experienced a sharp decline in profitability after August 2007. The return on equity for the largest US and European firms in the calendar year 2007 fell to around 7.4% and 4.6% respectively, less than a third of the record highs reached in 2006. A few firms actually recorded outright negative earnings for the year. Losses on exposures to securities backed by mortgages, consumer loans and related derivatives accounted for the major part of this slump in performance. Trading revenues were cut by half due to the effects of the turmoil on many securities markets. By contrast, earnings were generally supported by income from asset and wealth management as well as by fees from the underwriting of initial public offerings (IPOs) and merger and acquisition advice, at least until the turn of the year (Graph VII.2). However, both these lines of business showed clear signs of weakening in the first quarter of 2008 as the deal flow subsided and many IPOs were withdrawn.

… driven by large exposures to counterparty and liquidity risk …

By the nature of their activities, investment banking firms are more exposed to adverse market conditions than commercial banks. They operate on a thinner capital cushion and tend to be more active risk-takers. Without a retail deposit base, investment banks are more reliant on capital markets for fund-raising and on well functioning money markets for their short-term liquidity

Indicators of investment banks' activity and risk



[1] In billions of US dollars. [2] IPOs in Germany, Japan, the United Kingdom and the United States. [3] Completed international debt securities issuance. [4] Market capitalisation-weighted average of eight large institutions' total and interest rate value-at-risk; Q4 2002 = 100. [5] Net financing of US primary dealers, measured by the net amount of funds primary dealers borrow (including through repo transactions) broken down by the fixed income security used; amounts outstanding.

Sources: Federal Reserve Bank of New York; Dealogic; Thomson Financial; BIS. Graph VII.2

management. During the financial turmoil, counterparties' uncertainty about the size and distribution of investment banks' exposures to underperforming asset classes resulted in an acute shortage of liquidity. Standalone investment banks that are not part of a larger organisation with commercial banking activities were affected the most. The severity of the financing problems prompted an exceptional extension of access to central bank financing facilities for those securities houses that are also primary dealers in the Federal Reserve's operations (see Chapter IV). Investment banks made extensive use of these facilities in substituting their holdings of mortgage-backed securities (MBS) for government paper as collateral in repo funding operations (Graph VII.2, right-hand panel).

... prompted official intervention on a large scale

The near collapse of Bear Stearns represented a defining moment in this period of prolonged financial sector distress. This major Wall Street institution found itself at the centre of events in the very early stages of the turmoil because of its leading role in mortgage securitisation. In the summer of 2007, the firm felt obliged to provide support to affiliated hedge funds that had registered large losses on subprime mortgage exposures. In March 2008, the firm's liquidity position deteriorated rapidly, leading the Federal Reserve to intervene. Taking a form of action not seen since the Great Depression, the central bank first extended a loan to the firm using a commercial bank as an intermediary, and then provided financing and guarantees to facilitate a full takeover by that bank a few days later. The extraordinary intervention was aimed at avoiding a disorderly unwinding of Bear Stearns's extensive positions in the cash and derivatives markets that would have compounded market uncertainties and illiquidity. Of particular concern were exposures related to the firm's role as a market-maker in the CDS market and an intermediary in the market for tripartite repurchase agreements. The demonstrated resolve of the authorities to act decisively to stabilise the situation helped reverse the decline in market participants' sentiment and led to a narrowing of spreads and risk premia (Graph VII.1; see also Chapter VI). At the same time, the unconventional nature of the intervention raised issues about its longer-term impact on incentives. A manifest willingness to extend the central bank safety net to investment banks, even under the most extreme circumstances, is likely to have implications for the design of the prudential oversight of such firms, which are not subject to supervision by the central bank.

Insurance companies

Despite the general resilience of the insurance sector ...

Overall, the effect of the financial turmoil on insurance companies was less severe than on banking institutions. Most insurance firms registered positive results, and premium income remained strong. With the exception of monoline insurers, exposures to the asset classes most affected by the turmoil were not widespread. Sizeable writedowns of mortgage-related holdings among some of the larger insurance companies were, with few exceptions, manageable and did not translate into funding liquidity problems as they did for banks.

In the property and casualty segment of the industry, the absence of major natural disasters kept down the costs from claims and helped support companies' earnings and prudential ratios. Looking forward, however, the continuing upward trend in the frequency of smaller-scale natural disasters may suggest that future cost estimates will need to be revised upwards.

... highly leveraged monoline insurers experienced strain

The segment of the insurance sector most affected by the turmoil was the one specialised in offering credit guarantees to bond issuers. The so-called monoline insurance companies, which had traditionally provided guarantees primarily to local government bond issuers, had gradually expanded their business to offer credit enhancements for structured finance products. The collapse in the performance of these products entailed larger than expected payouts on the guarantees, thereby testing the limits of the highly leveraged balance sheets of the monoline insurers. As a result, their credit rating was questioned and the price of their debt plunged (Graph VI.8, left-hand panel). A few smaller companies were downgraded and others were obliged to seek capital infusions in order to maintain the AAA rating that is crucial to their business model. The problems they faced in raising fresh capital prompted the intervention of the supervisory authorities to avoid knock-on effects on other segments of the bond market and other financial firms.

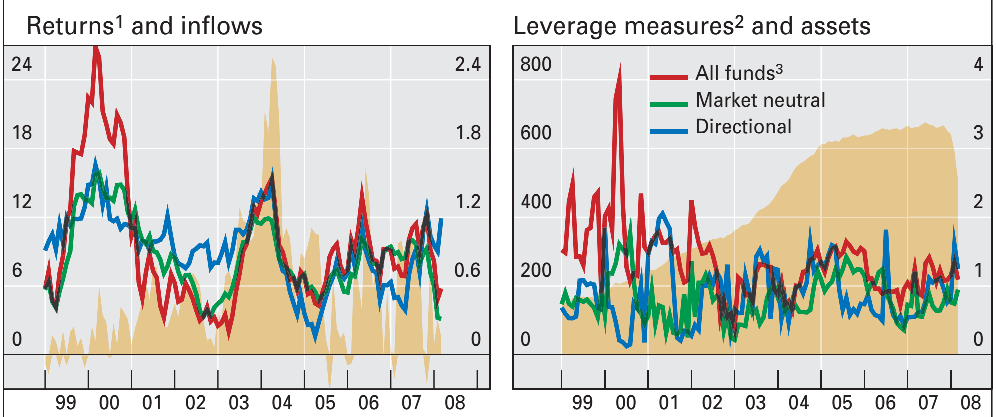
Leveraged investors

As funding markets tightened ...

The leveraged investor sector was also affected negatively by the stresses in the financial system, albeit mostly indirectly. Market-makers and lenders reacted to weakened balance sheets and reduced profits by tightening funding conditions. As a result, hedge funds and private equity funds had to adapt their risk-taking to the higher cost of borrowed capital.

Even though the first signs of strain to emerge were problems in hedge funds associated with large investment houses, the performance of the industry as a whole initially proved relatively robust. During 2007, returns on most

Hedge fund size, performance and leverage

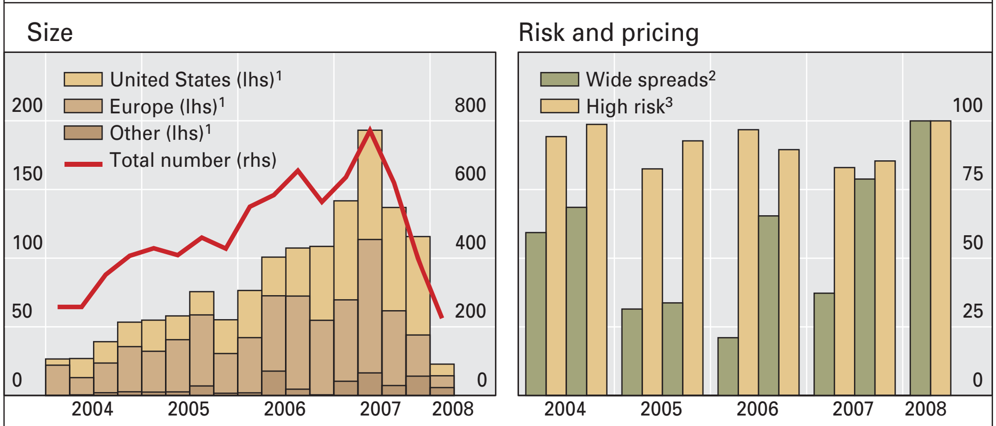


The shaded areas represent hedge fund flows and stocks respectively, indicated by the left-hand scales, in billions of US dollars.

[1] Average annualised excess return (12-month moving average), in per cent, across hedge funds; relative to three-month US Treasury bill yields. [2] Based on the regression methodology described in P McGuire, E Remolona and K Tsatsaronis, "Time-varying exposures and leverage in hedge funds", *BIS Quarterly Review*, March 2005. [3] Includes all available styles of hedge fund families weighted by assets under management.

Sources: Hedge Fund Research, Inc; BIS calculations. Graph VII.3

LBO loan market: size, risk and pricing



[1] Issuance, in billions of US dollars. [2] LBO loans with spreads of 250 basis points or more, as a percentage of the total volume of rated LBO loans. [3] LBO loans rated below BB, as a percentage of the total volume of rated LBO loans.

Source: Dealogic Loanware. Graph VII.4

hedge fund strategies compared favourably to those recorded in 2006 (Graph VII.3). The main exception was the performance of fixed income funds, which slipped during 2007. Over the calendar year, net investor inflows to all fund sectors remained at levels comparable to those of the recent past.

… hedge fund activity eventually shrank …

During the first months of 2008, a challenging market environment led to disappointing performance for many hedge funds, triggering withdrawals of funds by investors. This was compounded by prime brokers' desire to reduce their exposures by intensifying margin calls and tightening funding terms. Many funds, especially those below the top tier, found it hard to keep their positions open and were forced to liquidate part of their portfolio.

… and pressure on private equity mounted …

Private equity funds experienced significant pressure during the period under review as funding conditions tightened and investment opportunities narrowed. Successful fund-raising over the past few years created an overhang of investor money that has not been placed in the traditional way for this type of fund. Portfolio investments in structured finance securities resulted in large losses for a few private equity funds and in the high-profile failure of a recently listed entity associated with a top-tier private equity partnership.

… leading to a contraction of the LBO market

Loan activity linked to leveraged buyouts (LBOs) declined substantially during the second half of 2007 and came to a near standstill in the first quarter of 2008 (Graph VII.4). Originators found it increasingly difficult to securitise these loans as other lenders shied away from risk. Concerns about heightened credit and concentration risk arising from the involuntary accumulation of such exposures dried up the flow of financing for such transactions.

Real estate markets and financial firms' writedowns

The slowdown in property markets …

Developments in the property market played a central role in the genesis and dynamics of the financial turmoil. Exposures to US residential mortgages, especially to the riskier segments of the market, were the primary source of losses both on direct holdings of mortgages and on holdings of securities

Subprime-related writedowns and capital-raising[1]				
	Writedowns			Capital raised[2]
	Amount[2]	% of profits[3]	% of capital[4]	
Commercial banks[5]	197	102	21	169
Investment banks[6]	64	163	24	37

[1] As of mid-May 2008. [2] In billions of US dollars. [3] Pre-tax profits in 2007 (for two commercial banks, 2006). [4] Tier 1 capital in 2007; for investment banks, total equity. [5] Twenty largest commercial banks. [6] Top five investment banks.

Sources: Bankscope; Bloomberg. Table VII.3

related to mortgage debt. From a forward-looking perspective, developments in the property market are also likely to be a key determinant of how the overall situation evolves.

… led to large writedowns by financial firms …

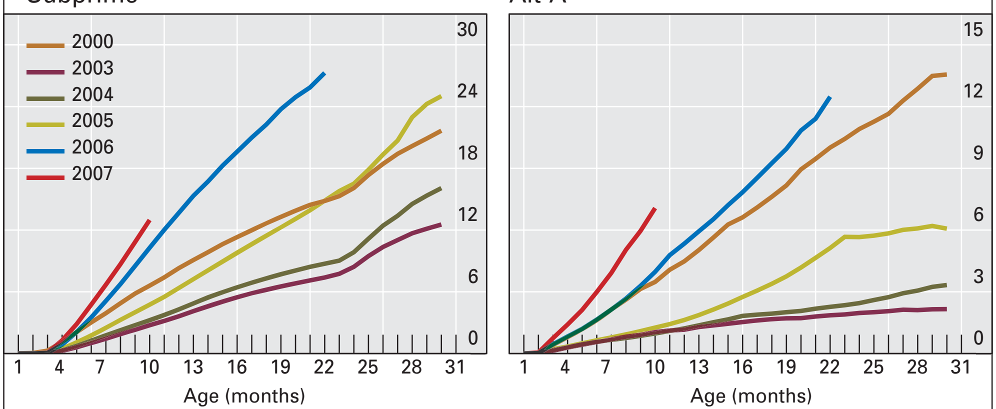
Most of the writedowns reported by financial firms during the period under review were related to declines in the value of their mortgage-linked holdings. Losses booked since August 2007 were quite severe (Table VII.3). The writedowns reflected the combined effect of an increase in the delinquency rate of mortgage debt and the massive repricing of portfolios of securitised mortgages. The size of the losses prompted a large number of institutions to actively seek to repair their balance sheet by raising new capital.

Losses related to mortgages jumped in the United States as delinquency rates increased. By September 2007, delinquency rates for prime-quality loans had risen to 3.1%, and for subprime loans to 16%. More recent subprime loan vintages exhibited much higher delinquency rates, an indication of the progressive loosening of underwriting standards over the course of the housing boom (Graph VII.5).

… and a revision of pricing models

The rise in mortgage delinquencies triggered a re-evaluation of the assumptions underpinning the pricing of mortgage-related securities. Low spreads for pools of securitised mortgages reflected in part the expectation

Mortgage delinquency rates[1]



[1] Delinquency rates (60+ days) by cohort year, in per cent.

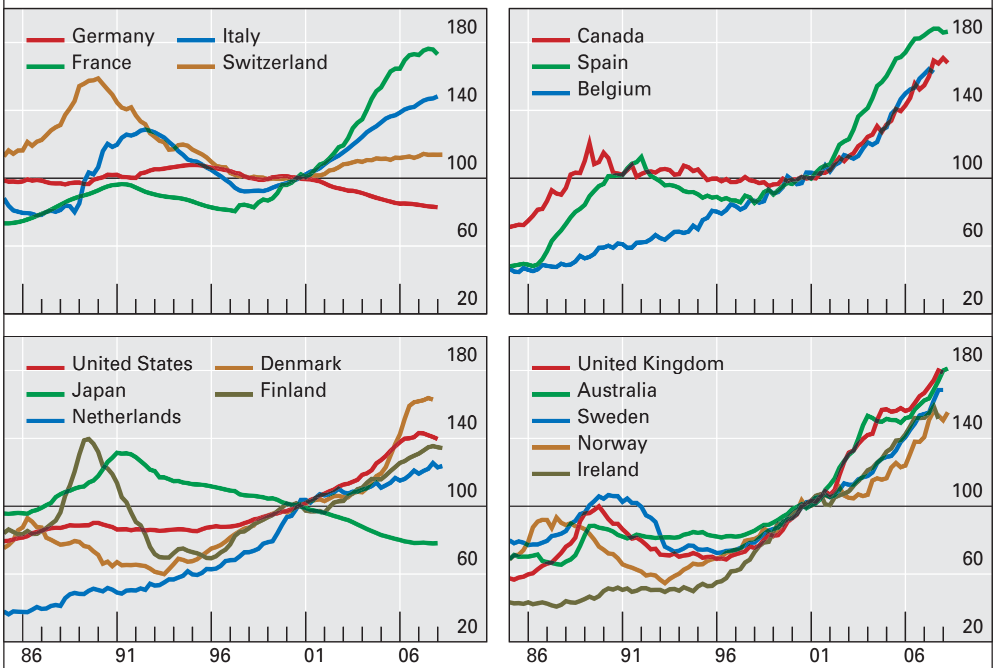
Sources: CPR & CDR Technologies, Inc; UBS. Graph VII.5

that highly indebted borrowers would be able to refinance or sell the property easily in a booming housing market, avoiding costly foreclosure proceedings. Moreover, valuations of structured finance products related to mortgages were also based on optimistic assumptions about the closeness of the link between delinquencies and "systematic" risk drivers. As a result, manifestations of higher risk led to large-scale downgrades in the credit ratings of securitised mortgages and a sharp drop in the marked to market value of related structured finance securities.

Transaction complexity contributed to writedowns

Two features of structured finance products amplified the price declines. The first was the complexity of the structure governing the distribution of cash flows to different investors. By construction, securitisation redistributed risk by concentrating it in junior tranches. The low expected loss characteristics of senior tranches, however, came at the expense of higher sensitivity to underlying valuation assumptions. Second, since the secondary markets for these securities were fairly illiquid, valuations had been increasingly based on primary market placing of newer vintages of similar structures, or on risk models, rather than on new information about the performance of the underlying pool of assets. As the demand for new securities dried up and initial pricing assumptions had to be revised, the non-linear nature of the structures meant that recorded valuations required very substantial adjustments. This explains why the writedowns reported by financial firms are significantly larger than the actual realised losses from non-performing mortgages.

Inflation-adjusted house prices[1]



[1] Nominal house prices deflated by the personal consumption deflator; 2000 = 100. For France, Germany, Italy and Japan, quarterly house price data are derived from lower-frequency data using Ginsburgh interpolation techniques.

Sources: Various real estate associations; national data; BIS calculations. Graph VII.6

A significant decline in house price inflation ...

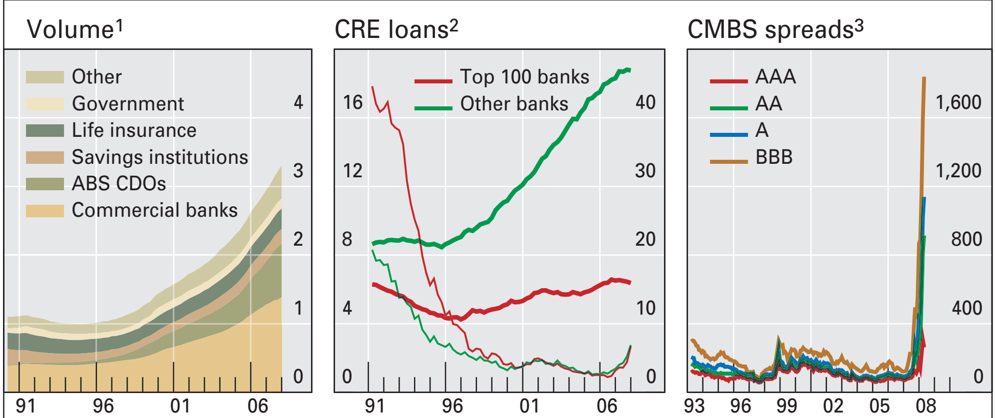
Property market trends have been key in determining the course of the current cycle. Residential real estate prices halted their upward trend during the period under review (Graph VII.6). In most countries, house prices stabilised or their growth moderated substantially. In the United States, house prices fell. The decline in the national average price index masks considerable diversity in the performance of local markets. The areas where prices grew the fastest in the past few years were also those where prices have recently dropped most. Also, house price indices that are more sensitive to properties in large metropolitan areas and those financed by large or not fully documented mortgages show annual price declines in the order of 12%. More generally, the global flattening of the rate of increase in house prices can be attributed primarily to a decline in housing demand, which in certain countries came on the heels of a recent construction boom. Higher interest rates for mortgages, an incipient economic slowdown and elevated levels of household indebtedness have to varying degrees played a role in the slackening demand for housing in different countries.

... spilled over to the commercial real estate market

The slowdown in property prices also affected the commercial real estate sector. Commercial property prices had accelerated in a number of countries over the past few years, albeit starting from a lower level than residential markets and showing more diversity across countries (Table VII.4). Bank exposures to the sector have also increased. Direct exposures to commercial real estate account for almost 14% of the assets held by US banks, with the share having jumped from 19% to 33% in the case of medium-sized banks over the past six years (Graph VII.7).

There were, however, accumulating signs of investors' heightened sensitivity to commercial property risk during the period under review. The trend increase in the issuance of securities backed by commercial property investments was reversed during the past year. At the same time, spreads on such securities widened very substantially (Graph VII.7, right-hand panel). This

US commercial real estate sector



[1] Commercial and multi-family mortgage debt outstanding, in trillions of US dollars. [2] In per cent. Thick lines represent commercial real estate (CRE) loan/interest earning asset ratios (rhs); thin lines represent delinquency rates (lhs). [3] Commercial mortgage-backed securities (CMBS) spreads, in basis points.

Sources: JPMorgan Chase; national data. Graph VII.7

Commercial property prices[1]							
	Nominal change[2]			Level[3]	*Memo: Office vacancy rates*[4]		
	1998–2006	2006	2007	2007	*2005*	*2006*	*2007*
United States	3.2	12.3	15.9	47.1	*13.9*	*12.6*	*12.8*
Japan	–3.1	19.6	11.9	21.4	*3.9*	*3.0*	*2.1*
Germany	–2.1	–5.1	–1.3	34.9	*11.6*	*9.9*	*9.8*
United Kingdom	5.4	17.2	–4.8	64.7	*7.3*	*5.7*	*4.2*
France	6.0	15.0	11.8	78.0	*6.5*	*5.1*	*5.2*
Italy	10.2	1.3	3.9	86.0	*6.1*	*6.1*	*5.8*
Canada	3.3	12.9	11.6	64.7	*12.1*	*10.5*	*7.2*
Spain	10.0	10.7	5.9	76.1	*6.1*	*3.4*	*4.3*
Netherlands	2.4	4.3	4.6	83.1	*13.6*	*11.7*	*10.6*
Australia	2.7	10.8	14.9	50.6	*9.0*	*8.1*	*4.7*
Switzerland	1.3	–0.0	0.6	60.2	*11.5*	*10.9*	*10.2*
Sweden	3.0	9.8	9.4	51.4	*16.8*	*15.4*	*11.7*
Norway	2.8	10.7	12.4	69.7	*9.0*	*8.2*	*4.5*
Denmark	8.4	9.6	5.6	100.0	*7.9*	*5.0*	*4.3*
Finland	0.5	1.8	3.3	56.9	*9.0*	*8.1*	*7.0*
Ireland	10.5	21.7	6.1	100.0	*15.2*	*12.0*	*11.3*

[1] For Australia, Italy and Spain, prime property in major cities; for Japan, land prices. [2] Annual changes, in per cent. [3] Peak period of real commercial property prices = 100. [4] Immediately vacant office floor space (including sublettings) in all completed buildings within a market, as a percentage of the total stock. For Switzerland and the United States, nationwide; for Australia, France, Germany, Italy, the Netherlands and Spain, average of major cities; for other countries, largest city.

Sources: Catella Property Consultants; CB Richard Ellis; Investment Property Databank Ltd; Japan Real Estate Institute; Jones Lang LaSalle; National Council of Real Estate Investment Fiduciaries; Sadolin & Albæk; Wüest & Partner; national data. Table VII.4

evidence contrasts with reports of a gradual weakening in lending standards during the past few years, similar to that observed in residential mortgage markets.

The turmoil in perspective

The episode of stress that dominated the financial landscape starting in mid-2007 arguably ranks among the most serious in recent experience. It affected a large number of financial institutions and proved to be more persistent than many other instances of generalised financial sector instability. From the perspective of policymakers, some of the most important questions raised by the turmoil relate to the interactions between the financial and real sectors of the economy. A key question is whether the credit cycle may be leading the business cycle as financial institutions respond to weakened balance sheets by tightening the supply of credit. Moreover, the transmission of stress through the international banking market indicates that economic spillovers may be broader than suggested by the original stress points. A final set of questions relates to systemic risk and to the role of the originate-to-distribute model of financial intermediation in shaping its nature.

The credit cycle

Large losses forced banks to …

The intense strains over the period under review have forced financial firms to overhaul their business plans. In many cases, firms that saw their capital base shrink had to resort to emergency recapitalisation to maintain their franchise value in their respective areas of activity. A key question looking forward, however, is the extent to which the repercussions of the turmoil will affect the supply of credit to the non-financial sector.

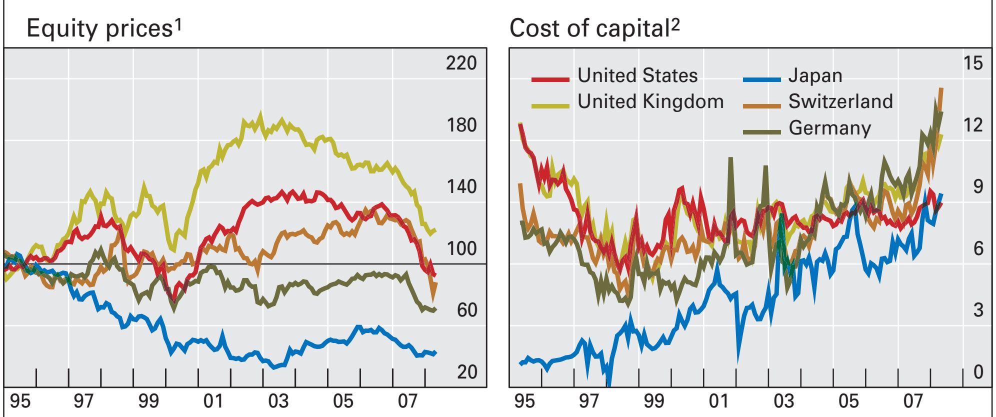
… raise fresh capital …

Writedowns of mortgage-related assets and the prospect of further deterioration in asset quality prompted many banks to take action to repair their balance sheets. Most explicitly, many large institutions have done so by raising fresh equity capital through private or public rights issues to the tune of $200 billion (Table VII.3). This has been particularly costly in an adverse market environment where investors' concern about the fragility of financial institutions' performance has weighed on their share prices (Graph VII.8). Nevertheless, for a number of institutions, the financial and reputational costs of immediate action have been outweighed by the benefits of avoiding a further tightening in the availability of capital and being able to maintain capital buffers sufficient to support the value of their business franchise. These efforts have also received the endorsement of supervisors, who have encouraged banks to review their capitalisation levels with a critical eye and address weaknesses in a timely way.

… and tighten credit

Another, more widespread reaction among financial firms has been a more defensive positioning in terms of asset growth. Asset deterioration led lenders to retrench from the hardest hit market segments, such as mortgage loans and consumer credit. Survey evidence points consistently towards a tightening of credit standards in these areas. This is true not only in the United States, where the performance of these credits demonstrably worsened, but also in Europe, where problems with such loans have been much less pronounced (see the discussion in Chapter II and evidence in Graph II.12, right-hand panel). There are indications that credit availability to the corporate

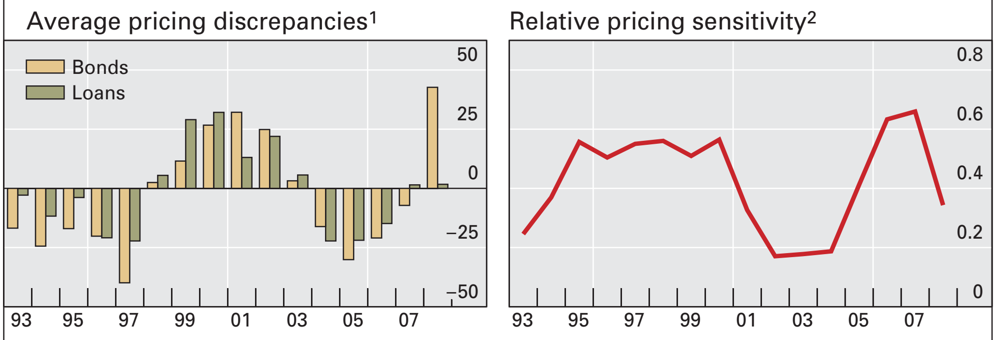
Bank equity prices and cost of capital



[1] Ratio to broad equity index; 1995 = 100. [2] Implied by the 12-month forward price/earnings ratio; in per cent.

Sources: Datastream; BIS calculations. Graph VII.8

Pricing of risk in syndicated loan and bond markets



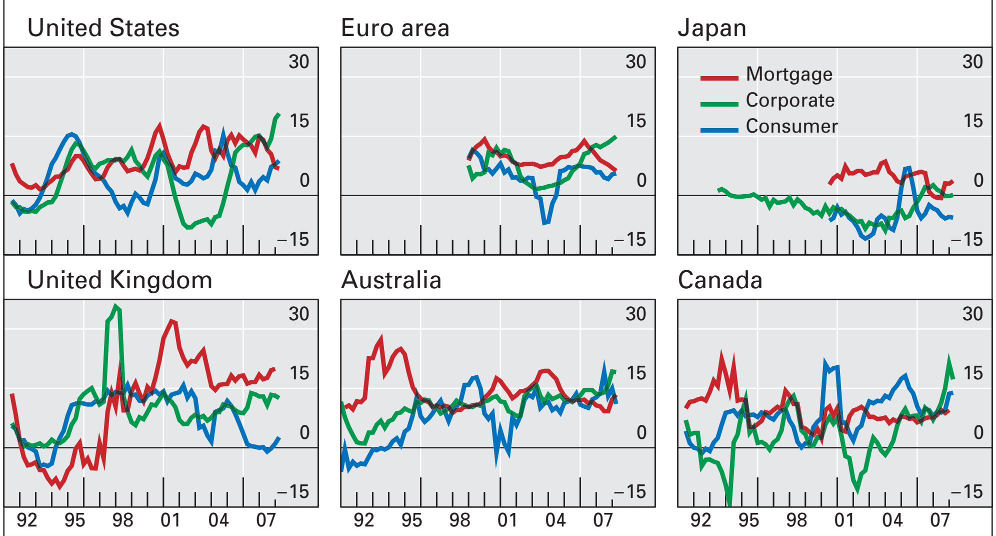
[1] Facility size-weighted averages of discrepancies (in basis points) between actual (bond or loan) spreads and those implied by a model incorporating short-term interest rates, rating, time to maturity, guarantees, collateral, currency risk and size of facility. A negative number indicates that market spreads are lower than model-implied spreads. [2] Time-varying relative sensitivity of loan and bond prices to credit risk, estimated as the regression coefficient of loan rates on the yield index for corporate bonds of the same rating. Other variables include the size and maturity of the loan facility. A value of 0.5 implies that the difference in spreads between two facilities, one with a lower rating than the other, is half as great for loans as it is for bonds.

Sources: Dealogic; national data; BIS calculations. Graph VII.9

sector is also under pressure, with banks being more demanding in their lending terms. Of particular note has been the disappearance of loan contracts with looser covenants, which had become increasingly prevalent during the recent boom in leveraged financing. Credit spreads have also generally widened, although this increase has been more pronounced in the bond than in the loan market (Graph VII.9).

Aggregate credit growth rates have declined moderately from their recent peaks in many countries (Graph VII.10). For a number of reasons, however, these statistics may in some cases understate the contraction in the supply of credit. One reason is that, as a result of the underperformance of securitised

Sectoral composition of bank credit[1]



[1] Annual growth, in per cent.

Sources: Datastream; national data. Graph VII.10

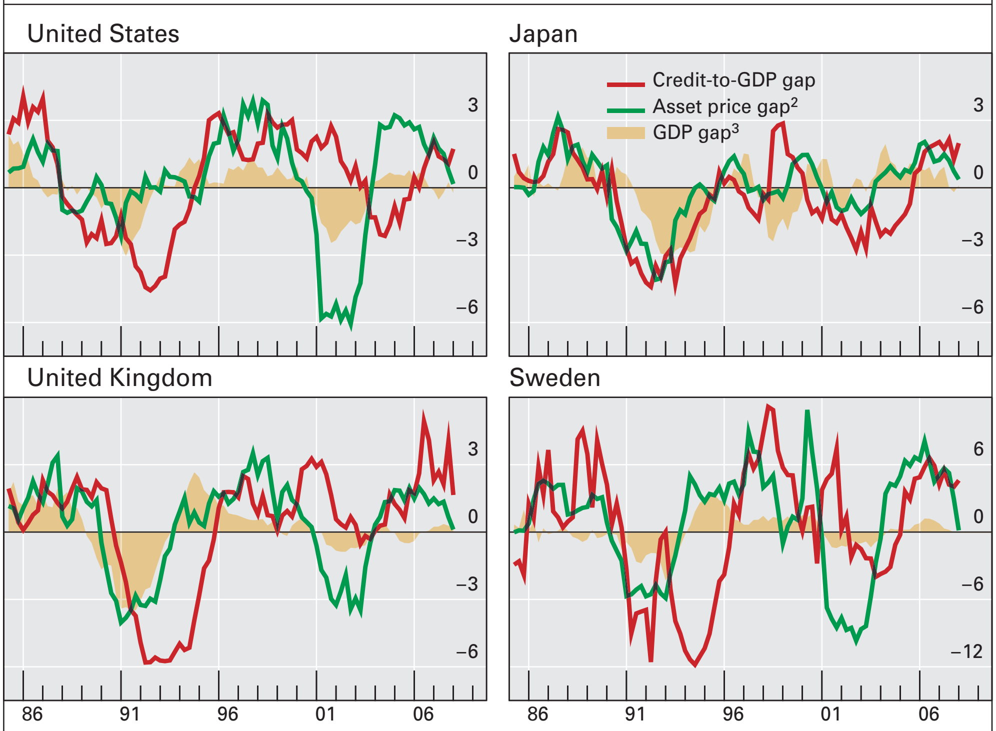
instruments, sponsoring banks brought back onto their balance sheets portfolios that had been housed in separate legal entities as part of the securitisation structure. These decisions were dictated partly by existing funding commitments to these separate entities and partly by a desire to minimise the reputational costs to the franchise name of the firm from eventual failures of such vehicles. A second reason is that many large banks that had used loans to fund LBOs in the late stages of the leveraged financing boom found themselves holding large portions of these exposures when the secondary market for such loans dried up in summer 2007. The overhang of these loans, estimated by market observers to have neared $250 billion at its peak, weighed on the banks' balance sheets. The gradual market reopening towards the end of the period under review was in part stimulated by interest from private equity funds. A final reason why the overall numbers may overstate the supply of new credit is that, once credit has started contracting, borrowers in need typically draw down from existing credit lines with their banks.

Credit cycle developments are intertwined with …

The evolution of credit availability in the near and medium term will depend on a number of factors. Two key factors, closely interlinked, are how far banks succeed in replenishing their capital reserves and how the quality of their assets develops. The latter is in turn intimately tied to developments in the macroeconomy.

Previous episodes of financial sector stress can offer some guidance as to what can be expected, albeit far from an exact prediction. The similarities

Financial markets and the real economy[1]



[1] Deviations from trend, in per cent. Each trend is derived on the basis of data available in real time. [2] Based on an index of real equity, residential and commercial property prices; scaled down by a factor of 3. [3] Based on the logarithm of real GDP.

Sources: IMF; OECD; national data; BIS calculations. Graph VII.11

between the current turn in the credit cycle and others that have occurred over the past 20 years are evident when one examines the patterns of credit expansion, asset prices and economic activity (Graph VII.11). Regardless of the specific features of past episodes of distress, they were typically preceded by periods of faster than average credit growth and by asset price booms, driven very often by property prices. These periods of credit growth were associated with looser credit standards and a lower price of risk (Graph VII.9, left-hand panel), and typically mirrored a strong upswing in economic activity.

... the performance of the real economy

The reversal of the process in the downswing of the cycle was often fairly abrupt. Financial sector indicators typically led real economic activity as credit growth contracted and asset prices declined in advance of GDP and spending. The health of financial institutions deteriorated during the downswing, as suggested by the declining values of performance indicators. While it is difficult to derive general causal linkages from this evidence, the dynamics of financial sector strength, credit and asset price growth and real sector activity do highlight their close interdependencies.

Looking beyond the near-term horizon, the main risks appear to be linked to the response of aggregate demand to the weakened position of banks and tighter lending standards. Debt levels of households in many countries remain high and tighter credit supply is likely to have an impact on spending patterns (see Chapter II). The level at which house prices will eventually converge and the length of this stabilisation period would be a very important factor in the economies where housing booms have been the most pronounced.

The international banking market and the transmission of stress

The stress may have international consequences via ...

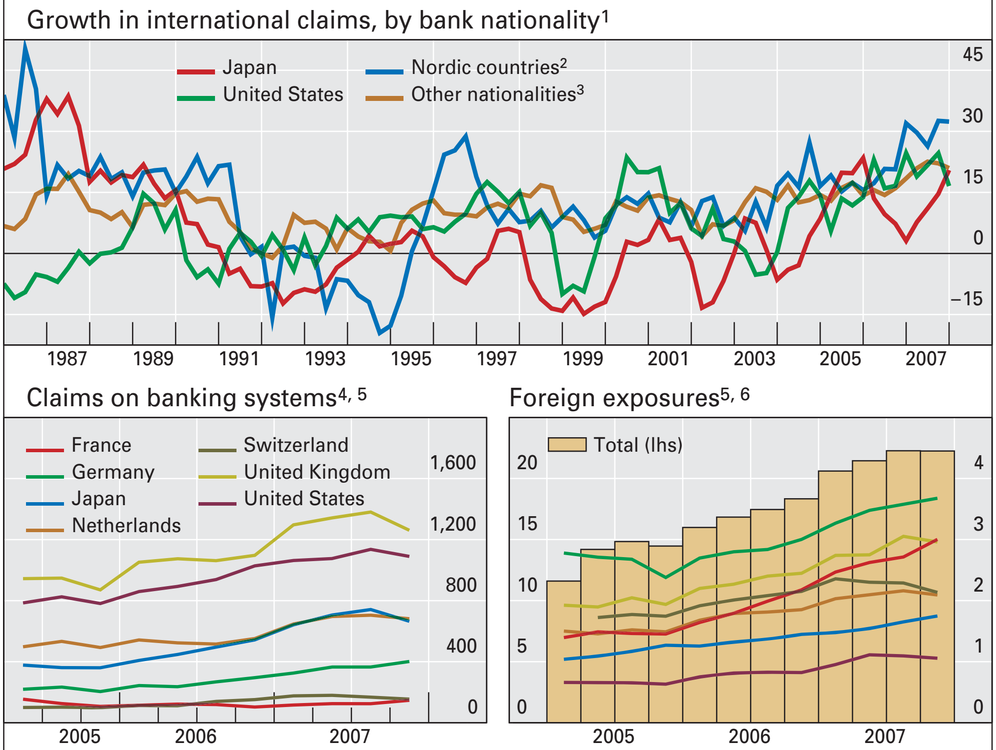
The growing internationalisation of finance implies that the health of a country's banking system can be important beyond the borders of the domestic economy. A number of large institutions lie at the centre of the international banking market. Their continued difficulties can affect financial conditions across national boundaries.

The 1990s offer examples of banking crises in advanced industrial countries with direct international consequences. Japanese banks scaled back their international operations in response to the non-performing loans problem caused by the bursting of the asset price bubble (Graph VII.12, top panel). As a result of a prolonged period of generally negative growth, Japanese banks' share in international claims fell from 38% in 1990 to less than 8% in 2007. The Nordic banking crisis had a similar effect in curtailing locally headquartered banks' international claims, albeit from a much smaller base. Instances where US banks' international operations contracted are also associated with periods of domestic financial strain, notably in the late 1980s, the early 1990s and autumn 1998.

... a reduction in cross-border lending ...

In each of these cases, the banks affected reduced credit channelled through their international offices in multiple locations. These cuts therefore represented negative shocks to credit supply in the host country, induced by conditions at the banks' headquarters in the home country. By contrast, throughout most of this period, international credit extended by their

International lending and interbank exposures



[1] Year-on-year growth rate in international claims booked by banks of the nationality identified in the legend. Foreign currency claims on home country residents are excluded. [2] Danish, Finnish, Norwegian and Swedish banks. [3] Total international claims excluding those booked by Japanese, Nordic and US banks. [4] BIS reporting banks' foreign claims on the national banking systems identified in the legend; in billions of US dollars. [5] On an ultimate risk basis and excluding inter-office transfers. [6] Foreign claims vis-à-vis entities (banks and non-banks) in advanced economies, booked by banks headquartered in the countries shown in the legend; in trillions of US dollars.

Source: BIS international banking statistics. Graph VII.12

international peers exhibited a more muted cycle, and posted negative growth only briefly in 1992.

The international banking market has grown significantly since then and with it the potential international impact of a similar retrenchment today. International claims of BIS reporting banks rose from $6 trillion in 1990 to $37 trillion in 2007 (equivalent to over 70% of world GDP), with total claims on emerging markets topping $4 trillion, including cross-border credit and claims extended locally by foreign banks. The withdrawal of institutions from a major national banking system from international lending could affect advanced industrial economies as well as constrain the financing of emerging markets (see Chapter III). Several emerging markets in Europe and Latin America have become more reliant on foreign bank credit, either through cross-border transactions or via local branches. That said, data available up to end-2007 show bank lending to emerging markets continuing to accelerate, in contrast to banking activity between advanced industrial economies.

... and interbank linkages

Even if the condition of internationally active banks might be considered less problematic now than in the early 1990s, their common market exposures (including to US mortgage-related assets) have increased and the institutions are now more highly interconnected through interbank linkages, credit commitments and guarantees. Tentative signs of a credit contraction have started to emerge. Internationally active banks have started to reduce their direct exposures to various national banking systems. Interbank exposures to UK, French and US banks declined the most, followed by those to German and Swiss banks (Graph VII.12, bottom left-hand panel). In turn, several major banking systems including those from Switzerland, the United Kingdom and the United States are showing signs of curbing their total international exposure (bottom right-hand panel). The presence of such extensive international bank linkages generally underscores the point that continued strains at internationally active banks have the potential to produce a retreat from international lending that could be felt well beyond the main financial centres.

The originate-to-distribute business model

The new originate-to-distribute business model …

Many elements of the recent credit market turmoil mirror features of past financial cycles and, as such, form part of the mechanisms that bring about the alternation of periods of financial booms and sharp contractions. A relatively novel element specific to the latest episode is the central role of the so-called originate-to-distribute (OTD) business model for financial intermediation. This model relies on the dispersion of originated exposures through markets for risk transfer, and a layered structure of players is involved in different stages of the process, from origination and repackaging to the ultimate bearing of the risk. While securitisation is not a recent innovation, its growth in recent years had accelerated substantially, supported to a large extent by the introduction of more complex structures.

… facilitates risk transfer …

The growth in securitisation markets was an integral part of the expansion phase of the current credit cycle. Financial innovation, in the form of new structures that govern the distribution of cash flow generated by the securitised assets to the ultimate investors, was an important factor behind the abundant supply of credit to households and firms. The repackaging of mortgages into tranched securities with different risk characteristics energised funding from various types of investors with varying degrees of risk tolerance. Moreover, the wider distribution of the risk across the financial system arguably contributed to the compression of risk premia, as investors felt better able to match their risk appetite to the composition of their portfolios.

… but harbours structural weaknesses …

Conversely, the market turmoil that ushered in the contraction phase of the cycle exposed some of the weaknesses in this business model of financial intermediation, and especially in some of the practices introduced in the most recent period. These weaknesses relate primarily to the interactions between the incentives of individual participants in the securitisation chain and the quality of the information flow. A successful securitisation process relies on complementarities between the roles of different participants to ensure that decisions at every stage are based on adequate information and are conducive to better allocation of risk and economic resources.

… in the process of loan origination …

Originators play a key role in the success of a securitisation structure. Information generated by other parties at subsequent stages is at best only an imperfect substitute for the asset quality assessment made by originators.

Information deficiencies stemming from the lack of due diligence or lax underwriting standards at this initial stage are very difficult to overcome. These weaknesses were evident in the securitisation market for subprime mortgages. Competition between originators who never intended to bear the risk and were motivated solely by income tied to the origination volumes contributed to a decline in standards of verification and documentation of mortgages. In the most extreme cases loans were granted to borrowers who would clearly not be able to repay them except under very optimistic scenarios of future house price appreciation.

Financial intermediaries specialising in the creation and management of securitisation vehicles face similar incentives as originators. Their income is primarily linked to the volume of business rather than to the underlying risk-return profile of the securitised assets. They typically bear only a small portion of the risk, and in the prevailing euphoria of the market boom they were able to substantially reduce this exposure. Further, the creation of complex structures that insert several layers of securitisation between the original asset base and the cash flows to the ultimate risk bearers often obscured the risk borne by the structures' managers.

… securitisation …

A key role for the ultimate investor and bearer of risk is to inject discipline into the securitisation process by demanding and receiving pertinent information about the underlying risks before taking positions. The incentive to do this was weakened, however, by the fact that new and complex securitisation transactions resulted in very large portions of these holdings being structured as senior claims and receiving the highest creditworthiness assessments by rating agencies. The compensation of investors in this class of claims, while generous compared to other similarly rated instruments, is not substantial enough to justify the effort of performing a full review of the underlying risks in highly structured transactions. Hence, their decisions rely on external risk assessments and due diligence performed by the so-called "mezzanine" investors, who hold less senior and higher-yielding claims. However, their capacity to screen and instil financial discipline was undermined by the very substantial volume of securitisation issues that came to the market in the past few years, overstretching their resources. In addition, the practice of layered securitisation, which created new structures and more senior claims from the packaging of mezzanine tranches of securitised assets, further lessened the ability of this class of investors to reliably assess and monitor the risks.

… and rating assessments

The growth of more complex forms of securitisation may have weakened the incentives of originators and managers to do due diligence and elevated the importance of credit ratings for the functioning of the market. Investors in the more senior tranches placed increased weight on the credit rating agencies' assessment, often without regard to the fact that credit ratings focus mainly on average (or expected) credit losses and do not fully describe the potential range of those losses. In fact, the complexity of the more layered securitisation structures meant that this range of potential losses was much wider than for similarly rated loan or bond exposures. Ratings also abstract from the possible losses stemming from the interaction between market and credit risk drivers, which are also more pronounced in the context of some of these structures. Indeed, as a result of the lessons learned from the turmoil, investors seem to have shunned complexity, and rating agencies have started looking for ways in which to better communicate the important nuances in their assessments.

Initiatives to overcome these shortcomings

In spite of its identified shortcomings, amply illustrated during this period of stress, the potential benefits of the OTD model for individual institutions and for the efficiency of the financial system as a whole remain. The main challenge facing market participants and policymakers is to address these shortcomings while enhancing its positive features. Several efforts are in train. Private sector initiatives include moves towards more complete documentation at origination and better dissemination of information throughout the securitisation chain, a heightened recognition that discipline is stronger when participants in every step of the process retain sufficient exposure to the overall risk, and efforts to refine the assessments by rating agencies. Policymakers are also seeking to incorporate the lessons learned about the risks inherent in more complex securitisation structures in designing and implementing prudential standards and to address the weaknesses exposed by the links between market and funding liquidity and overall risk in financial institutions.

A general lesson derived from the financial turmoil is the close interdependence of markets and institutions in the functioning and resilience of the financial system. The OTD model of financial intermediation is based on the premise that risk is ultimately shifted to the investors through market transactions. However, as the events during the period under review demonstrated, it is the capital of financial institutions that in the end underpins the stability of all these transactions. As mentioned above, originators and managers of securitised assets found themselves under pressure to provide support to the securitisation structures and investment vehicles with which they were associated. Uncertainty about the ability of institutions to sustain losses from related exposures engendered a general distrust of securitised assets and brought activity to a halt not only in the market for seasoned securities but also in the primary market for new transactions. Finally, as money market liquidity evaporated, the funding of off-balance sheet vehicles became entirely dependent on the ability of the sponsoring financial institutions to meet their backup liquidity commitments.

From a policy point of view, this interdependence between financial institutions and markets argues in favour of strengthening the macroprudential elements in the design of the framework and the calibration of its instruments. The shortcomings of the originate-to-distribute model can be attributed mainly to the failure of individual players to develop a holistic view on the risks due to excessive focus on their narrow, individual perspective, losing sight of system-wide drivers of risk and interdependencies. Policy that has a similarly narrow focus can also fail to take ex ante preventive action as the risks of disruptive interactions build up. At the same time, the management of the period of stress has already shown that, to be effective, policy responses may entail interventions aimed at easing the strain in the markets while at the same time helping institutions to cope with distress.