

Financial Stability Report

June 2009 | Issue No. 25



BANK OF ENGLAND





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The Bank of England has two core purposes — monetary stability and financial stability. The two are connected because serious disruption in the financial system can affect the implementation and effectiveness of monetary policy, while macroeconomic stability helps reduce risks to the stability of the financial system.

The Bank's responsibilities for monetary stability are set out in the Bank of England Act 1998. The Bank's statutory responsibility for financial stability is set out in the Banking Act 2009.⁽¹⁾ The respective roles of the tripartite authorities — HM Treasury (HMT), the Financial Services Authority (FSA) and the Bank of England — are also set out in a Memorandum of Understanding (MoU).⁽²⁾

Under the Banking Act, the Bank is responsible for contributing to the maintenance of the stability of the financial system as a whole. This derives from its responsibility for setting and implementing monetary policy, its statutory role in respect of payment systems in the United Kingdom and its role as banker and supplier of liquidity to the banking system. As described in the MoU, the Bank aims to bring its expertise in economic analysis and its experience, both as a bank and as a participant in financial markets, to the assessment and mitigation of risks to the UK financial system. Where necessary, this involves helping to manage and resolve financial crises and making use of the Special Resolution Regime for dealing with distressed banks. The Bank works closely with authorities domestically and overseas on issues relevant to the stability of the UK financial system, including the international financial architecture and regulatory frameworks.

As part of that contribution, the *Financial Stability Report* aims to identify key risks to UK financial stability and to stimulate debate on policies needed to manage and prepare for these risks. The *Report* is produced half-yearly by Bank staff under the guidance of the Bank's Financial Stability Board, whose best collective judgement it represents.

The Financial Stability Board:

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This document was delivered to the printers on 24 June 2009 and, unless otherwise stated, uses data available as at 12 June 2009.

The *Financial Stability Report* is available in PDF at www.bankofengland.co.uk.

(1) The Banking Act 2009 is available at www.opsi.gov.uk/acts/acts2009/pdf/ukpga_20090001_en.pdf.
(2) The tripartite Memorandum of Understanding was revised in March 2006 and is available at www.bankofengland.co.uk/financialstability/mou.pdf.

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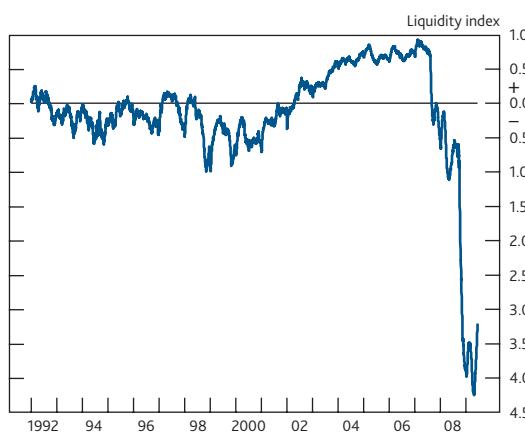
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Overview

A second wave of wide-ranging financial support from governments was needed early in 2009 to deal with renewed concerns about the stability of financial systems, as global macroeconomic and market conditions deteriorated sharply. In recent months, market conditions have improved and there are signs that the pace of decline in GDP is easing, improving the outlook for banking systems. But, given their leverage and funding positions, banks in the United Kingdom and internationally will remain sensitive to further shocks for some time. And if economic recovery were to stall as a result of weak bank lending, losses on assets could rise, further affecting confidence in the banking sector.

Authorities internationally are working to strengthen financial system resilience over the medium term. Policies on market discipline, bank regulation, market infrastructure and bank structure and size should be based on their impact on overall financial system stability, not just on individual firms. This systemic perspective has not always shaped policy around the world sufficiently in the past.

Chart 1 Financial market liquidity^(a)



Sources: Bank of England, Bloomberg, Chicago Board Options Exchange, Debt Management Office, London Stock Exchange, Merrill Lynch, Thomson Datastream and Bank calculations.

(a) The liquidity index shows the number of standard deviations from the mean. It is a simple unweighted average of nine liquidity measures, normalised on the period 1999–2004. The series shown is an exponentially weighted moving average. The indicator is more reliable after 1997, as it is based on a greater number of underlying measures.

Global financial instability and the policy response

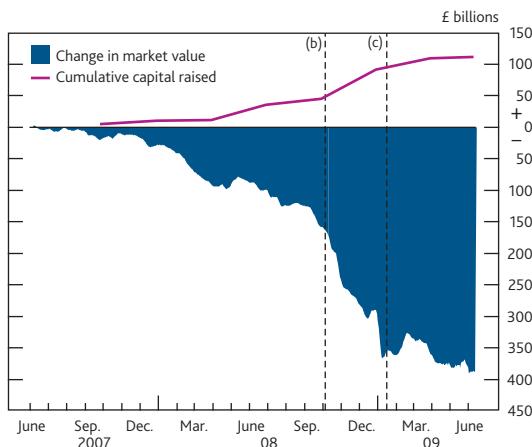
The financial system came close to collapse in the autumn of 2008, following the failure of Lehman Brothers and the 'breaking the buck' of a large US money market mutual fund (MMMF). The subsequent panic across global markets prompted unprecedented action by national authorities. In the latter part of 2008 and early in 2009, UK and other authorities announced a second wave of measures to underpin the system.

An abrupt fall in global demand and asset prices renews concerns about financial institutions...

As Section 1 discusses, the backdrop to those further measures was a sudden, internationally synchronised collapse in confidence and demand in late 2008. Global recession heightened uncertainty about the condition of the financial system. Asset prices fell sharply and liquidity in some markets dried up (**Chart 1**).

In the United Kingdom, implied mark-to-market losses on major banks' loan portfolios roughly doubled between October and end-January (**Chart 2**), exceeding fresh capital raising over that period. That partly reflected increases in expected losses, though rising uncertainty and falling market liquidity also significantly affected these valuations. Internationally, efforts by financial institutions to reduce risks compounded strains in markets. By mid-March, estimated

Chart 2 Loss of market value of major UK banks' banking book assets and their capital raising^(a)



Sources: Bank of England, Bloomberg, JPMorgan Chase & Co., Merrill Lynch, UBS Delta, published accounts and Bank calculations.

(a) Based on weekly moving average prices of traded instruments as proxies for market value of similar banking book exposures. Group comprises Banco Santander, Barclays, HSBC, Lloyds Banking Group, Nationwide, Northern Rock and RBS.

(b) First UK support package (8 October 2008).

(c) Second UK package of measures announced (19 January 2009).

total financial losses on debt securities and equities since the start of the crisis had reached around US\$25 trillion (Table A).

...contributing to a collapse in lending, especially across borders...

Banks internationally sought to conserve capital by further tightening credit conditions. In many industrialised countries, including the United Kingdom, lending growth to households and corporates fell sharply (Chart 3). That partly reflected a withdrawal of foreign lending as cross-border capital flows reversed (Chart 4), prompted by rising uncertainty about credit risk, strains on banks' liquidity, and policy pressures to prioritise local lending.

Tighter credit conditions and the sharp global economic slowdown exposed weak spots in borrowers' balance sheets. Some companies faced difficulties in refinancing existing borrowing, insolvencies picked up and concerns about future corporate distress rose sharply. Pressures on the household sector increased as unemployment rose and property prices fell. Deteriorating capital market conditions resulted in financing pressures on countries with large external imbalances.

...prompting an unprecedented policy stimulus.

Against that backdrop, authorities internationally took wide-ranging measures in the latter part of 2008 and early in 2009. Interest rates globally were cut, in some cases to historic lows. And central bank lending to the financial system and beyond expanded, leading to a more than doubling in central bank balance sheets to around 15% of GDP in the United States and United Kingdom. Almost half the world's largest 20 banks received direct government investment. In the United Kingdom bank support measures included further liquidity insurance, additional capital investment and asset protection. Overall, the total value of actual and contingent support in North America and Europe rose to over US\$14 trillion, equivalent to about 50% of annual GDP in those economies, although that does not equate to losses as in some cases these obligations were offset by holdings of assets.

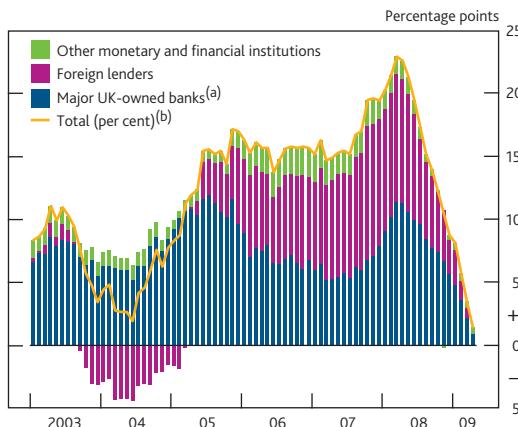
Table A Mark-to-market losses on selected financial assets^(a)

US\$ trillions	Outstanding amounts ^(b)	Oct. 2008 Report ^(c)	Mid-March 2009	June 2009 Report
Equities	30.7	14.4	20.2	12.3
Corporate bonds	15.2	2.2	2.0	0.7
RMBS ^(d)	4.2	1.0	1.8	1.3
CLOs and CDOs ^(e)	1.0	0.4	0.5	0.4
CMBS	0.8	0.1	0.3	0.2
Memo: Debt securities	21.2	3.7	4.6	2.7
Total losses	-	18.1	24.7	15.0

Source: Bank calculations.

- (a) Estimated loss of market value since January 2007, except for US CLOs, which are losses since May 2007. Assets cover the United Kingdom, the United States and the euro area, except for equities, which are global.
 (b) Outstanding face values, except for equities, which are market values.
 (c) Updated to reflect new availability of outstanding amounts at time of October 2008 Report.
 (d) Includes prime, non-conforming and buy-to-let RMBS for the United Kingdom, prime and Alt-A RMBS and home equity loan ABS for the United States, as well as RMBS for the euro area.
 (e) Includes high-grade and mezzanine home equity loan ABS CDOs for the United States.

Chart 3 Contributions to annual growth in lending to UK non-financial companies



Source: Bank of England.

(a) Includes consolidated banking groups of Barclays, Lloyds Banking Group, HSBC, Nationwide and RBS.

(b) Twelve-month growth rate in the stock of lending.

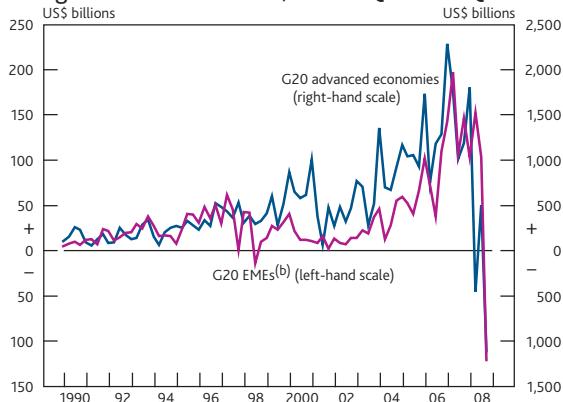
The current state of the financial system

Market sentiment has improved recently...

As Section 2 sets out, market sentiment has improved in recent months. Equity markets have risen by 25%–35% from low points in March, recouping around US\$8 trillion of mark-to-market losses. And an improvement in credit markets has recovered around US\$2 trillion of estimated mark-to-market losses on debt securities.

Perceptions of banks' resilience have improved, supported by conversions of preferred shares to common equity, private sector capital raising and government support. Market contacts report somewhat better conditions in funding

Chart 4 Net purchases of domestic financial assets by foreigners in G20 countries,^(a) 1990 Q1–2008 Q4

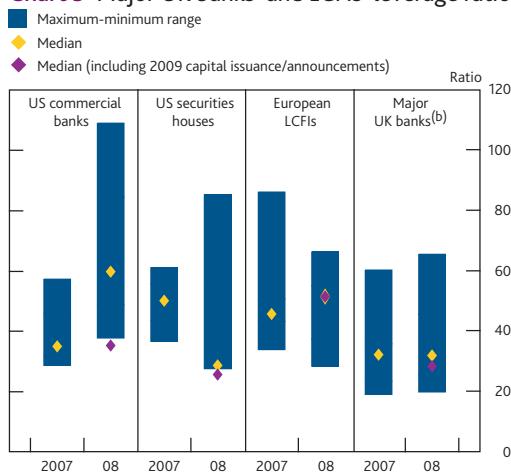


Sources: Bank of England, IMF *International Financial Statistics*, ONS, Thomson Datastream and Bank calculations.

(a) Excluding financial derivatives.

(b) Excludes China, India and Saudi Arabia due to lack of consistent quarterly data.

Chart 5 Major UK banks' and LCFIs' leverage ratios^(a)

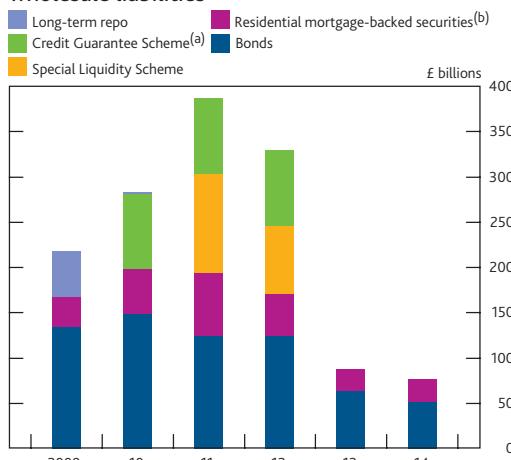


Sources: Published accounts and Bank calculations.

(a) Assets adjusted for cash and cash items in the course of collection from banks, goodwill and intangibles and deferred tax assets. Assets adjusted on a best-efforts basis to ensure comparability between institutions reporting under US GAAP and IFRS. Derivatives are netted in line with US GAAP rules. Off balance sheet vehicles are included in line with IFRS rules (excluding mortgages sold to US government-sponsored entities). Capital excludes Tier 2 instruments, preference shares and hybrids and goodwill and intangibles.

(b) Excludes Northern Rock.

Chart 6 Major UK banks' maturing funding: selected wholesale liabilities



Sources: Bank of England, Bloomberg, Deutsche Bank and Bank calculations.

(a) Shows the full limit for the Credit Guarantee Scheme allocated across three years in equal shares.

(b) Excludes Britannia, Co-operative Bank and HSBC. Shows the date at which markets expect the residential mortgage-backed securities to be called.

markets, with signs that creditors are willing to provide finance without government guarantees, though term funding in unsecured money markets remains constrained.

...but banks remain vulnerable.

Notwithstanding these positive developments, balance sheets of banks internationally remain weak. UK and global banks' assets have risen markedly since the start of the decade. Bank leverage remains high (**Chart 5**), so net worth is sensitive to changes in sentiment about asset values. Funding fragilities persist, with banks needing to refund substantial support provided by the official sector in coming years (**Chart 6**). They also face pressures in cross-border funding markets and intense competition for retail deposits.

As long as these balance sheet vulnerabilities persist, there is a risk to the banking system from further adverse economic or financial sector developments, which could in turn affect lending and economic recovery. For example, further disruption to funding markets could arise from rising sovereign and cross-border risks, or banks' asset values might deteriorate due to higher losses, perhaps on emerging market and commercial property exposures. In that event, the authorities could provide further public sector support of the sort seen to date in the United Kingdom. But at some point public support could become less effective, as it may eventually lead to rising fiscal concerns, which could feed back to higher funding costs for banks. Recent conversions of subordinated debt into equity are helpful in sharing the costs with the private sector. In adverse circumstances, other options might also need to be considered, such as public-private asset purchases or restructuring of bank balance sheets to create good and bad banks.

Building a more resilient financial system

In the future, the financial system needs to be much more resilient without the expectation of large-scale official support. Section 3 of this *Report* highlights some areas where fundamental changes need to be implemented or at least debated.

Stronger market discipline

Market discipline needs to be strengthened, including through richer and more frequent public disclosures by banks. Improvements should be made to disclosures on asset valuations and liquidity profiles. Provision of data on period averages, highs and lows, as well as end-period data, would provide a fuller picture of banks' true risk profiles. Banks should also offer insights into uncertainties about balance sheet positions, including the results of economically plausible stress tests.

To control risk-taking, financial institutions need to face a credible threat of closure. The establishment of the UK Special Resolution Regime has increased the prospect of orderly

Stronger market discipline

Market discipline should be strengthened significantly through:

- richer, more consistent and more timely disclosures by banks;
- making the threat of closure/wind-down credible for all financial firms via resolution regimes;
- improved cross-border crisis management arrangements; and
- a risk-based, pre-funded deposit insurance system.

Greater self-insurance

Financial institutions' own resources should be the first line of defence against financial pressures:

- higher levels of bank capital, consisting of common equity;
- reduced reliance on rating agencies;
- bank reserves should be built up in periods of strong earnings to absorb losses in times of economic and financial stress;
- larger liquidity buffers, comprising government bonds;
- contingent plans for accessing capital in times of stress;
- contingent funding plans, including testing use of the Discount Window Facility;
- contingent plans for restructuring or wind-down in the event of failure; and
- constant net asset value MMMFs should be regulated as banks or forced to convert to variable net asset funds.

failures of deposit-taking institutions. Greater challenges exist in dealing with failures of international financial groups. It is important that principles on cross-border crisis management, which were recently agreed by the Financial Stability Board and endorsed by G20 Heads of Government, are implemented swiftly. The case for special resolution arrangements for other types of institutions in systemically threatening circumstances and for infrastructures needs to be assessed.

To encourage more effective market discipline on deposit-takers, the Bank also supports charging banks risk-adjusted deposit insurance premia. By collecting these premia in advance a deposit insurance fund can be built up, reducing the need to raise levies in times of stress and providing a fund to support effective resolution.

Greater self-insurance

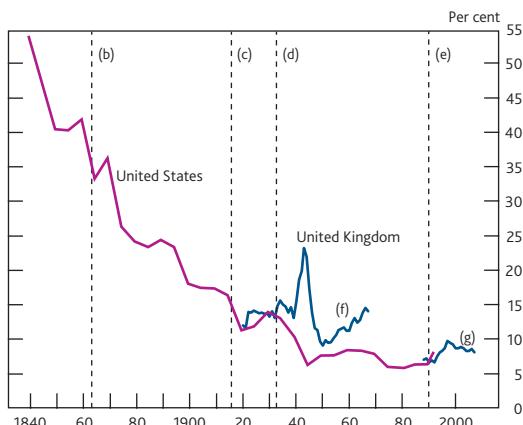
Financial institutions' own resources should be the first line of defence against financial pressures. The prospect of public support reduces financial institutions' incentives to buy adequate insurance against their own failure. Regulation is needed to ensure appropriate standards are met.

Historically, banks' liquidity and capital levels have been in secular decline (**Chart 7** and **Chart 8**). In the future, the level of capital and liquidity held by banks should rise materially to ensure that banks can maintain critical economic functions in times of stress. In determining required buffers, banks and regulators should not rely on third-party opinions, for example from ratings agencies, as permitted at present under the Basel II standard approach. Regulators should require banks to build up buffers during periods of strong earnings to absorb losses in times of stress. These requirements should be additional to banks' minimum capital requirements, so that banks do not 'gear up' on the additional capital that they accumulate in good times.

The quality of banks' capital buffers has fallen over time. In the future, capital buffers should comprise only common equity to increase banks' capacity to absorb losses while remaining operational. And banks' liquidity buffers must only include assets, such as high-quality government bonds, whose liquidity is assured in all but the most severe conditions.

Banks need effective contingency plans in the event of stress. They should consider ways of obtaining contingent capital — for example, through agreed lines from investors or instruments that can be converted into equity if required. Banks should also have effective, tested contingency funding plans. UK institutions should sign up to direct access to the Bank's Discount Window Facility, which needs to be used periodically to reduce the risk that access at a time of market or idiosyncratic stress is seen as a sign of weakness. And financial institutions should be required to produce plans for their restructuring, or wind-down, in the event of severe stress.

Chart 7 Long-run capital levels for UK and US banks^(a)



Sources: Berger, A, Herring, R and Szegö, G (1995), 'The role of capital in financial institutions', *Journal of Banking and Finance*, pages 393–430; United Kingdom: Billings, M and Capie, F (2007), 'Capital in British banking 1920–1970', *Business History*, Vol. 49(2), pages 139–62; British Bankers' Association; and published accounts.

(a) US data show equity as a percentage of assets (ratio of aggregate dollar value of bank book equity to aggregate dollar value of bank book assets). UK data show risk-weighted Tier 1 capital ratios for a sample of the largest banks.

(b) National Banking Act 1863.

(c) Creation of Federal Reserve 1914.

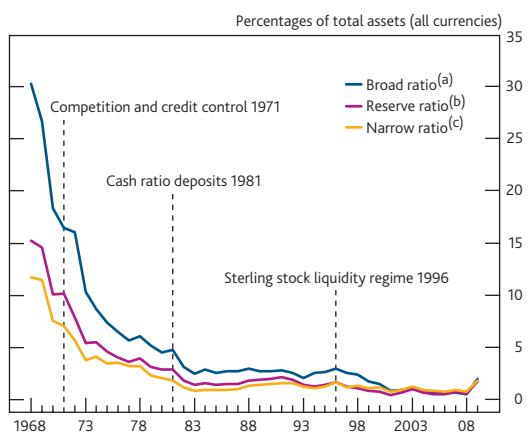
(d) Creation of Federal Deposit Insurance Corporation 1933.

(e) Implementation of Basel risk-based capital requirements 1990.

(f) From Billings and Capie (2007).

(g) BBA and Bank calculations. This series is not on exactly the same basis as 1920–70, so comparison of levels is merely indicative.

Chart 8 Sterling liquid assets relative to total asset holdings of UK banking sector



Sources: Bank of England and Bank calculations.

(a) Cash + Bank of England balances + money at call + eligible bills + UK gilts.
 (b) Proxied by: Bank of England balances + money at call + eligible bills.
 (c) Cash + Bank of England balances + eligible bills.

Improved management of risks arising from interactions

The authorities need better information and means of managing interconnections between financial institutions and between the financial system and the real economy:

- improved information on connections between financial institutions, including flow of funds data, and improved information on the activities of key market participants;
- common stress tests that factor in feedback effects from financial institutions' response to shocks;
- capital and liquidity buffers gauged to firms' systemic importance;
- countercyclical prudential policy in order to limit the growth of financial imbalances;
- an international monetary system that limits the build-up of international imbalances;
- expanded use of central counterparties for clearing financial contracts; and
- more trading of key financial instruments on exchanges or other well-designed and open trading platforms.

Measures to strengthen resilience will inevitably increase avoidance incentives. Higher standards should apply to all institutions that are judged by the authorities to be important for financial stability. Institutions providing banking services should be regulated as banks. For example, constant net asset value MMMFs should be regulated as banks or forced to convert to variable net asset funds.

Improved management of risks arising from interactions among financial institutions and with the real economy

The authorities need better information on connections between financial institutions to understand and manage spillovers in the system. Collecting flow of funds data on linkages between balance sheets at both a domestic and an international level could be one mechanism. Enhanced information provision by hedge funds and other financial institutions is a minimum baseline for comprehending their contribution to risks to the system. Tapping central repositories of information such as exchanges, clearing corporations and registries for information on key financial markets would be another. Common stress tests would also help improve understanding of interdependencies within the system.

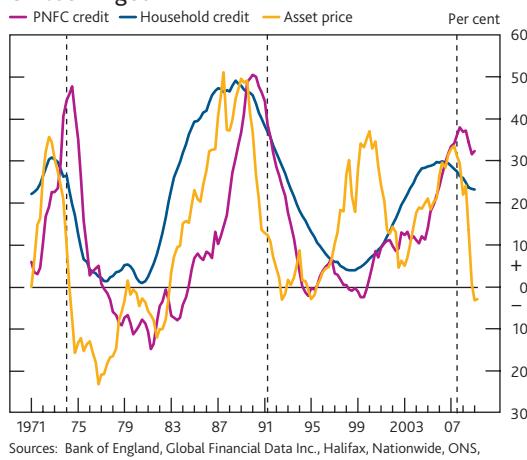
Regulation should ensure that banks' resilience is commensurate with the costs that failure could impose on the financial system as a whole. That would mark a step change from the current approach, which has been largely orientated towards protecting depositors at individual banks. It would mean larger and more interconnected banks holding higher capital and liquidity buffers, which has tended not to be the case in the past. Over time, that may help deter them from growing or staying too large or interconnected.

Higher levels of resilience should help banks maintain their capacity to lend in a downturn. But it will not necessarily prevent the build-up of financial imbalances, which have tended to emerge at regular intervals in the past (**Chart 9**). An important question is whether a macroprudential toolkit could embrace an aim of preventing imbalances becoming too great, while otherwise minimising distortions to the economy.

Ideally, mechanisms would be found for imposing symmetric obligations on countries that run persistent current account surpluses and deficits — a problem identified but not solved at the Bretton Woods conference in 1944.

Financial system infrastructure should also be improved. Risks arising from connections between firms can be reduced through more widespread use of central counterparty (CCP) clearing for over-the-counter cash and derivative instruments. The Bank supports a significant extension of the scope of CCPs. For more bespoke instruments, further improvements should be made to bilateral clearing arrangements, including through better collateralisation of exposures.

Chart 9 Asset prices and credit in the United Kingdom^{(a)(b)}



Sources: Bank of England, Global Financial Data Inc., Halifax, Nationwide, ONS, Thomson Datastream and Bank calculations.

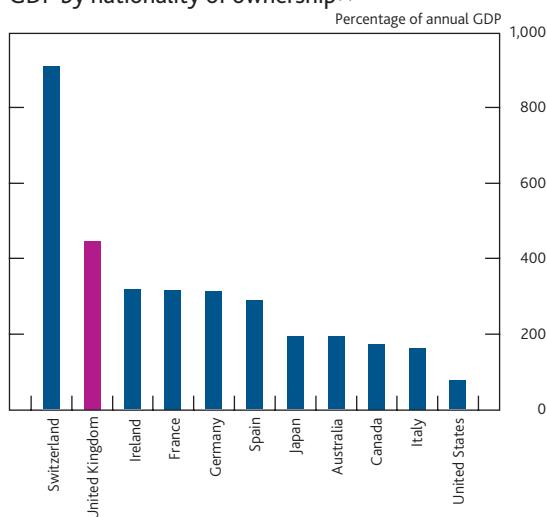
- (a) The chart shows ratios of real asset prices, household credit and private non-financial corporate (PNFC) credit to GDP, relative to their ten-year moving averages. A positive level thus indicates above-trend growth.
- (b) The dashed lines show start dates for banking crises. The chart shows the secondary banking crisis, small banks crisis and the current crisis.

Banks should not be too big or complex

The size and structure of financial systems need to be compatible with maintaining financial stability:

- simpler, more transparent, legal structures that are capable of being supervised and resolved; and
- potential changes to the structure or size of banks to ensure they can be effectively supervised and wound up.

Chart 10 Consolidated banking group assets relative to GDP by nationality of ownership^(a)



Sources: *The Banker*, Bankscope published by Bureau van Dijk Electronic Publishing, International Monetary Fund and Bank calculations.

- (a) End-2007, except for the United Kingdom, which is at end-2008. Data for all countries except the United Kingdom are from *The Banker's* ranking of the world's largest 1,000 banks. This measure will underestimate the size of banking systems that have a large proportion of banking sector assets outside of the list. UK data are from Bankscope.

Clear principles for public safety nets

Where self-protection fails, a safety net is needed that encourages prudent behaviour and contains risks to the public finances:

- clear principles guiding market maker of last resort interventions; and
- principles for public sector provision of capital support.

The functioning of key financial markets, such as those for asset-backed securities, should be improved through greater transparency about their structure and the underlying portfolio of instruments. More trading of key financial instruments on exchanges or in well-designed, open trading platforms would help to preserve liquidity at times of stress.

Banks should not be too big or complex

The current size and structure of financial systems may be incompatible with maintaining financial stability and containing calls on public resources. Financial systems have grown rapidly in recent years and have become more complex, more interconnected and more global in their activities. The UK financial system is no exception, with a relatively concentrated banking system whose assets are equivalent to more than four times annual GDP (Chart 10).

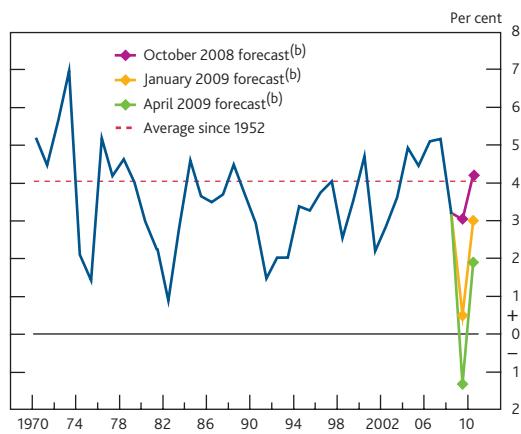
Authorities, domestically and internationally, should consider whether they need more actively to influence or constrain the future size and structure of the system to support stability. It has to be possible to supervise effectively institutions that pose greater risks to the economy or taxpayer in the event of failure and to resolve them in the event of severe distress. Possible measures could include limiting the scope of banks' businesses to a narrower range of relatively low-risk activities or, as noted above, imposing higher capital and liquidity charges that are sensitive to the risk profile of the institution. Such measures ought to go hand in hand with improved resolution powers to wind down large and complex financial institutions in an orderly manner. Determining the optimal policy mix poses major challenges, including how to determine any boundaries between functions and how to prevent activities beyond any perimeter themselves becoming a threat to stability, but this area merits further debate internationally.

Clear principles for public safety nets

These initiatives cannot, and should not, prevent all failures. Public authorities may sometimes need to step in as a backstop to the financial system — for example, by acting as market maker or capital provider of last resort, as they have during the financial crisis. These interventions should be guided by explicit principles to ensure that they do not encourage imprudent behaviour by financial institutions and that they minimise risks to the public finances. Work is needed to gain acceptance for such principles.

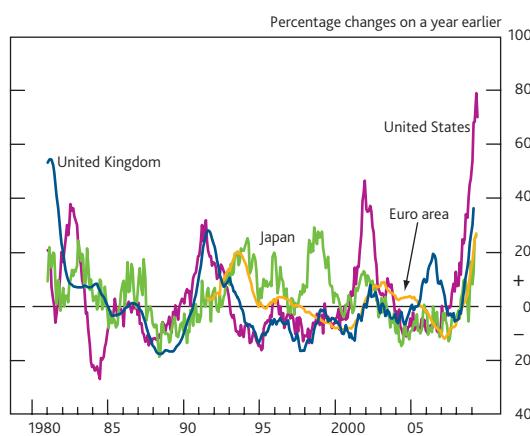
A systemic perspective

The common denominator in all these initiatives is that they should improve the resilience of the financial system as a whole, not just that of individual financial institutions. This systemic perspective has perhaps not always shaped policy around the world sufficiently in the past.

Chart 1.1 World GDP growth^(a)

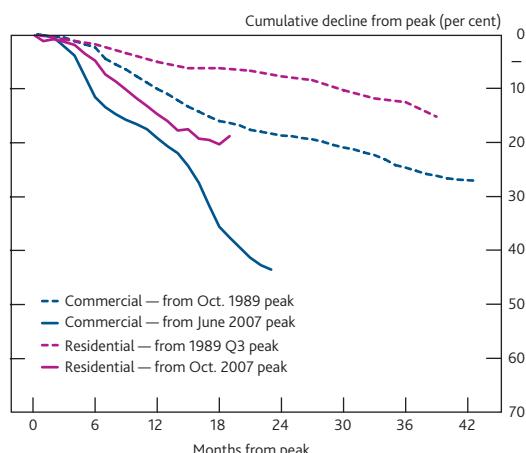
Sources: IMF *World Economic Outlook* (WEO), World Trade Organization (WTO) *International Trade Statistics* and Bank calculations.

(a) WEO data are used from 1981 onwards. Data from the WTO are used before that. Data are annual real GDP growth.
(b) WEO growth forecasts for 2009 and 2010.

Chart 1.2 Unemployment^(a)

Source: OECD *Labour Force Statistics (Main Economic Indicators)*.

(a) Survey-based measures of numbers of people unemployed. Data for the United Kingdom are to February 2009; data for the euro area and Japan are to April 2009; data for the United States are to May 2009.

Chart 1.3 UK property price falls in recent recessions^(a)

Sources: Halifax, IPD, Nationwide, Thomson Datastream and Bank calculations.

(a) All data are nominal. Residential property prices are seasonally adjusted and based on the average of the Halifax and Nationwide house price indices. Commercial property prices are non seasonally adjusted.

1 Global financial instability and the policy response

The previous Report described developments leading up to a period of exceptional instability in the global financial system last autumn. Against that backdrop, authorities internationally announced a range of measures aimed at restoring confidence in banks so that they could support the wider economy.

This Report assesses developments since last autumn against that objective. This section highlights the marked deterioration in global economic and financial prospects towards the end of 2008 and in early 2009, which led to a renewed threat of financial instability and prompted further policy interventions. Market conditions have since improved. But, as Section 2 explains, structural vulnerabilities in banks' and other sectors' balance sheets remain. Looking beyond the current crisis, fundamental changes are required to improve the resilience of the financial system, as Section 3 sets out.

Growth collapsed...

In late 2008, the global economy abruptly fell into a severe downturn. All the major developed economies entered recession, with the International Monetary Fund (IMF) estimating that world GDP fell at an annualised rate of around 6% in the fourth quarter of 2008. Although a downturn had been anticipated, its severity was much greater than had previously been expected: in October 2008 the IMF expected world GDP to grow by 3% in 2009, but by its April 2009 Report it forecast a decline of 1.3% (Chart 1.1). The severe contraction of output was associated with sharp rises in unemployment (Chart 1.2). In the United States, unemployment increased almost twice as quickly as its previous peak growth rate. And in the United Kingdom, unemployment rose at its fastest rate since 1981, putting pressure on banks' household-loan portfolios.

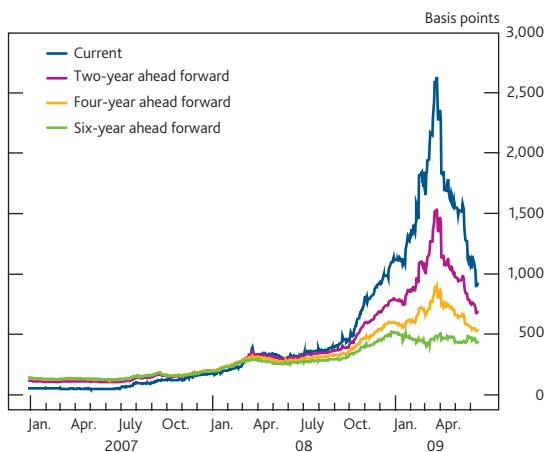
...and property prices fell sharply...

Against a backdrop of sharply contracting activity, both commercial and residential property prices continued to fall sharply in a number of countries. By March 2009, residential property prices in the United States had fallen by around 30% from their peak according to the Case-Shiller 10-City index, the largest nominal fall on record. In the United Kingdom, property prices had fallen further than in the early 1990s recession, with residential and commercial property prices down 20% and 41% respectively from their 2007 peaks (Chart 1.3).

...causing a sharp pickup in household loan arrears...

As unemployment increased, debt servicing became more of a concern for some households. UK personal insolvencies and bankruptcies rose to historic highs. In the United States, the personal insolvency rate rose to 0.5% in 2009 Q1, around 50% higher than in mid-2007.

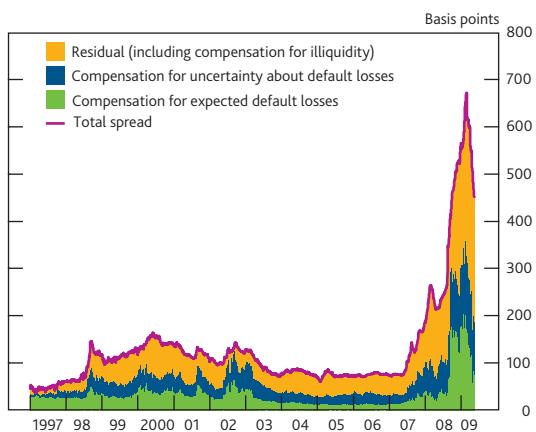
Chart 1.4 Sterling corporate bond spreads^(a)



Sources: Merrill Lynch and Bank calculations.

(a) BBB-rated corporate bond spreads over government bond yields; one-year maturity. Forward spreads implied by bonds of different maturities.

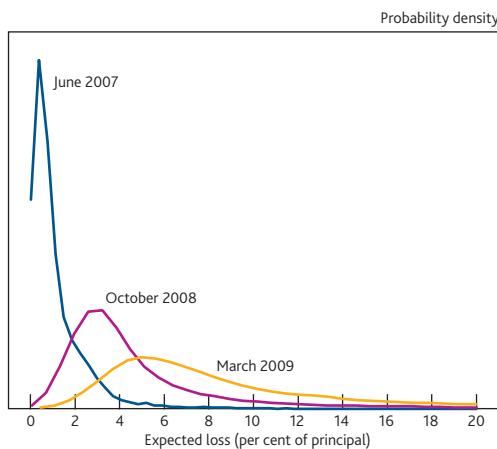
Chart 1.5 Decomposition of sterling investment-grade corporate bond spreads^(a)



Sources: Bloomberg, Merrill Lynch, Thomson Datastream and Bank calculations.

(a) Webber, L and Churm, R (2007), 'Decomposing corporate bond spreads', *Bank of England Quarterly Bulletin*, Vol. 47, No. 4, pages 533–41. Option-adjusted spreads over government bond yields.

Chart 1.6 Expected loss rates on European investment-grade corporate bonds^(a)



Sources: JPMorgan Chase & Co. and Bank calculations.

(a) The chart shows estimates of market-implied loss rates inferred from five-year on-the-run iTraxx Europe Main CDS indices. These are 'risk-neutral' loss rates. In the likely case that investors are averse to risk, the perceived probability of high loss rates would be lower than under the risk-neutral measure.

Sharp falls in residential property prices reduced the value of many mortgagors' collateral. The estimated incidence of negative equity had increased to between 7% and 11% of UK mortgagors by 2009 Q1, restricting their access to credit, including via mortgage equity withdrawal, and contributing to increases in mortgage arrears.⁽¹⁾ UK mortgage arrears more than doubled in the year to 2009 Q1, but remained well below their peak levels in the early 1990s.⁽²⁾ The marked deterioration in the economy led to expectations of a further rise in mortgage arrears, as discussed in Box 1.

...and in corporate sector financial pressure.

As growth fell, corporate default rates picked up sharply. Globally, default rates were forecast by Moody's to rise significantly for speculative-grade firms. In the United Kingdom, total corporate insolvencies increased by over 50% in 2009 Q1 compared with a year earlier. Refinancing became more difficult; contacts of the Bank's regional Agents reported sharp increases in fees and spreads on the renewal or extension of existing facilities. Consistent with that, measures of default risk — such as corporate bond spreads — increased by much more in the near term than further ahead (Chart 1.4).

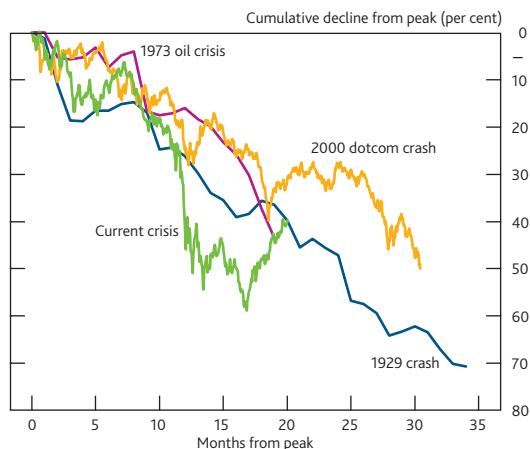
Corporate bond spreads rose more sharply than Moody's forecasts of default rates over matching horizons, suggesting that financial markets were also affected by rising uncertainty and illiquidity risk. Indeed, one possible decomposition of longer-maturity corporate bond spreads suggests that a rise in investors' required compensation for uncertainty about default losses and illiquidity risk was a key driver of the increase in spreads in late 2008 and early 2009 (Chart 1.5). Distributions of possible losses on corporate bonds implied by credit default swap (CDS) indices pointed to a sharp rise in upside risks (Chart 1.6).

Asset prices also fell sharply...

The rapid deterioration in the global economy was associated with widespread and sharp falls in equity prices. The decline in global equity prices outpaced that seen in previous financial crises (Chart 1.7). All sectors were affected, with factors common across firms becoming stronger drivers of movements in equity returns than in past equity market collapses, such as in 1987 (Chart 1.8). Equity prices also fell sharply in countries that appeared to have suffered relatively small financial losses during the early stages of the crisis, including Japan and a number of emerging market economies.

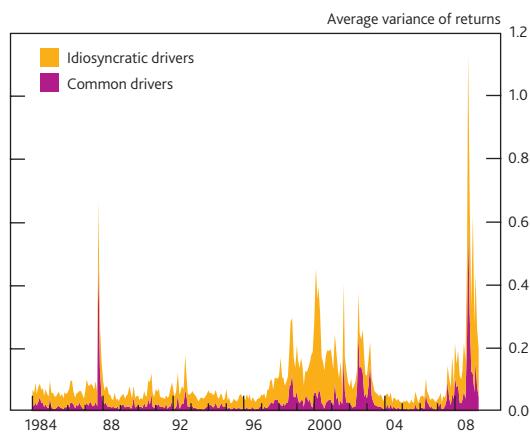
(1) The 2009 Q2 *Bank of England Quarterly Bulletin* article, 'The economics and estimation of negative equity', discusses the link between house prices and default in more detail, as well as providing details on a variety of estimates of the incidence of negative equity.

(2) Some of this increase is due to the mechanical impact of recent falls in interest rates on the calculated arrears rate (the number of months in arrears — the numerator of the arrears rate — is calculated by dividing the total value of outstanding arrears by the current monthly payment).

Chart 1.7 FTSE world equity index during crises^(a)

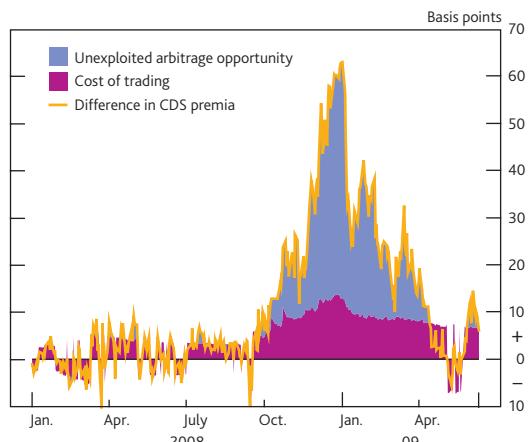
Sources: Global Financial Data Inc. and Bank calculations.

(a) Previous peaks were: 1929 crash = 31 October 1929; 1973 oil crisis = 28 February 1973; 2000 dotcom crash = 27 March 2000 and current crisis = 11 October 2007.

Chart 1.8 Contributions to FTSE 100 equity returns^(a)

Sources: Thomson Datastream and Bank calculations.

(a) Derived using the methodology of Campbell et al (2001), 'Have individual stocks become more volatile? An empirical exploration of idiosyncratic risk', *Journal of Finance*, Vol. 56, No. 1. The chart shows the average monthly variance of daily percentage returns across constituents of the FTSE 100 index.

Chart 1.9 A possible arbitrage opportunity^(a)

Sources: JPMorgan Chase & Co., Thomson Datastream and Bank calculations.

(a) The difference in CDS premia is the gap between the average premium for credit protection on the 125 constituents of the iTraxx Europe Main CDS index and the premium for credit protection on this index. The cost of trading is half of the bid-ask spread on the index plus half of the average bid-ask spread on its constituents.

...with falling risk appetite and impaired market functioning...

In this environment, investors' willingness and ability to hold risky assets were severely affected. The vast majority of global fund managers reported in the early part of the year that they preferred to hold less risk than in their benchmark portfolios. Many hedge funds were forced sellers of risky assets as prime brokers called for higher margins and as investors redeemed investments following a number of months of poor returns. Partly as a result of tighter credit conditions, average hedge fund leverage fell to roughly half of its pre-crisis peak level.⁽¹⁾

As losses mounted, dealers in financial instruments were unable or unwilling to support as much risk on their balance sheets. Many responded by widening bid-ask spreads. Market contacts reported that 'market makers' would execute trades only when they had offsetting buy and sell orders from clients, effectively acting like agency brokers. Trading volumes consequently declined and the liquidity of many financial markets became severely impaired.

Poor market liquidity and limited risk appetite appeared to cause investors to leave unexploited trading opportunities that would plausibly have been profitable in the longer run. For example, between October and April, a sizable gap emerged between the cost of buying protection against default losses on an index of corporate bonds and the cost of buying this protection for all of the bonds in the index separately (Chart 1.9).⁽²⁾

...resulting in a significant loss of financial wealth.

Widespread declines in asset prices led to a further marked reduction in financial wealth. By the middle of March, total financial losses on debt securities since the start of the crisis had reached an estimated US\$4.6 trillion (Table 1.A). Over the same period, the market capitalisation of global equity markets had fallen by US\$20.2 trillion. So total losses in financial wealth toward the end of 2009 Q1 were equivalent to around 50% of world GDP. This further loss of wealth compounded strains in financial markets, adding to falls in banks' asset valuations and constraining their ability to fund themselves.

This placed further pressure on banks' solvency...

Against this backdrop, major UK banks⁽³⁾ and LCFIs⁽⁴⁾ reported substantial write-downs across a range of trading book

(1) Leverage defined as ratio of gross assets to capital.

(2) Other pricing anomalies are described in 'Pricing anomalies in financial markets', *Bank of England Quarterly Bulletin*, 2009 Q1, pages 16–17.

(3) Membership of the major UK banks group is based on the provision of customer services in the United Kingdom, regardless of the country of ownership. The following financial groups, in alphabetical order, are currently members: Banco Santander, Bank of Ireland, Barclays, Britannia, Co-operative Bank, HSBC, Lloyds Banking Group, National Australia Bank, Nationwide, Northern Rock and RBS.

(4) LCFIs include the world's largest banks, securities houses and other financial intermediaries that carry out a diverse and complex range of activities in major financial centres. The group of LCFIs is identified currently as: Bank of America, Barclays, BNP Paribas, Citi, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan Chase & Co., Morgan Stanley, RBS, Société Générale and UBS.

Box 1

Mortgage defaults

The sharp deterioration in the economic outlook has already led to an increase in household distress. Going forward, that is likely to lead to a further increase in defaults, placing additional pressure on the banking system. This box examines the key drivers of mortgage defaults and discusses why and by how much they might rise over the next few years.

Drivers of mortgage defaults

There is a rich theoretical and empirical literature on modelling credit risk, particularly mortgage default rates.⁽¹⁾ Although no single model can be relied upon, a number of variables have been identified as being key in driving mortgage arrears and defaults.

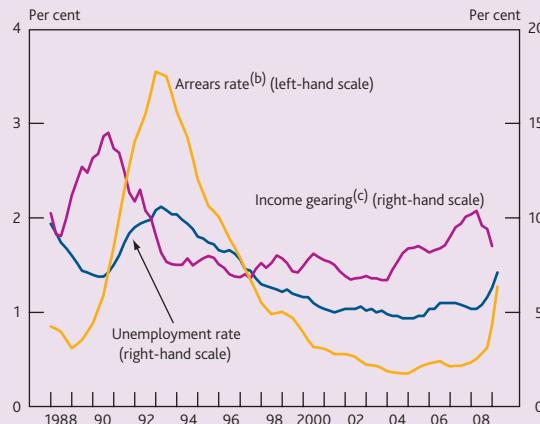
The theoretical literature suggests that the likelihood of a household defaulting on its mortgage depends on both its willingness to keep up with loan repayments and its ability to do so. For instance, mortgagors may be willing to continue making mortgage payments so long as the value of the property does not fall too far below the outstanding loan balance. But sudden drops in income or rises in mortgage payments could limit their ability to do so. This is particularly the case when the mortgagor also has unsecured debts or low savings.

Empirical studies on UK data have found that a combination of measures of willingness and ability to pay is required to explain households' mortgage default rates. For willingness to pay, the level of undrawn housing equity has been found to be an important factor.⁽²⁾ In terms of ability to pay, indicators of borrowers' financial position, such as the unemployment rate and measures of debt-servicing requirements, have been found to be significant drivers of defaults for UK households.⁽³⁾ As Chart A shows, UK mortgage arrears rates (a commonly used proxy for default rates) have been positively correlated with unemployment and with (lagged) income gearing in recent decades.

Prospects for mortgage defaults

In the current recession, a number of factors are affecting both willingness and ability to pay, and so shaping prospects for mortgage defaults. Some households will experience sudden falls in income as a result of unemployment and may find it difficult to keep up with their mortgage payments. In addition, the large fall in house prices since their peak in October 2007 is likely to mean that some households find themselves with less unused housing equity to draw from to supplement shortfalls in labour income. Some households will find themselves in negative equity which might reduce their willingness to keep up with their payments.⁽⁴⁾ The reduced credit availability associated with the current crisis is also likely

Chart A Mortgage arrears, unemployment and income gearing^(a)



Sources: Council of Mortgage Lenders (CML), Labour Force Survey, ONS and Bank calculations.

(a) Arrears rate and unemployment rate data are to 2009 Q1. Income gearing data are to 2008 Q4.

(b) Percentage of mortgagors more than six months in arrears. Series consists of semi-annual data before 2008 and quarterly data from 2008 onwards. Note that some of the recent increase in this series is due to the mechanical impact that falls in interest rates have on the calculated arrears rate (see footnote 5). The 2009 Q1 figure is also distorted by the exclusion of 'legacy loans' from the CML's data set. See the CML's 2009 Q1 arrears and repossession release for more details.

(c) Gross interest payments as percentage of post-tax income. Interest payments exclude the impact of Mortgage Interest Relief at Source, which has been gradually abolished since the late 1980s.

to lead to payment difficulties, by affecting the ability of some households to smooth consumption in the face of income shocks.

But these upside pressures are likely to be partly offset by the current low level of interest rates. As markets expect interest rates to remain low over the near future, the offsetting influence of interest rates on default rates should also be expected to persist for some time. This is a major difference between the current and the early 1990s recession. In the early 1990s, very high interest rates added to the pressures on households.

How far might mortgage arrears rise given these influences? A tentative answer is given by projections based on a simple econometric model of the macroeconomy and the mapping from macroeconomic outcomes to mortgage arrears. In the model, the key drivers of mortgage arrears are unemployment, income gearing, house prices and debt. Clearly, there is considerable uncertainty inherent both in prospects for the macroeconomy and in how macroeconomic developments might affect mortgage arrears. This includes possible variation in the behaviour of both households and lenders compared with the past.

Mortgage arrears have already risen from 0.5% in 2008 Q1 to 1.3% in 2009 Q1.⁽⁵⁾ The projections suggest that they may rise further as increases in unemployment and falls in house prices outweigh the impact of low interest rates. The central projection suggests that mortgage arrears will rise to just under 3% by mid-2011, somewhat below their peak in the early 1990s recession (3.5%). But there is great uncertainty around

the outlook for arrears. At the 90% confidence interval, the range of mortgage arrears lies between 2% and 4%.

Mortgage arrears may generate further losses for the major UK banks, as domestic mortgage lending represents over five times their core Tier 1 capital. But it is not clear that arrears of even 3% or 4% would necessarily generate substantial losses for banks. Not all cases of arrears will translate into defaults (repossession). Indeed, the Government has put in place a range of measures to give more protection to households at risk of repossession,(6) which will tend to reduce the transition from arrears into default. And even in the 1990s, when arrears reached 3.5%, banks' write-off rates on mortgage lending only rose to around 0.3%.

Summary

Economic theory suggests that a number of macroeconomic variables are important drivers of mortgage arrears.

Unemployment, housing equity, levels of debt and interest rates are all likely to influence the path of arrears. Given the severe economic downturn, it seems likely that mortgage arrears will rise going forward, though there is uncertainty about by how much and the consequences for banks' losses.

- (1) See for example, Whitley, J, Windram, R and Cox, P (2004), 'An empirical model of household arrears', *Bank of England Working Paper no. 214*.
- (2) Undrawn housing equity is defined as gross housing wealth less mortgage debt, as a proportion of housing wealth.
- (3) The decision to default is likely to depend also on household-specific characteristics. Some studies have indeed found that factors such as age or number of dependents are important in explaining defaults.
- (4) See 'The economics and estimation of negative equity', *Bank of England Quarterly Bulletin*, 2009 Q2, pages 110–21, for a discussion of how the level of housing equity can affect a household's likelihood of default.
- (5) Some of this increase is due to the mechanical impact of recent falls in interest rates on the calculated arrears rate (the number of months in arrears — the numerator of the arrears rate is calculated by dividing the total value of outstanding arrears by the current monthly payment).
- (6) A range of measures have been introduced since October 2008, including: a new pre-court action protocol for all the main high street lenders; quicker and more extensive support to homeowners who have lost their job; a scheme to enable the most vulnerable homeowners to stay in their homes; and a major extension of free debt and legal advice.

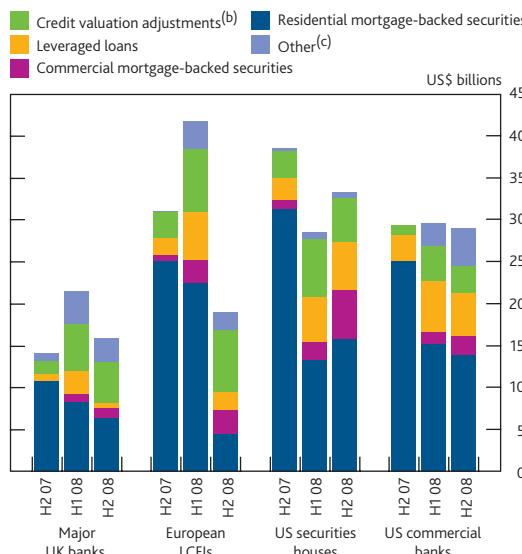
Table 1.A Mark-to-market losses on selected financial assets^(a)

US\$ trillions	Outstanding amounts ^(b)	Oct. 2008 Report ^(c)	Mid-March 2009	June 2009 Report
Equities	30.7	14.4	20.2	12.3
Corporate bonds	15.2	2.2	2.0	0.7
RMBS ^(d)	4.2	1.0	1.8	1.3
CLOs and CDOs ^(e)	1.0	0.4	0.5	0.4
CMBS	0.8	0.1	0.3	0.2
Memo: Debt securities	21.2	3.7	4.6	2.7
Total losses	–	18.1	24.7	15.0

Source: Bank calculations.

- (a) Estimated loss of market value since January 2007, except for US CLOs, which are losses since May 2007. Assets cover the United Kingdom, the United States and the euro area, except for equities, which are global.
(b) Outstanding face values, except for equities, which are market values.
(c) Updated to reflect new availability of outstanding amounts at time of October 2008 Report.
(d) Includes prime, non-conforming and buy-to-let RMBS for the United Kingdom, prime and Alt-A RMBS and home equity loan ABS for the United States, as well as RMBS for the euro area.
(e) Includes high-grade and mezzanine home equity loan ABS CDOs for the United States.

Chart 1.10 Major UK banks' and LCFIs' write-downs^(a)



Sources: Published accounts and Bank calculations.

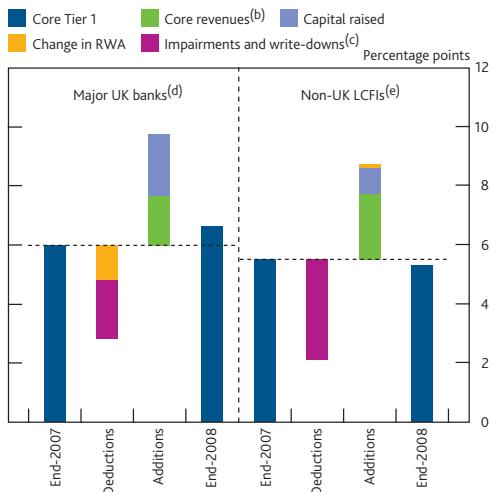
- (a) Includes mark-to-market adjustments on trading book positions where details disclosed.
(b) On exposures to monolines and others.
(c) Other includes SIVs, other ABS, Auction Rate Securities and Mortgage Servicing Rights.

exposures (**Chart 1.10**). While write-downs on sub-prime mortgages declined, delinquencies spread across a broader range of residential and commercial mortgages and to leveraged loans. And the continuing deterioration in prospects for the monoline insurers led to further credit valuation adjustments. Banks also had to absorb further write-downs on structured investment vehicles (SIVs) and losses related to Auction Rate Securities.⁽¹⁾

With rising defaults and falling property prices, there was a parallel reappraisal of losses on banking book exposures. This was reflected in an increase in provisions and a rise in risk-weighted assets (RWAs) for several major global banks, including the major UK banks. As a result, the impact of banks' capital raising during the second half of 2008 on their core Tier 1 capital ratios was largely neutralised (**Chart 1.11**). For example, in 2008 the major UK banks raised around £60 billion of new capital, but faced trading book write-downs and credit impairments of around £80 billion.

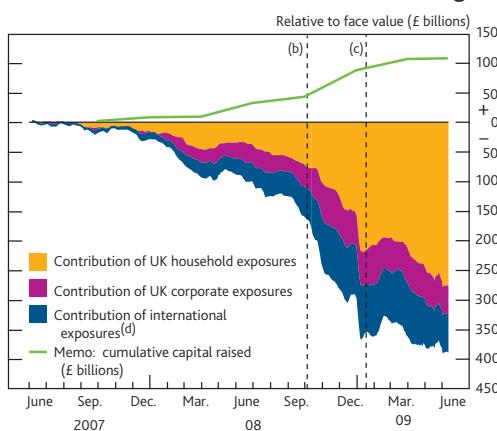
The deterioration in the macroeconomic outlook also led to concerns about prospective future banking losses. The market-implied discount to face value of UK banks' banking books roughly doubled between the October banking support package and end-January, to reach over £350 billion (**Chart 1.12**). That compared with core Tier 1 capital of around £200 billion for the same banks. The rise in the market-implied discount partly reflected increases in expected losses, but changes in uncertainty and illiquidity risk premia also significantly affected these valuations.⁽²⁾

- (1) Auction Rate Securities are long-term debt instruments for which the interest rate paid is regularly reset through an auction.
- (2) Since the end of January, the market-implied discount has increased slightly, as a price index of UK RMBS that is used as a proxy for the value of secured household loans (which are the largest category of exposures in UK banks' banking books) has continued to fall, while many other asset prices have recovered.

Chart 1.11 Changes in core Tier 1 capital ratios in 2008^(a)

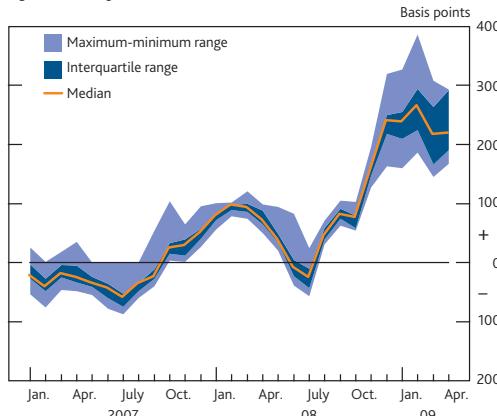
Sources: Published accounts and Bank calculations.

- (a) Asset-weighted average core Tier 1 capital, defined as common shareholders' equity.
 (b) Based on pre-provision profit before trading book write-downs.
 (c) Includes banking book impairments, trading book write-downs and other adjustments.
 (d) Excludes Northern Rock.
 (e) Includes US commercial banks and European LCFIs.

Chart 1.12 Market value of UK banks' banking books^(a)

Sources: Bank of England, Bloomberg, JPMorgan Chase & Co., Merrill Lynch, UBS Delta, published accounts and Bank calculations.

- (a) Based on weekly moving average prices of traded instruments used as proxies for the market value of similar banking book exposures. Group comprises Banco Santander, Barclays, HSBC, Lloyds Banking Group, Nationwide, Northern Rock and RBS.
 (b) First UK support package announced (8 October 2008).
 (c) Second UK package of measures announced (19 January 2009).
 (d) International exposures include the United States and Europe only.

Chart 1.13 Spreads on new fixed-rate mortgage lending by the major UK banks^(a)

Source: Bank of England.

- (a) Weighted average of fixed-rate spreads on new mortgages over swap rates at maturities of two, three and five years (lagged by one month).

...and renewed pressure on bank funding...

Policy measures introduced in October 2008 avoided seizure in the financial system, and helped to improve conditions in bank funding markets. But bank funding remained expensive and difficult to obtain from public markets without a government guarantee. Between October and March, the vast majority of senior debt issued by major UK banks was guaranteed by the UK Government. Most issues of residential mortgage-backed securities (RMBS) or covered bonds were retained by the banks, possibly for use in central bank facilities, rather than placed in public markets. In money markets, spreads declined but remained at elevated levels comparable to those that prevailed shortly before the failure of Lehman Brothers. As a result, banks continued to fund mainly at very short maturities, with substantial rollover risk.

...leading to tighter credit conditions...

As banks' capital and funding positions came under renewed strain from rising realised and prospective losses, banks further tightened credit conditions to corporates and households. Non-price terms tightened and there was also a pronounced increase in the spread between mortgage lending rates and swap rates (**Chart 1.13**).

...a marked slowing in domestic and cross-border lending...

Tightening credit availability contributed to a marked slowdown in lending growth in the major economies. In the United States lending began to fall. Lending also slowed sharply in the euro area, Japan and in the United Kingdom. Growth in mortgage lending by major UK banks fell to its lowest rate over the past decade. The stock of unsecured lending shrank for the first time. And lending to UK companies also slowed sharply (**Chart 1.14**), partly reflecting a withdrawal of foreign lending as cross-border capital flows reversed (see Box 2). To plug the lending shortfall, firms became more reliant on bond markets. But while investment-grade bond issuance increased, speculative-grade issuance remained weak.

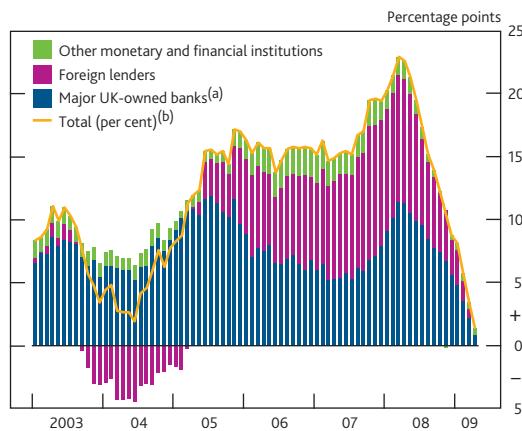
...and a worsening adverse feedback loop.

Tighter credit conditions compounded the impact of the macroeconomic slowdown on indebted households and corporates. This reinforced and broadened an adverse feedback cycle between the real economy and financial system during the latter part of 2008 and the early months of 2009. Measures of uncertainty in financial markets and in the real economy rose sharply in tandem, mirroring this feedback loop (**Chart 1.15**).

Wide-ranging policy measures aimed to break this cycle...

In light of these developments, authorities internationally took wide-ranging measures aimed at breaking the adverse cycle. Official interest rates were cut, reaching historic lows in some countries. Central banks also introduced a range of asset purchase schemes, in some cases funded by issuance of central bank money (**Table 1.B**). While these varied across countries

Chart 1.14 Contributions to annual growth in lending to UK non-financial companies

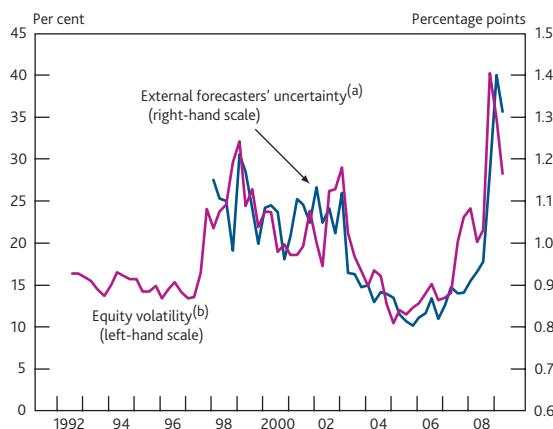


Source: Bank of England.

(a) Includes consolidated banking groups of Barclays, Lloyds Banking Group, HSBC, Nationwide and RBS.

(b) Twelve-month growth rate in the stock of lending.

Chart 1.15 Indicators of UK economic and financial uncertainty



Sources: Bank of England, Euronext.liffe and Bank calculations.

(a) Standard deviation of distribution of external forecasters' predictions of GDP growth two years ahead. Based on averages of individual forecasters' probability distributions as sampled by the Bank and reported in the *Inflation Report* each quarter.

(b) Market-implied volatility of future FTSE 100 equity returns (monthly average).

in terms of the instruments involved, the schemes shared similar aims of stimulating demand and improving the liquidity of economically important private markets.

Measures were also taken internationally to improve conditions in funding markets and to bolster banks' capital buffers, as summarised in **Table 1.B**. The breadth of these interventions was substantial: almost half of the world's largest 20 banks received direct government support. These measures were also put in place very rapidly by comparison with past crises (**Chart 1.16**). Box 3 considers the development and management of a selection of past crises.

Varying approaches were taken to deal with uncertainty about banks' asset values. For example, the UK authorities introduced an Asset Protection Scheme (APS) to insure against losses on a selection of assets held on the balance sheets of participating banks. In the United States, the authorities announced a Public-Private Investment Program (PPIP) to remove legacy loans and securities from banks' balance sheets, with risks and returns shared between public and private sector investors. The Financial Services Authority (FSA) provided information on the stress-test scenarios underpinning the APS; and the US authorities published the results of their stress tests on the major US banks.

...resulting in substantial overall support.

The interventions by the major central banks have resulted in a significant increase in the size of their balance sheets (**Table 1.C**). In some cases these interventions have been fully, or partially, guaranteed by governments.

The upfront fiscal outlays from various of the measures — mainly government capital injections, direct government lending and asset purchases — have been large. For advanced countries in aggregate, these initial outlays to date are equivalent to 6% of annual GDP, comparable to the average

Table 1.B Financial system support schemes since October 2008

	United Kingdom	United States	Euro area
Central bank liquidity insurance	Extension of Discount Window Facility maturity. Long-term repo operations and closure of Special Liquidity Scheme with £185 billion utilisation. Central bank swap lines.	Central bank swap lines.	Longer-term refinancing operations with a maturity of twelve months. Central bank swap lines.
Market liquidity	Asset Purchase Facility purchases of commercial paper (£2.1 billion) and corporate bonds (£0.7 billion).	Purchases of commercial paper (US\$138 billion).	Planned purchases of covered bonds (€60 billion).
Banks' funding	Extension of HMT Credit Guarantee Scheme and introduction of Asset-Backed Securities Guarantee Scheme.	Extension of wholesale funding guarantees by six months. Extension to end 2013 of US\$250,000 limit for deposit insurance. Lending against Asset-Backed Securities including Term Asset-Backed Lending Facility (US\$45 billion).	Wholesale funding guarantees. Many countries have either announced blanket protection for retail deposits or increased limits.
Capital and assets	Introduction of Asset Protection Scheme. Protection of £457 billion on risky assets for RBS and Lloyds Banking Group agreed in principle. ^(a) Provision of £13 billion capital for RBS.	Capital injections into eligible banks (US\$198 billion) funded under the Troubled Assets Relief Program. Introduction of PPIP to purchase legacy loans and securities.	A number of banks have received capital injections.

Source: Bank of England.

(a) Although the APS covers £552 billion of assets post provisions, RBS and Lloyds Banking Group would have to absorb the first £19.5 billion and £25 billion, respectively, of any losses plus one tenth of any further losses.

Box 2

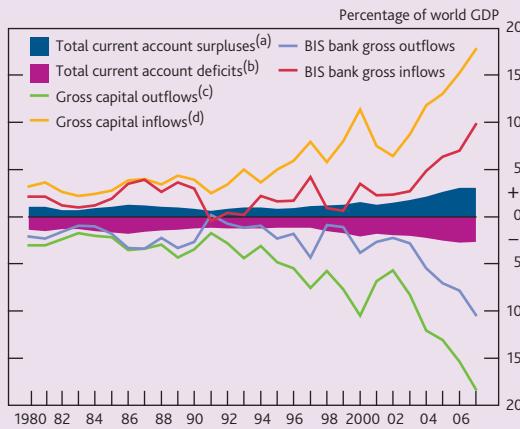
Recent cross-border flows

Cross-border capital flows fell sharply in 2008, especially following the failure of Lehman Brothers, after several years of rapid growth. This box examines why and how this could affect the stability of the UK financial system.

The rise and fall of cross-border flows

The large global current account imbalances witnessed in the run-up to the current crisis had their counterpart in large net capital flows from surplus to deficit countries. However, these net flows underestimate the increase in financial linkages among economies in recent years due to the huge build-up of gross external asset and liability positions. Banking flows accounted for more than half of these gross flows (Chart A).

Chart A Global current account imbalances and financial globalisation, 1980–2007



Sources: Bank for International Settlements, IMF *World Economic Outlook* and Bank calculations.

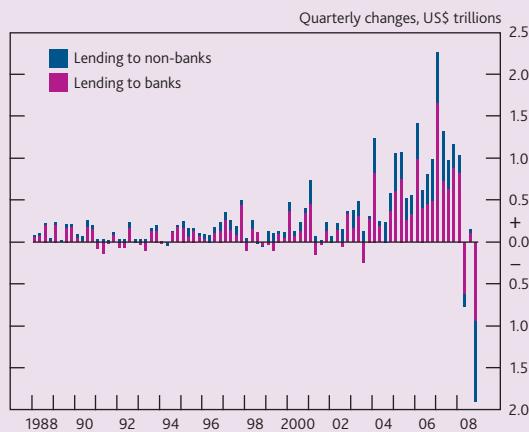
- (a) Sum of global current account surpluses.
- (b) Sum of global current account deficits.
- (c) Sum of global net purchases of foreign assets by residents.
- (d) Sum of global net purchases of domestic assets by foreigners.

But during 2008, gross capital flows reversed dramatically. Indeed, in 2008 Q4 and 2009 Q1, the US current account deficit was financed by a repatriation of assets from abroad, rather than from gross inflows of foreign capital. The widespread reversal of capital flows was concentrated in bank lending (Chart B). For example, UK-resident banks reduced their foreign lending sharply, repatriating US\$590 billion from abroad during 2008 Q4 and a further US\$70 billion in 2009 Q1. There has also been a more modest reversal in portfolio debt and equity flows. As in previous episodes of abrupt capital reversals, foreign direct investment has held up so far.

Causes of the collapse in cross-border flows

There are a number of possible reasons for the recent sharp reversal in cross-border bank lending. It could be due to a

Chart B BIS banks' cross-border lending^(a)



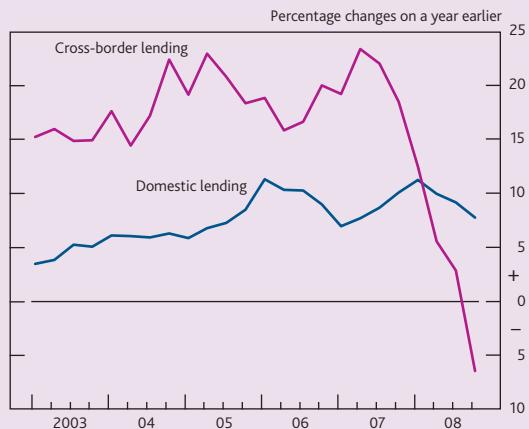
Source: Bank for International Settlements.

(a) Claims on non-residents adjusted for exchange rate changes.

reduction in demand for international finance as the world economy has contracted. Relatedly, it could reflect a widespread increase in the perceived default probability of borrowers, making banks less willing to lend. Another driver could be banks' need to improve their liquidity and capital positions, forcing them to shrink their balance sheets both domestically and abroad.

But the fall in cross-border lending has been much sharper than that in domestic lending in BIS countries (Chart C), consistent with some 'home bias' in bank lending. This may be due to banks' preference to reduce exposures faster in markets where they have less knowledge of their customers or where lending has grown most rapidly in the past. It could also, in part, be the unintended consequence of banks satisfying criteria for receiving government support.

Chart C BIS banks' cross-border and domestic lending to non-banks^(a)



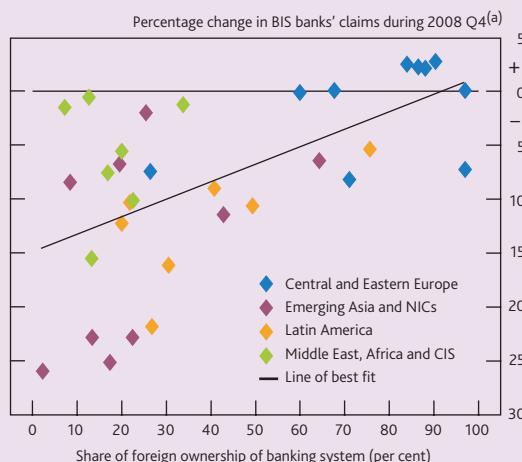
Sources: Bank for International Settlements, IMF *International Financial Statistics* and Bank calculations.

(a) The data are weighted averages of fifteen banking systems, where the weights are based on the relative size of each system's cross-border claims on non-banks.

Market intelligence is consistent with this 'home bias' explanation. Some banks appear to be moving towards a model of funding domestic credit through locally sourced deposits. A number of international banks have also noted that capital constraints mean they have increasingly focused on their 'core' business. Cross-border activities that were not seen as central to their business models have been scaled back.

Cross-border lending has not fallen sharply to all regions, though. Perhaps surprisingly, recent data suggest that bank lending to Central and Eastern Europe excluding Russia (CEE), where a number of economies look particularly vulnerable, has fallen by less than to other regions (**Chart D**). Given the dominant role played by foreign-owned banks in the region, this may indicate that, so far, parent banks have been willing to roll over loans to their local subsidiaries.

Chart D BIS banks' cross-border lending to EMEs and foreign ownership of banking system by region



Sources: Bank for International Settlements, Federal Reserve Bank of New York and Bank calculations.

(a) Adjusted for exchange rate changes.

Implications of the collapse in cross-border flows

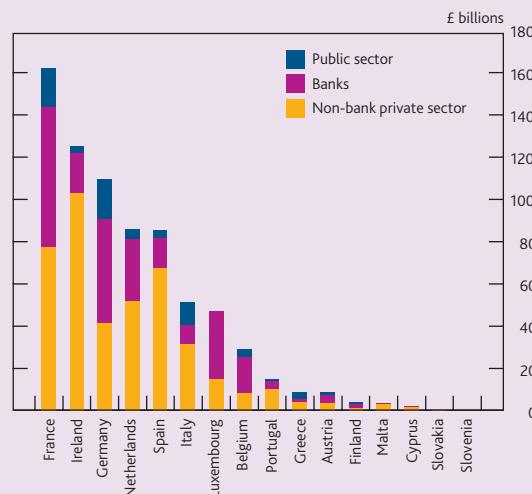
Looking ahead, a further reduction in cross-border capital flows could affect a number of financial systems internationally. The impact of a withdrawal of cross-border flows will depend on a country's initial financial condition. Countries most at risk are those reliant on short-term external debt, particularly if this is in foreign currency, with limited liquid foreign assets for possible repatriation, and with large current account deficits. In CEE, for example, a number of countries entered this crisis with large current account deficits and limited foreign assets. Some of these countries have already resorted to IMF funding to avoid, or at least limit, financial distress.

In contrast, countries with a large stock of government or central bank foreign assets, such as oil exporters, have run

these down to alleviate pressures on their currencies. While selling foreign assets helps to offset the impact on the domestic economy of foreign bank capital outflows, it can exacerbate funding pressures in other countries and propagate liquidity shocks through the international banking network. For example, UK-resident banks faced large outflows of foreign deposits in 2008 Q4, including almost US\$100 billion from Russia.

UK banks could also be affected by problems in countries where they have substantial direct exposures, or indirectly through the international banking network. For example, UK-owned banks have significant exposures to euro-area banks (**Chart E**), some of which have lent significantly to CEE countries. They also have material exposures to the non-bank private sectors of some euro-area countries that entered this crisis with large current account deficits.

Chart E Major UK banks' exposures to euro-area countries, end-2008^(a)

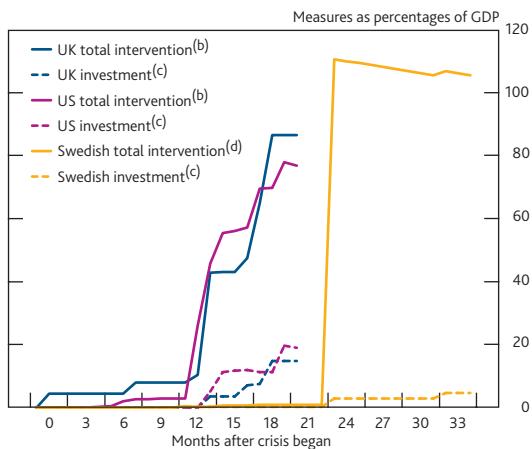


Sources: Bank of England and Bank calculations.

(a) The chart shows consolidated data on an ultimate risk basis. It only includes the UK-owned institutions in the major UK bank peer group, which report the relevant data to the Bank of England. The bars show total exposures for the banks included in the chart. Exposures to the public sector in Cyprus, Luxembourg and Malta are not shown due to confidentiality issues.

The UK non-bank private sector is also a large borrower and depositor with some euro-area owned banks operating in the United Kingdom, particularly Irish and Spanish-owned banks. In total, around 35% of the stock of lending to domestic non-financial companies is accounted for by foreign-owned banks resident in the United Kingdom. Growth in lending from foreign-owned banks has fallen more quickly than credit from UK-owned banks in the past few quarters. That suggests that UK non-financial companies could be at risk from a further withdrawal of cross-border activity.

Chart 1.16 Speed and scale of interventions in different crises^(a)



Sources: Bank of England, Board of Governors of the Federal Reserve System, Bureau of Economic Analysis, Federal Deposit Insurance Corporation, HM Treasury, OECD, ONS, Swedish Ministry of Finance, Sveriges Riksbank and US Department of the Treasury.

- (a) Start date of current crisis is taken as August 2007 for both the United Kingdom and United States; start date for Sweden's crisis as September 1990. GDP is based on these dates.
- (b) Total intervention includes insurance, investments, and lending by central banks and governments to financial institutions under measures introduced after the crisis began.
- (c) Investment is composed of capital injections to banks and SPVs, guarantees of first loss tranches and direct holdings of assets.
- (d) Size of Sweden's guarantee of all banks' liabilities is based on interpolation of year-end balance sheets of banks.

Table 1.C Size of financial system support measures

Trillions (local currencies)

	United Kingdom		United States		Euro area	
	Jan. 2007	Latest	Jan. 2007	Latest	Jan. 2007	Latest
Available central bank support						
Current direct lending to financial institutions ^(a)	0.05	0.10	0.04	0.44	0.46	0.63
Asset purchases and other loans ^(b)	–	0.15	–	3.32	–	0.06
Collateral swaps ^(c)	–	0.19	–	0.20	–	–
Central bank currency swap lines	–	No limit	–	No limit	–	No limit
Available government support						
Guarantees of financial institutions' liabilities ^(d)	–	0.37	–	2.08	–	>1.19
Insurance of financial assets ^(e)	–	0.46	–	3.74	–	–
Capital injections to banks and special purpose vehicles	–	0.06	–	0.70	–	0.22
Increase in public sector support	–	1.26	–	10.44	–	1.64
Memo: US dollar amount^(f)	–	2.06	–	10.44	–	2.31
Percentage of GDP	–	88	–	73	–	18
Memo: Actual size of central bank's balance sheet	0.09	0.22	0.91	2.09	1.16	1.73
Percentage of GDP	6	15	7	15	14	19

Source: Bank calculations.

- (a) Includes repurchase agreements and other claims on credit institutions. For the United States also includes loans provided under the term auction and ABCP MMMF liquidity facilities and credit extended to AIG.
- (b) For the United Kingdom includes gilts and private sector assets authorised to be purchased under the APF. For the United States includes Treasury securities, Agency MBS and debt to be purchased under non-standard open market operations, potential loans to be made under TALF and PPIF, commercial paper holdings and loans made to Maiden Lane I, II and III with accrued interest payable. For the euro area, includes covered bonds to be purchased.
- (c) For the United Kingdom includes Treasury bills lent under the SLS at close of drawdown period. For the United States includes maximum amount made available under the TSLF.
- (d) Includes wholesale liabilities and for the United States retail deposits under the transaction account guarantee program. Unlimited guarantees have not been included for the euro area.
- (e) Sum of bank assets insured under government asset protection schemes, net of impairment provisions and write-downs, first loss pieces and 10% of remaining potential losses borne by the banks. For the United States includes money market funds guarantee program.
- (f) Based on euro/US dollar exchange rate of 0.710 and sterling/US dollar exchange rate of 0.613.

gross fiscal cost in previous system-wide banking crises in developed countries over the past 30 years. These costs, in combination with discretionary fiscal stimulus and the impact of automatic stabilisers, mean that in many countries the ratio of government debt-to-GDP is set to rise sharply in the near term. But the final fiscal costs may be much less. In previous developed-country banking crises, on average more than half of the government outlays were eventually recovered.

Governments have also taken on very sizable contingent claims, for example through debt guarantees. The cost or utilisation of these contingent claims will not be known for some time. In the highly unlikely event that all the facilities offered by central banks and governments were fully called upon, the scale of support to banking systems in the United Kingdom, the United States and euro area would exceed US\$14 trillion (Table 1.C). This is equivalent to around 50% of these countries' annual GDP, although in some cases these obligations were offset by holdings of assets.

Box 3

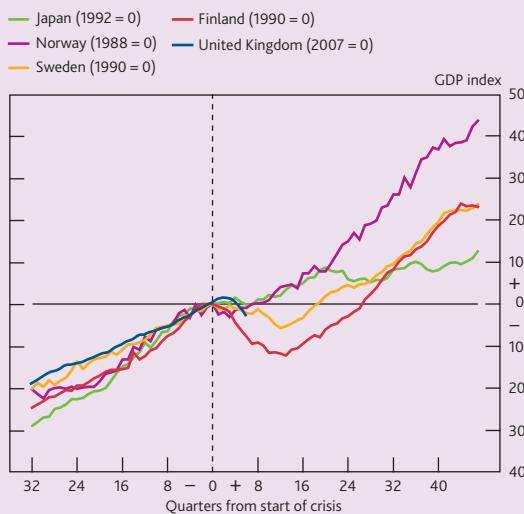
Insights from past financial crises

No two financial crises are the same. But analysis of key influences on the depth and nature of past crises may provide insights into the dynamics and management of the present crisis. This box reviews insights from financial crises in Japan (1992–2002), Sweden (1990–93), Norway (1988–93) and Finland (1990–93).⁽¹⁾

Development of past crises

Each crisis in our sample had a significant impact on economic performance, although the intensity and duration varied significantly across countries (**Chart A**). The key distinguishing feature of the Japanese crisis was its duration: it lasted a decade and spanned a number of periods of recession and recovery. By contrast, the Nordic crises were relatively short and involved a single, sharp period of recession followed by recovery. Estimates of the output losses in each crisis vary, as there are different methods to calculate the duration of a crisis and to estimate GDP growth in the absence of the crisis. One study estimates that output losses as a percentage of annual GDP were between 24.1%–71.7% for Japan, 2.5%–11.8% for Sweden, 9.8%–27.1% for Norway and 22.4%–44.9% for Finland.⁽²⁾

Chart A Real GDP levels before and after a financial crisis^(a)



Source: OECD *Economic Outlook*.

(a) GDP index centred at zero at the start of the crisis.

Each crisis followed a similar overall pattern: a credit boom drove up asset prices which later collapsed, creating systemic problems for the financial system. In response, the authorities adopted measures to shore up the financial system and to stimulate the economy.

An extended credit boom

The four crises had similar origins. Liberalisation of banking sectors led to greater and riskier lending by credit institutions, increasing leverage in the non-financial sectors and among many banks, and asset price bubbles. **Table 1** compares balance sheets in the year prior to the start of each crisis. It shows that the pressures in the economies built up in different sectors. In Japan, the corporate sector had a high borrowing ratio, but all sectors were highly indebted. Compared with Japan, each of the Nordics saw a large rise in house prices. In addition, household indebtedness was high in Norway and Sweden.

Table 1 Balance sheets at onset of financial crisis

	Japan (1991)	Sweden (1989)	Norway (1987)	Finland (1989)	United Kingdom (2006)
Household indebtedness ^(a)	129.7	124.8	148.6 ^(b)	88.0	168.5
Bank leverage ^(c)	51.1 ^(d)	64.0	21.4 ^(e)	23.0	24.6
House prices build up (per cent) ^(f)	47.8 ^(g)	72.4	84.9	84.3	88.3
Corporate borrowing ratio ^(h)	4.2	1.0	n.a.	n.a.	0.5
Year-end bank assets to GDP (per cent)	162.8	111.7	96.0	134.4	342.8 ⁽ⁱ⁾

Sources: Bank of England, central bank publications, National Statistics offices, OECD, ONS, Thomson Datastream and Bank calculations.

(a) Household liabilities as a percentage of nominal disposable income.

(b) Credit to household as a percentage of nominal disposable income. Figure is for 1988.

(c) Total assets/equity capital.

(d) Commercial banks only.

(e) Total assets/(share capital + reserves).

(f) Percentage change in house price index compared with five years before the start of the crisis.

(g) Residential land price index.

(h) Debt/capital.

(i) Major banks only.

A systemic financial crisis

In each crisis a shock exposed balance sheet vulnerabilities and asset prices fell sharply (**Table 2**). The fall in equity prices was typically larger but less prolonged than the fall in house prices, as has been the case in many other systemic financial crises.⁽³⁾

Table 2 Percentage peak to trough falls in asset prices during crises

	Japan	Sweden	Norway	Finland	United Kingdom ^(a)
House prices	36	19	30	41	21
Equity prices	75	48	52	68	34

Sources: Norges Bank, Statistics Sweden, Thomson Datastream and Bank calculations.

(a) From peak to end-May 2009.

The speed and the spread of financial sector problems differed between crises. In Norway, problems were initially confined mainly to savings banks, but had become system wide after two years. In Sweden, problems first arose in the non-bank sector in 1990, when finance companies faced funding difficulties. Problems spread to the banking sector, affecting

first the largest savings bank and the third largest commercial bank, and then almost the entire system within one year. In Finland, banking problems first arose in a commercial bank with close links to the savings bank sector. Although all banks were affected to some extent, failures were largely contained to the savings bank sector. In Japan, problems initially crystallised in non-bank corporations and credit banks, before spreading system wide after around six years.

Several of the troubled banks faced significant external financing challenges. In Sweden and Finland, a currency crisis made it more difficult to obtain liquidity in foreign currencies. In Japan, concern about the solvency of banks led to them facing a 'Japan premium' for obtaining foreign funding.

Authorities' response to the crises

The Nordic authorities acted quickly to stabilise their banking sectors once systemic problems developed. Sweden and Finland provided a blanket creditor guarantee to keep funding channels open. Similarly, the Norwegian Ministry of Finance committed that the government would take any actions necessary to secure confidence in the banks. The Nordic authorities nationalised troubled banks once the crisis approached systemic proportions. Sweden and Norway were quick to use detailed bottom-up stress tests to assess the size of banks' problems and introduced new legislation to wipe out shareholders of rescued banks.⁽⁴⁾ The Nordics were also relatively quick to establish new crisis management authorities.

The Japanese authorities, like the Nordics, acted to stabilise the banking sector once systemic problems crystallised. Japanese banks wrote off around ¥90 trillion of bad loans between 1992 and 2001 (over 18% of GDP at year-end 1992). A systemic approach to tackle the banks' bad loan problems was implemented in 2002, after introduction of the Takenaka plan. Legislation introduced in 1996 to reform deposit insurance and prompt corrective action rules was supplemented by reforms in 1998 to establish two new crisis management entities.

Table 3 summarises the key measures used to remove bad assets from banks' balance sheets. The approaches varied across authorities and over time. At first, all relied on capital injections to recapitalise banks that faced large losses. Towards the end of the crisis, Sweden and Finland used a good bank/bad bank approach to remove bad assets from the nationalised banks. The Norwegian authorities preferred the nationalised banks to manage the bad assets themselves.⁽⁵⁾ Early in the crisis, Japan established an asset management company (partly funded by the private sector) to administer the bad assets of failed and solvent banks. Banks were required to write down bad loans and state capital was provided as required. Later, Japan also nationalised some failed banks.

Table 3 Summary of measures used to deal with bad assets and burden sharing

	Japan	Sweden	Norway	Finland
Nationalisation or capital injection	Mixed	Mixed	Mixed	Mixed
Shareholders wiped out or diluted	Yes (but not in every case)	Yes (but not in every case)	Yes	Yes (but not in every case)
Good bank/ bad bank	Yes (but not in every case)	Yes	No	Yes
Ownership of bad bank	Public and private	Public	n.a.	Public

Sources: BIS and Norges Bank.

Monetary and fiscal policies also differed substantially. The Nordic countries increased policy rates to maintain currency pegs to the ECU, following the reunification of Germany. Economic recovery began to gain momentum once they floated their currencies and were able to lower interest rates. In Norway, fiscal policy became expansionary when the systemic banking crisis began. Procylical fiscal policies in Finland and Sweden may have exacerbated the contraction in aggregate demand during the crisis. In Japan, the adoption of the zero interest rate policy in 1999 appears to have aided economic recovery that year, though its suspension in 2000 may have contributed to the subsequent slowdown. In addition, government spending was a major contributor to a short recovery in growth in the late 1990s, but some observers suggest a tightening of fiscal policy in 1997 contributed to the recession in 1998.

Further shocks to the economy

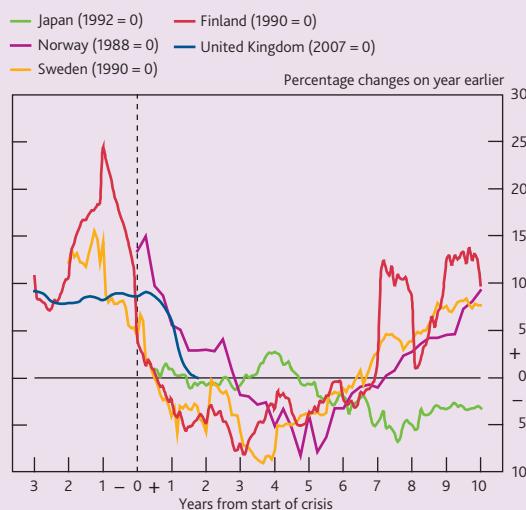
The dynamics of the crises were also influenced by shocks that hit the economies or banking sectors as the crisis developed. In Norway, a sharp increase in oil prices in 1990 helped boost the value of exports, allowing the government to loosen fiscal policy when the banking crisis was reaching systemic proportions. By contrast, in Finland the scale of the crisis was exacerbated by the collapse of its major export partner, the Soviet Union, in 1991. After its banking crisis began, the Japanese economy was buffeted by a sequence of adverse shocks — including the 1997 Asian crisis and the dotcom crash — which damped international demand for Japanese exports at times when the economy was beginning to recover.

Economic recovery

Two different transition paths are evident in these crises. The Nordic transition was characterised by a deep but short-lived contraction in GDP and credit (**Charts A and B**). Positive growth in real credit returned about six years after the start of the systemic banking problems. Households, corporates and banks adjusted their balance sheets in the aftermath of the crisis and it took some time for their leverage to return to pre-crisis levels. In Sweden and Norway corporate

indebtedness fell during the crises and took around a decade to return to pre-crisis levels. Banks began to record losses during the crises and took around three to seven years to return to profitability. Net exports as a share of GDP increased structurally in the aftermath of the crises, prompted in Norway by an increase in oil prices and in Sweden and Finland by currency devaluation.

Chart B Real lending growth rates^(a)



Sources: Bank of England, central bank financial stability reports, Thomson Datastream and Bank calculations.

(a) Finland and Japan series represent bank lending, all other series represent lending by financial institutions.

The Japanese crisis, by contrast, saw a prolonged period of weak economic performance. Households did not reduce their level of debt significantly during the crisis and banks started to shrink their balance sheets only late in the crisis. On the other hand, the corporate sector was overstretched going into the crisis, particularly those sectors exposed to real estate. In consequence, corporate bankruptcies rose and capital gearing fell during the crisis. Net exports as a share of GDP remained fairly stable. Bank profitability remained poor throughout the crisis, due to the disposal of large volumes of non-performing loans. There was little or no growth in the supply of credit throughout the crisis.

Applying the insights to the present crisis

The current crisis shares some similarities with this sample of past crises. In the United Kingdom, the crisis has been partly driven by cheap credit, which created vulnerabilities in the economy and an unsustainable rise in asset prices. The scale of the imbalances within sectors of the economy appears similar to those exhibited in the selection of past crises (Table 1).

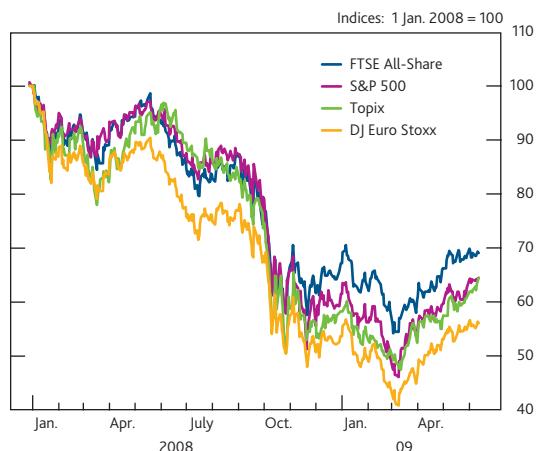
But there are also substantial differences. Interlinkages in the world economic and financial system have helped make this a global financial crisis. This lowers the potential contribution of export growth to economic recovery, despite the recent

sterling devaluation. Against that, the response of international authorities has been unprecedented in speed and size. All major economies have responded robustly to stabilise banks, to ease market conditions and to mitigate the severity of the global downturn, including through aggressive loosening of monetary and fiscal policy.

Past crises appear to indicate that the authorities' management of systemic banking problems is key to returning the banking sector to health. It is difficult to unwind the two main factors influencing credit growth in a crisis — household and corporate deleveraging reducing demand and the vulnerability of banks' balance sheets reducing supply. But it is clear that, to facilitate a recovery in credit, it is important to remove impediments to bank lending.

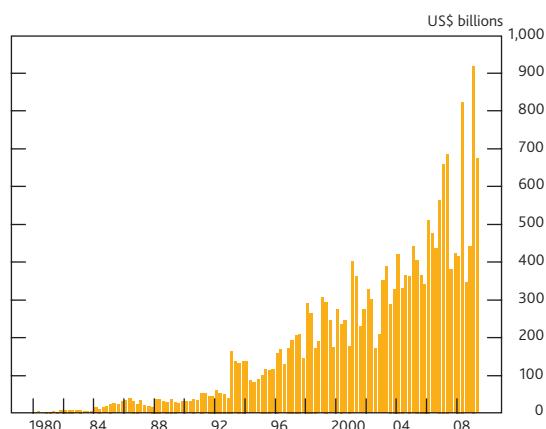
The UK authorities have aimed to act relatively quickly. They switched from idiosyncratic bank resolutions to system-wide measures within two years. Measures to stabilise the banking sector and support the flow of credit have included bank recapitalisation, the Credit Guarantee Scheme and the Special Liquidity Scheme. The United Kingdom has also begun work to tackle legacy problems on banks' balance sheets. The Asset Protection Scheme, announced on 19 January 2009, is designed to insure the risk of bad assets on two UK banks' balance sheets.

- (1) The start dates are when the first signs of systemic financial crisis were seen to emerge in financial institutions. The end dates are when resilience of the banking sector was restored.
- (2) Hoggarth, G, Reis, R and Saporta, V (2002), 'Costs of banking system instability: some empirical evidence', *Journal of Banking and Finance*, Vol. 26, pages 825–55.
- (3) Reinhart, C and Rogoff, K (2009), 'The aftermath of financial crises', *American Economic Review*, Vol. 99 No. 2, pages 466–72. The study analyses a large sample of systemic financial crises to find that, on average, house prices fall 35.5% over 6 years, while equity prices fall 55.9% over 3.4 years.
- (4) Norway and Sweden adopted different approaches to stress testing but both involved a detailed assessment of potential losses on banks' loan portfolios.
- (5) Moe, T G, Solheim, J A and Vale, B (2004), 'The Norwegian banking crisis', *Norges Bank Occasional Papers*, gives five reasons for this decision: (i) it was thought that the task of managing the bad loans would not distract the management of the overall bank; (ii) a bad bank would need to be capitalised by the state, potentially adding to the gross cost of resolution; (iii) it was thought better for banks to retain expertise in handling bad loans; (iv) it would be difficult to discover a fair price for the loans transferred to the bad bank; and (v) it was considered preferable for banks to retain responsibility for handling bad loans as they have the largest incentive to succeed.

Chart 2.1 Global equity prices^(a)

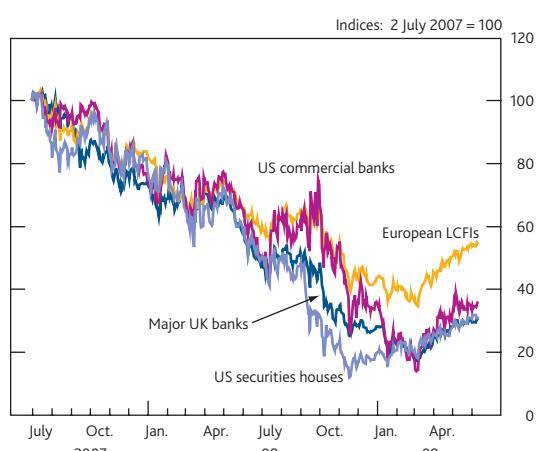
Sources: Thomson Datastream and Bank calculations.

(a) Denominated in units of local currency.

Chart 2.2 Global issuance of corporate bonds^(a)

Source: Dealogic.

(a) Issuance by quarter; 2009 Q2 reflects data to 12 June.

Chart 2.3 Major UK banks' and LCFIs' equity prices

Sources: Bloomberg and Bank calculations.

2 Assessing the UK financial system

Risk appetite appears to have returned...

The policy measures described in Section 1 appear to have contributed to a noticeable improvement in sentiment in financial markets. Since mid-March, global equity prices have recovered significantly, increasing by 25%–35% (**Chart 2.1**). Around US\$2 trillion of the financial losses on debt securities recorded in **Table 1.A** in Section 1 have been recouped. According to market contacts, this reflects a return of risk appetite to some markets.

Global issuance in corporate bond markets recovered to US\$1.6 trillion in the year to date, US\$250 billion higher than issuance in 2007 H1 (**Chart 2.2**). In the euro area, firms rated below investment grade were able to issue bonds in January 2009 for the first time since July 2007. And in the United Kingdom, issuance of sterling investment-grade bonds has been greater in the first half of 2009 than in any six-month period observed previously.

...amid signs activity is slowing less sharply.

The improvement in market conditions has coincided with signs of some turnaround in the outlook for global growth. While global GDP is still expected to fall further in 2009, the rate of decline may have eased. The macroeconomic stimulus provided by governments and central banks should provide support to global activity in the period ahead.

Taken together, these developments constitute positive news for the global banking sector. That is mirrored in rising equity prices of global banks including the major UK banks⁽¹⁾ and large complex financial institutions⁽²⁾ (LCFIs), which have recovered strongly from their mid-March lows (**Chart 2.3**). Credit default swap (CDS) premia have halved for many institutions over the same period (**Chart 2.4**). This suggests some stabilisation and recovery in global banking prospects.

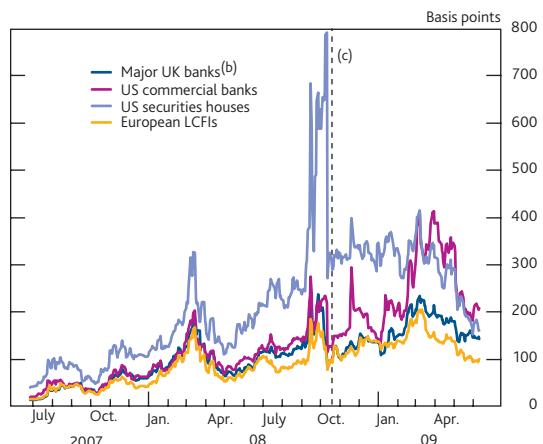
But the banking sector outlook remains uncertain...

Given their size, leverage and liquidity mismatches, however, banks' balance sheets remain sensitive to any setbacks in recovery in financial markets or real activity. The economic downturn is still perceived by market participants as the highest risk to financial stability — for example, as reflected in a new Bank survey of risk attitudes (Box 5).

(1) Membership of the major UK banks group is based on the provision of customer services in the United Kingdom, regardless of the country of ownership. The following financial groups, in alphabetical order, are currently members: Banco Santander, Bank of Ireland, Barclays, Britannia, Co-operative Bank, HSBC, Lloyds Banking Group, National Australia Bank, Nationwide, Northern Rock and RBS.

(2) LCFIs include the world's largest banks, securities houses and other financial intermediaries that carry out a diverse and complex range of activities in major financial centres. The group of LCFIs is identified currently as: Bank of America, Barclays, BNP Paribas, Citi, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan Chase & Co., Morgan Stanley, RBS, Société Générale and UBS.

Chart 2.4 Major UK banks' and LCFIs' credit default swap premia^(a)



Sources: Markit Group Limited, Thomson Datastream, published accounts and Bank calculations.

(a) Asset-weighted average five-year premia.

(b) Data exclude Co-operative Bank as no data are available.

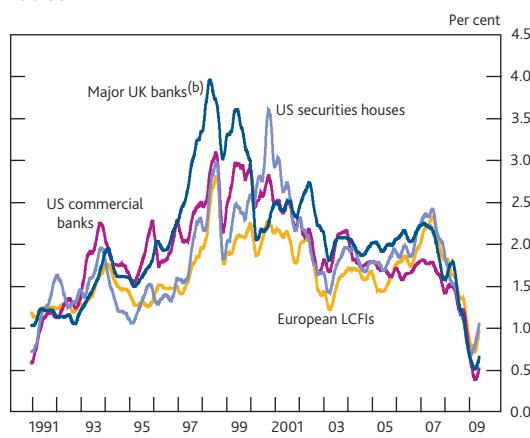
(c) October 2008 Report.

Continued uncertainty around banking sectors in major economies is evident in financial markets. The cost of insurance against major UK banks' and LCFIs' debt remains elevated (Chart 2.4). Equity prices also remain weak, at around 30%–55% of pre-crisis levels (Chart 2.3). Price to book ratios for most banks remain historically low (Chart 2.5). For some institutions these ratios are currently below one, implying further falls in the book value of equity are expected.

...as banks globally remain highly leveraged...

Underpinning this outlook is concern over the size of banks' balance sheets, which have grown substantially over the past decade (Chart 2.6). While total assets of the world's largest banks fell in 2008, this fall was concentrated among the US securities houses and European LCFIs. In both cases, there were significant falls in trading assets. In contrast, a number of acquisitions completed in 2008 resulted in a rise in total assets for the largest US commercial banks. Among the major UK banks, there was a significant shift in the composition of total assets as secured lending to other financial institutions fell while loans and cash holdings rose.

Chart 2.5 Major UK banks' and LCFIs' price to book ratios^(a)



Sources: Bloomberg, Thomson Datastream and Bank calculations.

(a) Chart shows the ratio of share price to book value per share. Simple averages of the ratios in each peer group are used. The data are a three-month rolling average.

(b) Excludes Nationwide and Britannia, which do not have traded equity.

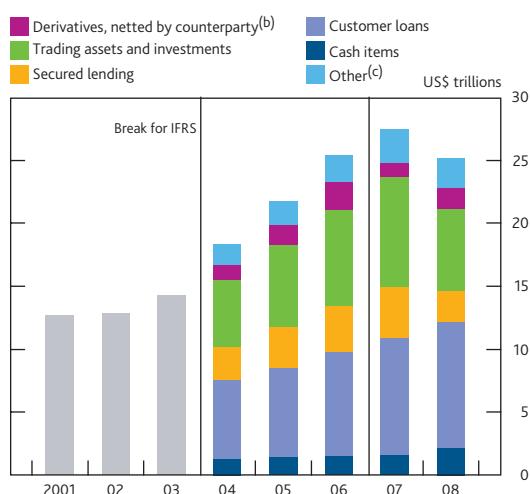
Chart 2.7 maps the change in banks' assets in 2008 onto one possible measure of leverage. On this measure, leverage of the major UK banks remained broadly unchanged during 2008, with the median level at just over 30 times capital. The US commercial banks experienced the largest changes in leverage, with the median ratio rising significantly to around 60 times capital. This rise reflected both acquisitions completed during 2008 and significant erosion of capital associated with losses incurred over the same period.

...and seek to strengthen capital buffers...

A number of banks internationally have sought to improve their capital positions, including through conversions of preferred shares and convertible notes to equity, private sector capital raising and participation in government support schemes (Table 2.A). The most significant capital raising has been completed or announced by US commercial banks. Following the US stress-testing exercise, these institutions have announced capital-raising plans generating a 2.5 percentage point increase in their core Tier 1 capital ratio. In the United Kingdom, capital injections — including through the Asset Protection Scheme (APS) — are projected to add a percentage point to the major UK banks' core Tier 1 ratio. UK banks are also actively seeking opportunities to generate capital internally through debt buybacks and exchanges (Box 4) and the disposal of assets.

Nevertheless, leverage remains elevated across the global banking system. Capital raising completed or announced by banks since end-2008 will restore the median leverage ratio to end-2007 levels, at around 35 times capital, with the greatest impact on the US commercial banks (Chart 2.7). But at these levels, capital buffers would still be eroded significantly if

Chart 2.6 Major UK banks' and LCFIs' total assets^(a)



Sources: Bankscope published by Bureau van Dijk Electronic Publishing, published accounts and Bank calculations.

(a) Assets converted at average exchange rate 2001–08.

(b) US GAAP banks report on a net basis; IFRS banks' derivative exposures netted from 2007.

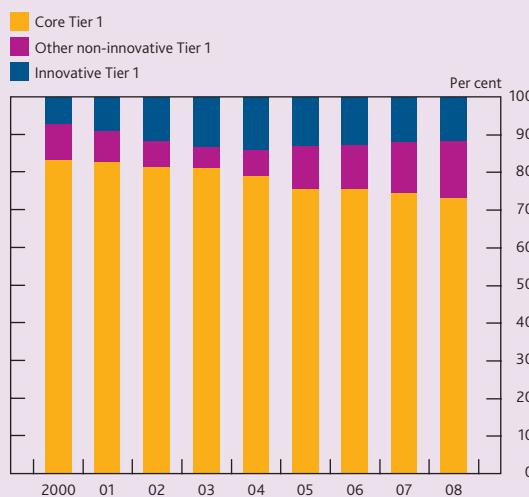
(c) 'Other' includes other receivables, other assets, goodwill and property and insurance.

Box 4

The changing composition of the major UK banks' regulatory capital

In the recent past, there was a marked shift in the composition of the major UK banks' Tier 1 capital, away from core equity capital to innovative and non-innovative instruments (**Chart A**). Banks issued Tier 1 capital instruments that contained more of the characteristics of debt in order to widen the pool of potential investors and to reduce capital costs (see **Table 1** for an overview of banks' regulatory capital). Banks have been reluctant to suspend coupon payments on these instruments, which weakens their ability to absorb losses. Recently, investor appetite for innovative capital has evaporated and banks have looked to increase their core Tier 1 capital in response to increased investor and regulatory focus on this measure of capital. This box examines these developments and their implications for financial stability.

Chart A Composition of the major UK banks' Tier 1 capital^(a)



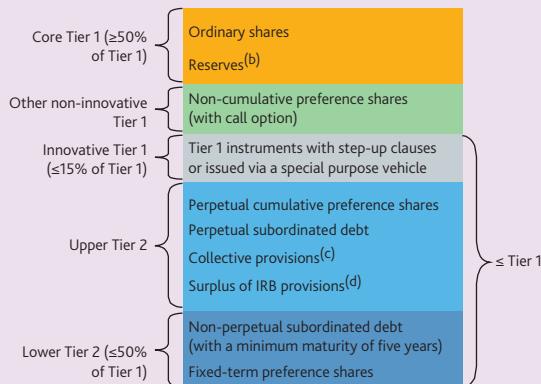
Sources: Dealogic, published accounts and Bank calculations.

(a) Includes Abbey, Alliance and Leicester and Bradford and Bingley instead of Banco Santander. Excludes Northern Rock.

The impact of the financial market turmoil

Market contacts suggest that one reason for the recent breakdown in the market for innovative capital is variation in the treatment of non-equity capital holders in recent bank resolutions, including in the United Kingdom. There is also uncertainty over the likelihood of coupon maintenance on Tier 1 and Tier 2 capital instruments, particularly for banks with substantial government support.⁽¹⁾ Investors are uncertain whether banks will continue to follow market convention by calling capital instruments at the step-up date.⁽²⁾ In response, ratings agencies have downgraded a number of issues of hybrid and subordinated debt. Secondary market spreads for Tier 1 and Tier 2 capital instruments have increased significantly since end-October.

Table 1 Key components of Tier 1 and Tier 2 capital and relevant regulatory limits under Pillar 1^(a)



Source: General Prudential Sourcebook for Banks, Building Societies, Insurers and Investment Firms, FSA.

(a) Limits are expressed in terms of Tier 1, which excludes Tier 1 innovative instruments and also deducts investments in own shares, intangible assets and other specific Tier 1 deductions.

(b) Includes non-repayable capital contributions and externally verified interim net profits after prudential filters (eg losses arising from valuation adjustments).

(c) Provisions that cannot be identified to specific transactions and correspond to portfolios under the standardised approach.

(d) The positive difference between the level of provisions and the level of expected losses associated with portfolios under the internal ratings based (IRB) approach.

The response of the major UK banks

With investors and regulators more focused on core Tier 1 capital ratios, a number of major UK banks have recently completed buybacks and exchanges of Tier 1 and Tier 2 instruments to increase their core Tier 1 capital (**Table 2**). Because Tier 1 and Tier 2 instruments are trading well below par, banks can offer investors a premium to current market prices while still acquiring the debt below par. In doing so, banks can realise fair value gains through their reserves, increasing core Tier 1 capital. Meanwhile, some investors receive a mark-to-market benefit by participating in the buyback because the instruments are bought back at a premium to their market value.

The increase in core Tier 1 capital is a positive development for the stability of the UK banking sector (Section 3). Existing equity holders also benefit, as there is a greater capital cushion to absorb going concern losses without diluting their shareholding in the bank. The development is not unambiguously positive for all stakeholders in the bank. By engaging in an exchange for senior debt or a buyback, the bank reduces its overall capital levels.⁽³⁾ As a consequence, existing senior creditors have less of a cushion against credit losses in the event that the bank is put into administration and wound down. This has to be weighed up against the lower probability of the bank being wound down in the first place given its larger core Tier 1 buffer.

West Bromwich Building Society recently exchanged the full outstanding principal value of its subordinated debt for a new instrument, Profit Participating Deferred Shares, which qualifies for inclusion in core Tier 1 capital. This transaction

Table 2 Major UK banks' buyback and exchange offers^(a)

Bank	Date of offer	Transaction	Nominal value of securities offered (£ billions)	Take-up (per cent)	Take-up price (percentage of nominal value)
Lloyds Banking Group	Jan. 2009	Exchange of Upper Tier 2 for Tier 1 securities	8.5	30	78
Lloyds Banking Group	Mar. 2009	Exchange of Upper Tier 2 securities for senior debt	7.5	58	61
RBS ^(b)	Mar. 2009	Exchange of Upper Tier 2 and Tier 1 securities for senior debt	5.8	61	51
RBS ^(b)	Mar. 2009	Buyback of Upper Tier 2 and Tier 1 securities	9.1	56	43
Barclays	Apr. 2009	Exchange of Upper Tier 2 for Lower Tier 2 securities	3.4	74	76
Bank of Ireland ^(c)	May 2009	Buyback of Tier 1 securities	3.0	49	41

Sources: Published statements and Bank calculations.

(a) Data include offers made and completed up to 18 June 2009.

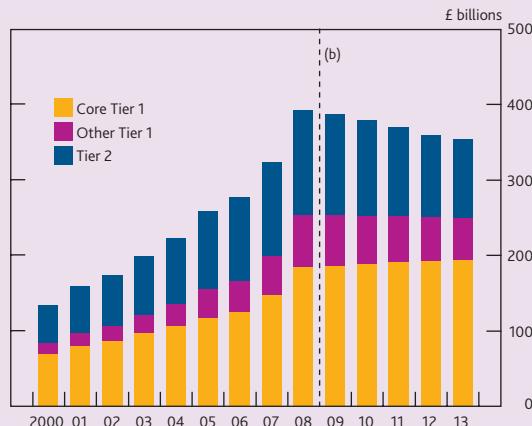
(b) RBS pricing assumes all buybacks and exchanges qualified for the early tender payment.

(c) Bank of Ireland is part of the major UK banks peer group as defined in Section 1.

differs from exchanges completed by the major UK banks because it does not reduce total capital.

The proliferation of buyback and exchange offers may weaken the market convention of calling capital instruments at the step-up date. In an environment where debt can be bought back below par, there is a strong incentive for banks to do so rather than calling the debt at par. This may constrain future issuance of these capital instruments. It may also be more expensive to issue these instruments if investors price in higher extension risk than prior to the financial turmoil. These developments may lead to a capital structure that has a greater proportion of core Tier 1 capital. This would improve the ability of banks to absorb unexpected losses (Section 3).

Chart B illustrates the impact on the capital composition of the major UK banks in a scenario in which maturing capital instruments are not replaced and banks buy back, or exchange for senior debt, innovative Tier 1 and Tier 2 instruments as their call dates fall due. Buybacks and exchanges already completed in 2009 (**Table 2**) are not included and the banks are assumed not to offer proactively to exchange or buy back capital instruments prior to these instruments' call dates falling due. This leads to a gradual increase in core Tier 1 capital and a reduction in other forms of capital instrument.

Chart B Illustration of the impact of capital buybacks on major UK banks' capital composition^{(a)(b)(c)}

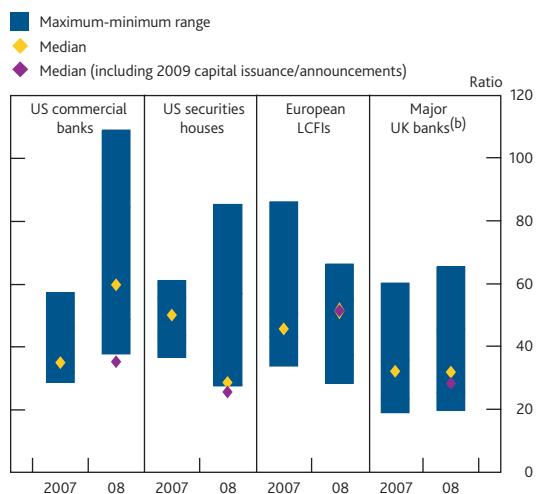
Sources: Dealogic, published accounts and Bank calculations.

(a) Includes Abbey, Alliance and Leicester and Bradford and Bingley instead of Banco Santander. Excludes Northern Rock.

(b) Figures post-2008 are for illustrative purposes and do not constitute a capital projection. They are calculated using end-2008 figures, which are not adjusted for capital raising in 2009, and do not take into account future earnings. End-2008 figures are also not adjusted for buybacks and exchanges made in 2009.

(c) Assumes post-2008 that maturing debt is not replaced and that Tier 2 and innovative Tier 1 instruments are bought back as their call dates fall due with 100% take-up at a 20% and 30% discount to par respectively. Callable non-innovative Tier 1 capital instruments are replaced as their call dates fall due.

- (1) Bradford and Bingley is the only major UK bank currently to have announced that it will defer coupon payments on its Lower Tier 2 capital instruments.
- (2) A step-up clause allows an increase in the coupon beyond a specified date.
- (3) For example, if a bank exchanges £100 million of Upper Tier 2 instruments at 80 pence in the pound for senior debt, abstracting from tax issues, its core Tier 1 capital will increase by £20 million. But the bank's Upper Tier 2 capital falls by £100 million, resulting in a fall in total capital of £80 million. It is possible, however, that the bank's total regulatory capital ratio will not fall if it is constrained by its Tier 1 capital (under Pillar 1, innovative Tier 1 and Tier 2 capital can only be counted for regulatory purposes up to the total value of non-innovative Tier 1 capital).

Chart 2.7 Major UK banks' and LCFIs' leverage ratios^(a)

Sources: Published accounts and Bank calculations.

(a) Assets adjusted for cash and cash items in the course of collection from banks, goodwill and intangibles and deferred tax assets. Assets adjusted on a best-efforts basis to ensure comparability between institutions reporting under US GAAP and IFRS. Derivatives are netted in line with US GAAP rules. Off balance sheet vehicles are included in line with IFRS rules (excluding mortgages sold to US government-sponsored entities). Capital excludes Tier 2 instruments, preference shares and hybrids and goodwill and intangibles.
(b) Excludes Northern Rock.

Table 2.A Impact of equity issuances and conversions in 2009 on capital ratios^(a)

Per cent	Major UK banks	European LCFIs	US securities houses	US commercial banks
End-2008 capital				
Core Tier 1 ^(b)	6.6	6.9	10.5	4.3
Tier 1	8.8	9.5	16.6	10.5
Impact of issuances and conversions on core Tier 1 capital				
Common share issuances	0.8	0.0	1.7	0.5
Conversions to core Tier 1 ^(c)	0.3	0.0	0.0	1.9
Impact of issuances and conversions on Tier 1 capital				
Total share issuances ^(d)	1.0	0.4	1.7	0.5
Conversions from Tier 2 to Tier 1	0.1	0.0	0.0	0.0
Capital post issuances and conversions				
Core Tier 1	7.7	6.9	12.2	6.8
Tier 1	9.9	9.9	18.3	11.1

Sources: Bloomberg, press releases, published accounts and Bank calculations.

(a) Includes Mandatory Convertible Notes (MCNs) and new equity issuances and conversions of preferred equity completed or announced between end-2008 and 12 June 2009. Capital impact based on end-2008 risk-weighted assets.
(b) Common shareholders' equity only.
(c) Includes conversion of preferred equity and Tier 2 MCNs to common equity.
(d) Includes common and preferred equity.

assets not protected by schemes such as the APS experience relatively modest further falls in value.

...with concerns over future banking book losses...

Perceptions of balance sheet risk have extended to the banking book, in particular at UK, US and European institutions with large commercial banking units. While net interest income for many of these institutions rose in 2008, they also reported large increases in provisions (Chart 2.8). Rising household and corporate distress, and continuing falls in property prices, raise the possibility of further asset impairment. Buffers of loan loss reserves over non-performing loans have already begun falling for some of the world's largest commercial banks.

...raising questions over future profitability.

Global banks' profitability has come under pressure as revenues fell in 2008, particularly among the US securities houses and European LCFIs (Chart 2.9). This has largely been driven by a significant decline in non-interest income, reflecting impaired market liquidity and significant losses on proprietary trading and investment positions. Results for the US LCFIs in the first quarter of 2009 have generally been better than anticipated. But the need to constrain balance sheet growth, given high levels of leverage and the potential for future losses, raises a question about revenue generation for banks globally over the medium term.

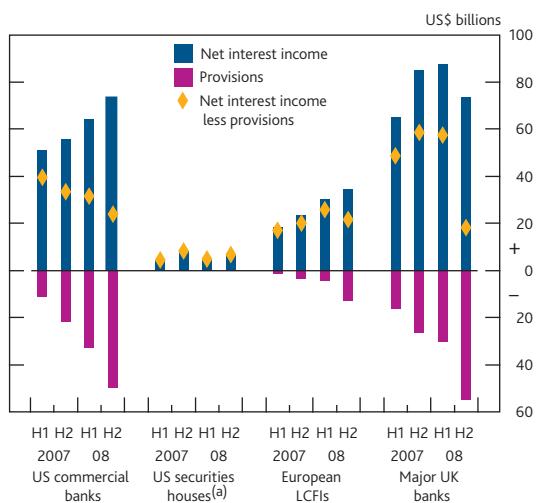
Chart 2.10 decomposes the major UK banks' past return on equity into gearing — a measure of leverage⁽¹⁾ — and the return on total assets. During 2008, the return on total assets turned negative and the impact of this on return on equity was amplified by banks' high level of gearing. Prior to 2008, the major UK banks used increased levels of gearing to generate higher returns on equity, while the underlying return on assets fell below 2002 levels.

The major UK banks and building societies have already acted to raise lending rates, as reflected in higher net interest margins (Chart 2.11). Over the past decade, net interest margins declined due to intense competition. This had a particularly negative impact on the profitability of building societies. Higher margins should help alleviate this stress over time. But as shown in Chart 2.12, mortgage lending is now focused almost entirely on the prime residential sector. Competition in this sector may limit the extent to which margins can be rebuilt. And experience from past crises suggests that bank profitability can take more than three years to recover once losses have been recorded (Box 3).

Funding conditions appear to be improving...

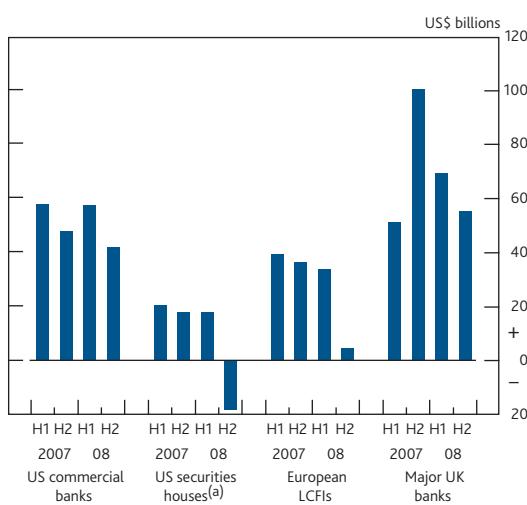
Funding conditions for banks appear to be improving somewhat. Some markets that had been effectively closed to

(1) This measure treats derivatives on a gross basis, where the value of the major UK banks' derivatives positions rose significantly during 2008.

Chart 2.8 Provisions versus net interest income

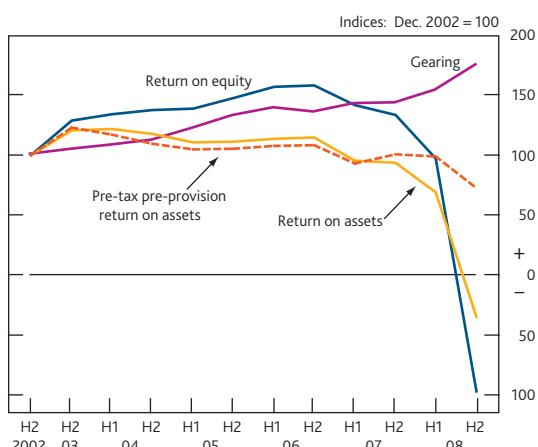
Sources: Bloomberg and published accounts.

(a) Lehman Brothers excluded due to lack of data in 2008 H2.

Chart 2.9 Underlying pre-tax and pre-provision profit

Sources: Bloomberg and published accounts.

(a) Lehman Brothers excluded due to lack of data in 2008 H2.

Chart 2.10 Major UK banks' pre-tax return on equity^(a)

Sources: Published accounts and Bank calculations.

(a) Based on twelve-month trailing pre-tax revenues and average shareholders' equity.

all but the strongest institutions appear to be reopening. In the euro covered bond market, issuance in May was around twice the average of the previous six months, boosted by the European Central Bank's announcement that it intends to buy covered bonds. In the United Kingdom, a few banks have been able to issue unguaranteed senior debt (**Chart 2.13**) at longer maturities than are available under the Credit Guarantee Scheme (CGS).

The majority of banks' wholesale funding continues to take place at very short maturities. Market contacts report some modest recovery in term money market funding. Since around the middle of March, the three-month Libor spread over expected policy rates has fallen steadily in the sterling, dollar and euro markets (**Chart 2.14**). But term money market funding is unlikely to return to pre-crisis levels in the near term. And as shown in **Chart 2.14**, the three-month sterling Libor spread over expected policy rates is expected to remain elevated.

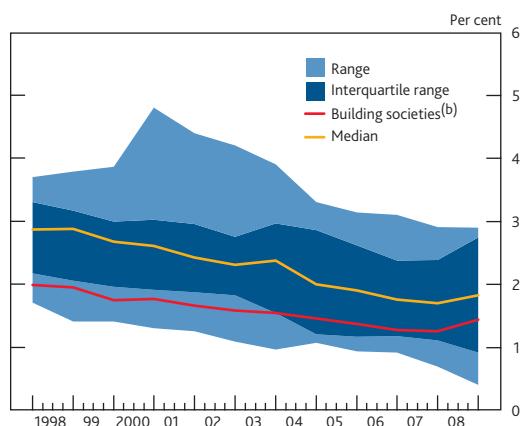
...but UK banks maintain a large funding gap...

The UK banks entered the financial crisis with a significant customer funding gap — the difference between customer loans and deposits — which continued to rise in 2008, reaching around £800 billion (**Chart 2.15**). The rising gap was largely accounted for by a 30% increase in the value of lending to other customers, which includes non-bank financial companies, overseas borrowers and the public sector. In part, this reflected exchange rate movements during 2008, which increased the sterling value of foreign-currency denominated loans.

The major UK banks' large and rising funding gap implies a continued heavy reliance on wholesale funding markets. Around half of the funding gap — £400 billion — is accounted for by lending to UK households and companies that is backed by securitisations. Some of these are securitisations retained on banks' balance sheets for use in central bank operations, including the Special Liquidity Scheme (SLS). But more than half is accounted for by securitisations sold to end-investors. If these were to be redeemed prior to the maturity of the underlying mortgages, it would place significant additional pressure on UK banks' funding needs — at a time when market contacts report continued nervousness on the part of non-bank financial institutions in wholesale funding markets, and when cross-border flows are falling (Box 2).

Banks currently meet some of the funding gap through issuance of debt under the CGS. But this is subject to a cap on both the amounts that can be issued and the maturity of the debt. As with securitisation, the banks will need to find alternative funding sources when these liabilities mature, the majority of which occurs in 2011 and 2012. The expiry of the SLS in less than three years' time and the eventual reduction in central bank lending around the world will add further to the

Chart 2.11 Major UK banks' and building societies' net interest margin^(a)

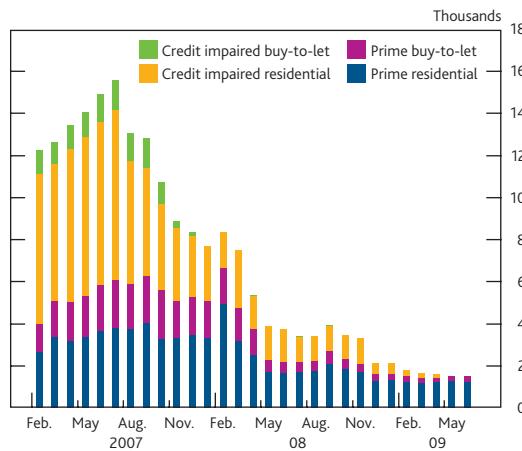


Sources: KPMG Building Societies Database, published accounts and Bank calculations.

(a) Prior to mergers and acquisitions, data have not been consolidated on the basis of the current merged entities.

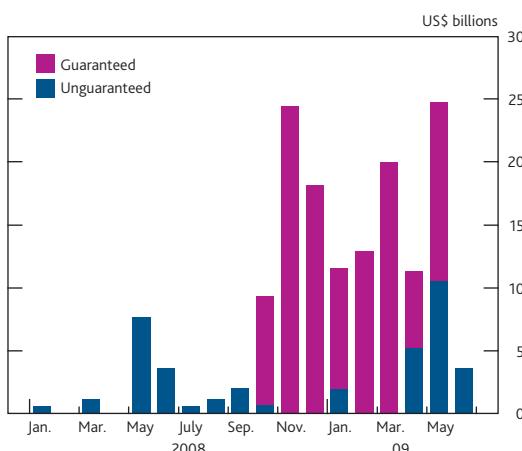
(b) Excludes Britannia and Nationwide.

Chart 2.12 Number of mortgage products advertised in Moneyfacts



Source: Moneyfacts Group.

Chart 2.13 UK banks' senior debt issuance^(a)



Sources: Dealogic and Bank calculations.

(a) Issuance with a value greater than US\$500 million and term to maturity greater than 18 months.

need for alternative sources of funding. Assuming CGS issuance reaches the cap of £250 billion, the major UK banks might conceivably need to shrink their balance sheets or find alternative sources of funding of around £500 billion over the period to 2013, as various forms of public sector financing are progressively withdrawn (**Chart 2.16**).

...and funding is sensitive to sovereign risk...

The substantial support provided by governments to banking sectors internationally has increased the links between these two sectors. In the period since the October 2008 Report, sovereign CDS premia rose for those countries where banking sector risks increased most (**Chart 2.17**). This suggests a further rise in government financing costs could have a knock-on impact on bank funding costs. Respondents to the Bank's *Systemic Risk Survey* also identified sovereign risk as a financial stability concern for the first time (Box 5).

Measures to support banking systems around the world have the potential to lead to a material rise in government debt in some countries. These pressures are reflected in the rise in sovereign CDS premia, which remain at elevated levels across a range of countries (**Chart 2.18**). Credit rating agencies have also downgraded some countries recently and have placed several sovereign ratings on negative watch. A downgrade might increase sovereign debt financing costs. For example, yields on AA-rated government bonds have averaged around 40 basis points more than similar securities with a AAA rating since 2006.

...placing further pressure on profitability.

The cost to the major UK banks of funding in wholesale debt markets has risen significantly over the past year. The overall cost of financing is substantially lower because banks remunerate retail deposits below Bank Rate. But one consequence of the low interest rate environment has been to reduce this retail deposit margin significantly, eroding profitability. This effect is particularly marked for institutions that rely mainly on retail funding—for example, traditional building societies.

Since 2008 Q3, a greater proportion of household deposits has flowed to National Savings and Investments, which has intensified competition among UK banks for retail balances. The impact on deposit rates has been striking (**Chart 2.19**). This represents a significant source of pressure on banks' and building societies' net interest margins and overall profitability.

Banks' structural weaknesses are affecting lending...

Higher spreads on lending and reduced leverage are necessary characteristics of a stronger banking system over the medium term. The transition will also require banks to rebalance their funding profiles and focus on activities that exploit their comparative advantage. In doing so, the banks may face a trade-off between deleveraging and revenue generation. Many

Box 5

Systemic Risk Survey results

In May 2009, the Bank conducted a survey of market participants' views about risks and the prospects for financial stability.⁽¹⁾ The survey was sent to a range of market participants at UK banks, large complex financial institutions (LCFIs), hedge funds, asset managers and insurance companies.⁽²⁾

This box summarises the key findings. The survey is designed to complement other sources of information on risks to the system, including regular dialogue with market participants. The Bank intends to conduct the survey regularly and report the results in future *Reports*.

Key risks

Participants were asked to list the five risks that they believed would have the greatest impact on the UK financial system, if they materialised in a plausible worst-case scenario. The top risks identified, as shown in **Table 1** (impact column), were:

- an economic downturn;
- borrower defaults;
- pressures in funding markets;
- regulatory and accounting changes;
- credit conditions; and
- sovereign risk.

Most of these top risks were cited by a greater proportion of respondents than in a pilot survey conducted in July 2008. This is consistent with the sharp deterioration in the current economic environment, discussed in Section 1. Sovereign risk was also mentioned for the first time. Far fewer respondents were concerned about the potential failure of a financial institution than a year ago (**Table 1**).

Participants were also asked to identify the three risks they would find most difficult to manage. Some of the top risks identified above were also generally seen as the most difficult for firms to manage (**Table 1**).

Probability of a high-impact event in the UK financial system

Survey participants were asked to report their view of the likelihood of a high-impact event affecting the UK financial system over the short and medium term. As in the July 2008 pilot survey, more than half judged this to be of medium likelihood over both horizons (**Chart A**) and more than a third thought the likelihood was high or very high in the medium term.

Table 1 Key risks to the UK financial system^(a)

	Impact May 2009 (July 2008) (per cent) ^{(b)(c)}	Manageability May 2009 (July 2008) (per cent) ^{(c)(d)}
Economic downturn	82 (61)	35 (42)
Borrower defaults	47 (12)	24 (6)
Pressures in funding markets	32 (33)	12 (21)
Regulatory and accounting changes	26 (27)	26 (12)
Credit conditions	26 (15)	3 (6)
Sovereign risk	26 (0)	6 (0)
Failure of financial institutions	24 (88)	15 (42)
Financial market dislocation	24 (30)	12 (9)
Operational risk	24 (30)	3 (15)
Lack of confidence in pricing, disclosure and ratings	21 (18)	12 (9)
Loss of confidence in authorities	21 (15)	9 (3)
Property prices	18 (45)	3 (21)
Derivatives/insurance markets	15 (18)	3 (18)
Infrastructure disruption	12 (12)	6 (9)

Sources: Bank of England *Systemic Risk Survey*, July 2008 and May 2009, and Bank calculations.

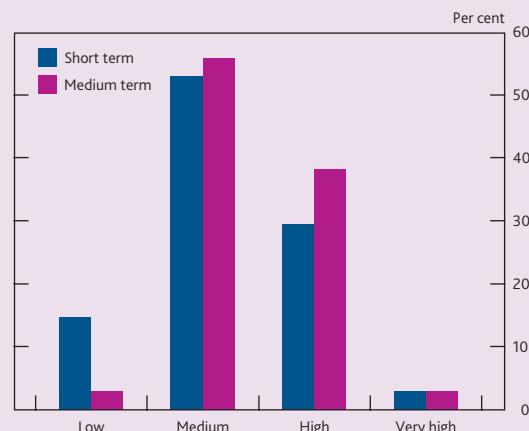
(a) Risks ranked highest to lowest on impact from May 2009 survey.

(b) Answers to question — Please list the risks that you believe would have the greatest impact on the UK financial system if they were to materialise in a plausible worst-case scenario. Please list the risks in order of potential impact.

(c) Per cent of respondents citing risk within top five.

(d) Answers to the question — Which of these risks would you find most challenging to manage as a firm?

Chart A Probability of a high-impact event in the UK financial system^(a)



Sources: Bank of England *Systemic Risk Survey*, May 2009 and Bank calculations.

(a) Answer to the question — In your view what is the probability of a high-impact event in the UK financial system in the short term and in the medium term? Five possible answers: very high; high; medium; low; very low. No response for very low.

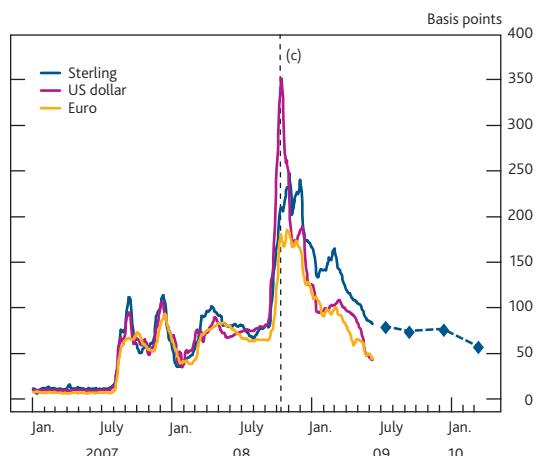
Confidence in financial system

Finally, survey participants were asked to report their overall confidence in the stability of the UK financial system over the next three years. Confidence was significantly lower than last summer, with a sharp decrease in those stating they were very confident (from 36% to 15% of respondents), and an increase in those who were not very confident (from 3% to 18%).

(1) This followed a successful pilot during last summer.

(2) The survey took place between 27 April 2009 and 15 May 2009. Thirty four market participants provided the Bank with their views. The survey was carried out by BMRB on behalf of the Bank.

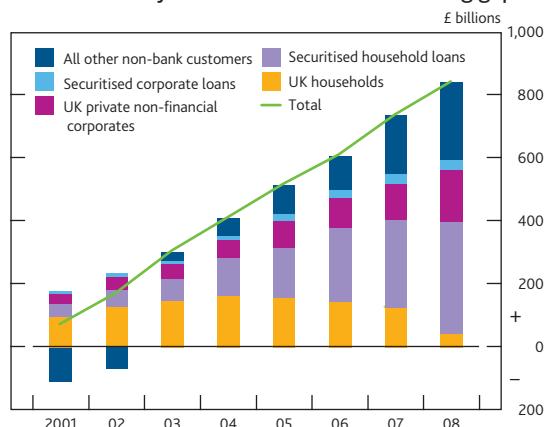
Chart 2.14 Three-month interbank rates relative to expected policy rates^{(a)(b)}



Sources: Bloomberg and Bank calculations.

- (a) Spread of three-month Libor to three-month overnight index swap (OIS) rates. Five-day moving average.
- (b) Dashed line shows sterling implied forward spreads derived from forward rate agreements and OIS from a range of maturities.
- (c) October 2008 Report.

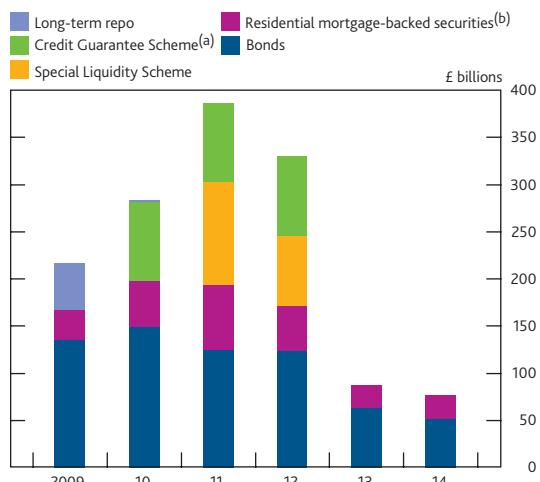
Chart 2.15 Major UK banks' customer funding gap^(a)



Sources: Dealogic, published accounts and Bank calculations.

- (a) Data exclude Britannia and Nationwide.

Chart 2.16 Major UK banks' maturing funding: selected wholesale liabilities



Sources: Bank of England, Bloomberg, Deutsche Bank and Bank calculations.

- (a) Shows the full limit for the Credit Guarantee Scheme allocated across three years in equal shares.
- (b) Excludes Britannia, Co-operative Bank and HSBC. Shows the date at which markets expect the residential mortgage-backed securities to be called.

UK banks have already announced that they will seek to sell parts of their business in order to refocus on their core activities. While improving balance sheets in the short run, this may raise questions about the future franchise value of some entities.

These balance sheet pressures — on both the assets and liabilities side — may be weighing on banks' ability to lend to households and companies at present. Their willingness to lend may be further affected by uncertainty about the economic outlook, as well as concerns about any future changes to liquidity and capital regulation.

As discussed in Section 1, growth in lending to UK businesses and households has fallen significantly in recent quarters. The ability of some sectors to lend, such as building societies, appears to have been particularly impaired (Chart 2.20). While there is significant dispersion across the major UK banks, annual growth in lending to UK households is at its lowest rate for more than a decade.

Overall corporate credit conditions remain tight, but recent reports by UK banks suggest that the availability of lending to companies may have marginally improved. This is consistent with the results of the Bank's 2009 Q1 *Credit Conditions Survey*.⁽¹⁾ A small balance of survey respondents also expected greater mortgage availability in the second quarter of this year.

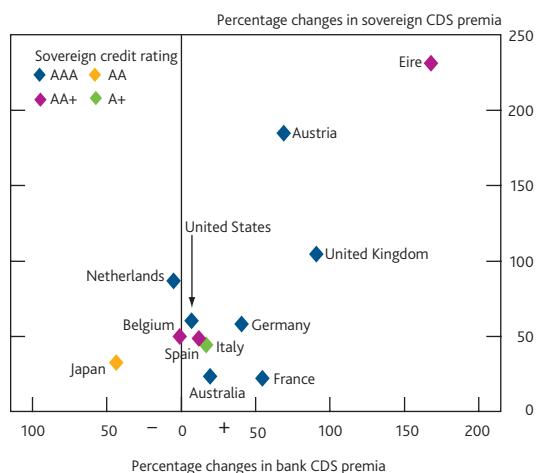
...though the demand for credit has also fallen...

At the same time, the demand for credit may be subdued in the near term. A key counterpart to increased growth in banks' leverage has been a steady build-up of debt in the household and corporate sectors over the past ten years. In the United Kingdom, this reached over 200% of GDP in 2008. Respondents to the Bank's *Credit Conditions Survey* suggest that households and companies have generally demanded less credit since the financial crisis began. The Survey also suggested that large non-financial companies may have demanded more credit in 2009 Q2. But this was partly the result of companies refinancing or restructuring existing facilities.

...and some companies are funding from capital markets.

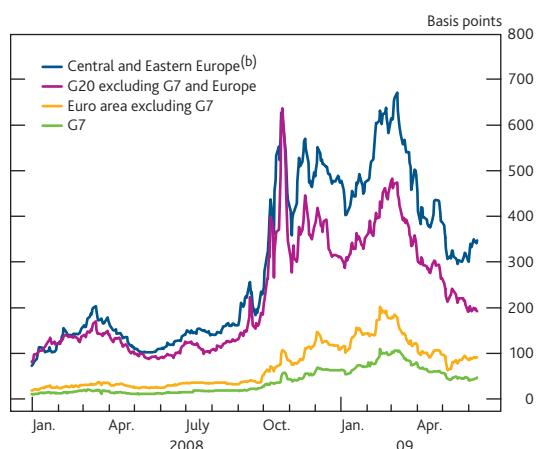
Market contacts suggest that some of this restructuring may have taken place through capital market issuance. In aggregate, UK non-financial companies have increased their use of bonds and equities to meet their financing needs in recent quarters (Chart 2.21). But capital markets are unlikely to provide significant funds to small and medium-sized companies, which remain reliant on bank lending for their funding.

(1) See the Bank's *Credit Conditions Survey*, available at www.bankofengland.co.uk/publications/other/monetary/creditconditions.htm.

Chart 2.17 Sovereign and bank CDS premia^(a)

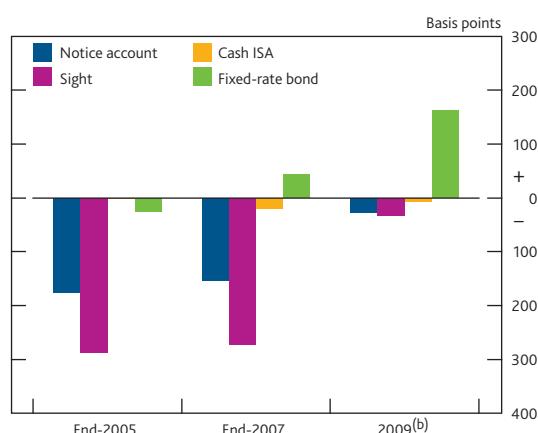
Sources: Bloomberg, Fitch Ratings Ltd, Moody's Investors Service, Standard & Poor's, Thomson Datastream and Bank calculations.

(a) Senior five-year CDS premia. Changes are since the October 2008 Report. Chart shows median premia for selected banks in each country.

Chart 2.18 Sovereign CDS premia^(a)

Sources: Thomson Datastream and Bank calculations.

(a) Senior five-year sovereign CDS premia. Chart shows the median premia for the countries in each group, for which data are available.
(b) As defined for IMF World Economic Outlook.

Chart 2.19 Retail deposit spreads^(a)

Sources: Bank of England and Bank calculations.

(a) Spread over Bank Rate, except for fixed-rate bonds where spread is over UK one-year swap rate.
(b) As at end-May 2009.

Further measures could be required.

In summary, while pressures on the major global banks have stabilised over the past few months, their balance sheets remain impaired. Banks' leverage remains high, with the possibility of further impairment of assets placing continued pressure on profitability and capital ratios. Future revenue generation will need to balance the desire to deleverage with the need to generate new business at profitable spreads.

At the same time, the major UK banks maintain a high and rising customer funding gap. The withdrawal of overseas funding and competition for domestic deposits has added to these funding pressures.

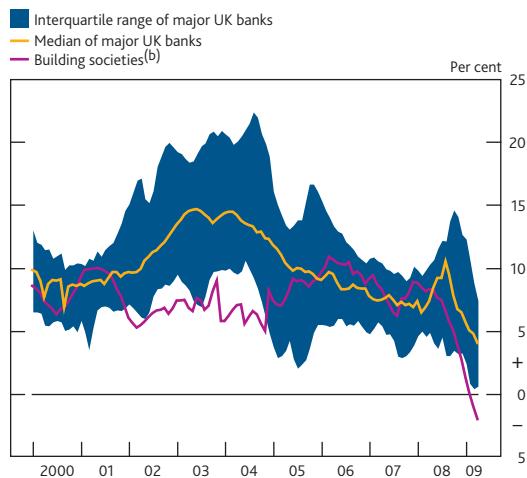
The experience of past financial crises is that lending levels have typically fallen (**Chart 2.22**). Against this backdrop, there is a risk that — in the event of further adverse macroeconomic or financial sector developments — banks may not supply sufficient credit to support growth in the economy. The commercial property market remains vulnerable and concerns persist over credit exposures of the international banking system to countries with large current account deficits (Box 2). On the funding side, further falls in cross-border lending and any increase in sovereign risk could cause banks to tighten credit conditions. This would flow back to the banks themselves and could conceivably prove a renewed threat to stability. In this event, there are a number of options that the authorities could pursue. These options vary according to the amount of burden sharing that takes place between the public and private sectors.

The public sector could extend the measures announced earlier in the year. But in countries where public sector indebtedness is already high, and where banking systems are large relative to the economy, markets may at some stage come to question the scale of any additional official sector support. At some point there would be a risk of fiscal injections raising sovereign risk and thereby amplifying, rather than dampening, pressures on the banking sector, for example in funding markets. While most countries are not yet at this point, it is a factor to weigh when assessing options.

Alternative options could share costs between the public and private sectors more evenly. The US authorities, for example, have proposed a Public-Private Investment Program, with joint contributions from private investors and the government to purchase loans and securities from banks. This option would allow banks to sell legacy assets, thereby helping to restore confidence in and reduce funding pressures on their balance sheets. The success of this scheme will depend, however, on whether a market price for assets can be found and on the ability and willingness of banks to recognise losses up front.

A third approach would be for banks to restructure their liabilities — for example, through the conversion of

Chart 2.20 Annual growth in major UK banks' and building societies' lending to UK households^(a)

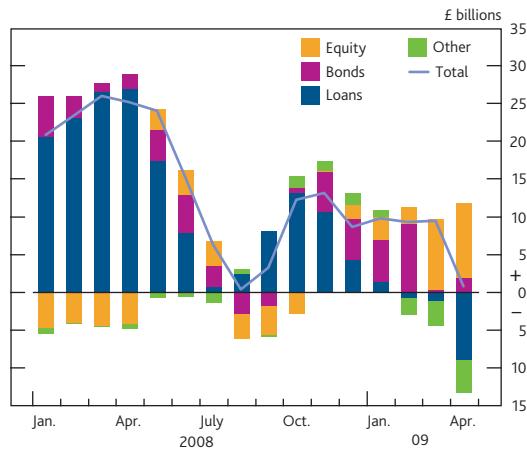


Sources: Bank of England and Bank calculations.

(a) Last data point is April 2009.

(b) Excludes Britannia and Nationwide.

Chart 2.21 Finance raised by UK non-financial companies^{(a)(b)}

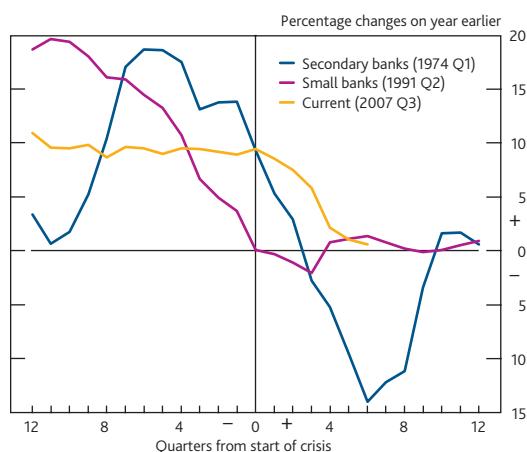


Sources: Bank of England and Bank calculations.

(a) The chart shows three-month changes in the level of financing.

(b) The total and loans series are seasonally adjusted, but the capital issuance data (equity, bonds and other) are not seasonally adjusted, hence the components may not sum to the total.

Chart 2.22 Lending in past UK financial crises^(a)



Sources: Bank of England, Global Financial Data, ONS and Bank calculations.

(a) Chart shows growth in real domestic lending to households and non-financial companies. The date used for the start of each crises is shown in parentheses.

subordinated debt to equity — or their whole balance sheets — for example, into a 'good bank' and a 'bad bank'. This has been a common way of dealing with banking sector problems in past financial crises (Box 3). Under one option, a well-capitalised 'good bank' could be created using the clean assets from the distressed bank. The 'good bank' should then be able to provide credit to the economy. In the scheme discussed in Box 6, shareholders and non-deposit creditors hold equity claims on the good bank. So the allocation of costs falls more heavily on private stakeholders, whose claims nevertheless have considerable potential upside.

In the medium term, policy measures need to be taken to improve the resilience of the financial system, so that it can sustain its critical economic functions without support. Section 3 discusses the key ways in which this can be achieved.

Box 6

Distributing the costs of financial crisis resolution

Outside of financial crises most banks are profitable. This protects depositors and allows banks to provide a stable flow of services to the real economy.

Banks' creditors receive interest compensating them for the risk in lending to banks, and banks' shareholders receive dividends and potential capital gains as compensation for providing risk capital. But in severe financial crises, the value of banks' future profits and legacy assets falls, while the nominal value of their debt liabilities is fixed.

The first line of defence should be profits and private capital. But if these options are not available, the cost of filling the 'hole' can be split in a number of ways, including among shareholders, creditors and governments. The distribution of these costs will need to balance a number of objectives, such as containing systemic risk, minimising the use of taxpayers' funds and promoting market discipline.

Balance sheet restructuring proposal

A proposal that has received recent attention is to restructure a distressed bank's balance sheet into a 'good bank' and a 'bad bank'. Similar schemes have been used in previous financial crises to deal with problem assets (see Box 3). They have also been announced during the current crisis by the authorities in Ireland and Germany. An in-principle good bank/bad bank proposal has been advocated recently by academics including Bulow and Klemperer,⁽¹⁾ and Hall and Woodward.⁽²⁾ There are several variations on this scheme, including debt-for-equity swaps and debt write-downs.

Table 1 illustrates this type of scheme using a stylised balance sheet. The good bank takes the 'clean' assets from the integrated bank as its assets and only the deposits from the integrated bank as its liabilities.

The bad bank has the 'toxic' assets of the integrated bank and all of the equity in the good bank. The liabilities are non-deposit liabilities and equity from the integrated bank. The key innovation in the design of this scheme is giving the bad bank all of the equity in the good bank. In effect, non-deposit creditors in the integrated bank could ultimately become equity investors in the good bank, in the event of the bad bank's insolvency. This may increase the expected value of debt holders' claims because the cleansed good bank offers much greater potential upside than the integrated bank. Following this restructuring, the good bank will be better

Table 1 Illustration of bank restructuring proposal

Integrated bank			
Assets		Liabilities	
Clean assets	80	Deposits	50
Toxic assets	20	Non-deposit creditors	30
		Subordinated debt	15
		Equity	5
	100		100
<i>Equity/assets: 5%</i>			
Good bank			
Assets		Liabilities	
Clean assets	80	Deposits	50
		Equity	30
	80		80
<i>Equity/assets: 37.5%</i>			
Bad bank			
Assets		Liabilities	
Toxic assets	20	Non-deposit creditors	30
Equity in good bank	30	Subordinated debt	15
		Equity	5
	50		50
<i>Equity/assets: 10%</i>			

capitalised relative to the integrated bank, potentially supporting lending to the real economy, and its deposits are also better protected. The bad bank is likely in practice to be a fund manager of the bad assets.

Under this scheme, the distribution of costs of resolving a financial crisis falls more heavily on private stakeholders, reducing the government's fiscal burden. Those who benefit from providing capital and funding outside of financial crises contribute significantly to the costs of resolution. This helps to reinforce market discipline on providers of capital and funding to banks. The possibility of distributing the cost of government support back to the banking system, rather than the general taxpayer, is discussed further in Section 3.5.

Feasibility

While these schemes might have a number of attractions in principle, their appropriateness will depend on the resolution arrangements in different jurisdictions and on insolvency rules. For example, Hall and Woodward illustrate their scheme using a US bank, and the United States has a form of depositor preference.⁽³⁾ This could make such a restructuring easier in the United States than in the United Kingdom because the ranking of creditors is maintained. The benefits should also be weighed against the risks, which include the impact on banks' funding of a debt restructuring, the operational complexity of the exercise, and whether confidence can be maintained.

(1) Bulow, J and Klemperer, P (2009), 'Reorganising the banks: focus on the liabilities, not the assets', www.voxeu.org/index.php?q=node/3320.

(2) Hall, R and Woodward, S (2009), 'The right way to create a good bank and a bad bank', <http://woodwardhall.wordpress.com/2009/02/23/the-right-way-to-create-a-good-bank-and-a-bad-bank/>.

(3) Under depositor preference, depositors' claims on the assets of a failed bank rank higher than general creditors.

Changes needed to increase the resilience of the financial system

- *Stronger market discipline:* Market discipline should be strengthened significantly.
- *Greater self-insurance:* Financial institutions' own resources should be the first line of defence against financial pressures and need strengthening.
- *Improved management of risks arising from interactions among firms and with the real economy:* The authorities need better information and means of managing interconnections between financial institutions and between the financial system and the real economy.
- *Banks should not be too big or complex:* The size and structure of the financial system needs to be compatible with maintaining financial stability.
- *Clear principles for public safety nets:* Where self-protection fails, a safety net is needed that encourages prudent behaviour and contains risks to the public finances.

3 Building a more resilient financial system

The financial system should be capable of absorbing shocks from the economy and from financial markets rather than generating them. It also needs to be much better able to support economic activity on a sustainable basis, without relying on large-scale publicly funded support to weather shocks. This will require fundamental changes to the way the financial sector is regulated, supervised and manages its own affairs.

This section sets out five areas where the Bank believes change is needed, though it is by no means an exhaustive list of all reforms that are required. The Bank will continue to develop this thinking in future Reports and in speeches.

Stronger market discipline (Section 3.1) through:

- richer, more consistent and more timely disclosure, including intra-period data and more granular information on balance sheet risks;
- creating a credible threat of closure/wind-down for all financial firms; and
- risk-based, pre-funded deposit insurance.

Greater self-insurance: Financial institutions' own resources should be the first line of defence against financial pressures and need strengthening (Section 3.2) through:

- larger, higher-quality capital buffers consisting of common equity;
- larger liquidity buffers comprising high-quality government bonds;
- realistic and tested contingent funding and capital plans;
- firms developing wind-down plans; and
- more effective cross-border co-operation on crisis management.

Improved management of risks arising from interactions among firms and with the real economy (Section 3.3) through:

- better information on connections between firms in the financial network;
- capital and liquidity buffers gauged to firms' systemic importance;
- more realistic stress testing that factors in feedback effects from firms' responses to shocks;
- expansion of the use of central counterparties for the clearing of vanilla over-the-counter (OTC) instruments;
- strengthening the structure of critical markets, including through more trading on exchange or on similar platforms;
- use of countercyclical prudential policy in order to limit the growth of financial imbalances; and

- developing an international monetary system that limits the build-up of international imbalances.

Banks should not be too big or complex: The size and structure of the financial system needs to be compatible with maintaining financial stability (Section 3.4) through:

- simpler, more transparent legal structures that are capable of being supervised and resolved; and
- potential changes to the structure or size of the banking system.

Clear principles for public safety nets: Where self-protection fails, a safety net is needed that encourages prudent behaviour and contains risks to the public finances (Section 3.5) through:

- clear principles guiding the authorities' interventions in financial markets; and
- principles for public sector provision of capital support.

All of these initiatives are designed to improve the resilience of the financial system as a whole, not just individual firms. This systemic perspective has perhaps not always shaped policy around the world sufficiently in the past. It needs appropriate weight and influence in decision-making going forward.

Taken together, these initiatives will mean additional costs for the financial system. But these must be weighed against the costs of financial instability, in terms of its adverse impact on public finances, on wealth and on economic growth. These measures are for the medium term and must not compromise economic recovery.

Stronger market discipline

Market discipline should be strengthened significantly through:

- richer, more consistent and more timely disclosures by banks;
- making the threat of closure/wind-down credible for all financial firms via resolution regimes; and
- a risk-based, pre-funded deposit insurance system.

3.1 Stronger market discipline

Market discipline should be strengthened through improved disclosure...

In the Bank's view, there is scope to strengthen market discipline on financial firms, thereby helping constrain their excessive risk-taking activities. Effective market discipline requires adequate disclosure by financial institutions. There is clear room for improvement in this area by financial institutions in the United Kingdom and internationally.

According to World Bank analysis,⁽¹⁾ prior to the crisis the United Kingdom was only middle-ranked among countries in terms of the quality of banks' public disclosures. The lack of consistent and timely information on banks' exposures has been a key factor undermining confidence during the crisis. Both the Committee of European Banking Supervisors and the International Monetary Fund (IMF) have highlighted this problem.

⁽¹⁾ See Huang, R (2006), *Bank disclosure index: global assessment of bank disclosure practices*, World Bank, September.

Table 3.A Liquidity risk disclosures for the ten largest global banks in 2008^{(a)(b)(c)}

	Disclosed every quarter	Disclosed in the middle of the year	Disclosed at the end of the year
Qualitative information about liquidity risk management	2.5	6.5	10
Qualitative information about liquidity risk stress testing	0.5	1	5.5
Quantitative information about liquid asset holdings	2	5	8.5
Quantitative information about maturity breakdown of liabilities	0.5	1.5	8.5
Quantitative information about counterparty breakdown of liabilities	0	0	3
Total number of banks reporting for each time period	3	10	10

Sources: Bankscope published by Bureau van Dijk Electronic Publishing, published accounts and publicly available regulatory filings.

(a) Based on total assets for end-2008.

(b) According to the banks' accounting years.

(c) The table shows the number of banks disclosing in each category at each frequency level. A score of 0 is assigned for each category where no information was disclosed. A score of 0.5 is assigned for each category that was somewhat disclosed, defined as either partial quantitative information provided (eg maturity breakdown of some liabilities), or a somewhat developed qualitative description (eg mention that liquidity risk stress tests are conducted). A score of 1 is assigned for each category that is disclosed and well developed (eg specific description of liquidity risk stress tests conducted).

Disclosures have been both more frequent and granular since the crisis began. The Bank believes that these higher standards should be maintained and augmented in the period ahead.

Balance sheet disclosures by UK financial institutions might usefully be more frequent — say, quarterly rather than six-monthly. Disclosures should become more standardised, to allow for greater comparability across firms and to allow the construction of consistent system-wide aggregates. And balance sheet disclosures themselves should be both more granular and more forward looking. Particular areas for improvements would include:

- greater disclosure on approaches to valuation of fair-value assets and the marks used;
- more information on liquidity risk profiles (**Table 3.A**);
- better disclosure of stress tests and sensitivity analyses;
- improved disclosures on the legal structure of major financial groups and the activities and risk positions of key group affiliates; and
- better information on exposures between financial institutions, on and off balance sheet.

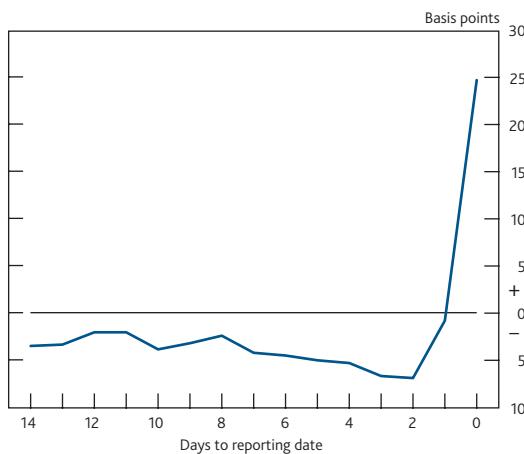
The authorities should also consider requiring banks to publish period averages and highs and lows, as well as end-period data.⁽¹⁾ It would reduce the significance to banks of the end of the reporting period and it might reduce the adverse impact on money markets due to window dressing strategies around that time (**Chart 3.1**).

Longer term, the Bank encourages a debate on whether regulatory data should be disclosed to the markets. This is already standard practice in the United States and some other countries.⁽²⁾ The full implementation of Pillar 3 of Basel II will provide a much richer array of data on banks' risk exposures (**Table 3.B**).⁽³⁾ Disclosures of such data could improve the quality of financial markets' risk-pricing and thus the degree of discipline on banks' risk-taking activities.

...through creation of a credible threat of closure or wind-down...

A second means of enhancing market discipline is by ensuring that there is a credible threat of closure or wind-down for all financial firms. If banks, shareholders or creditors are protected from losses, banks are more likely to take excessive risks and their incentives to monitor and discipline management are weakened.

Chart 3.1 SONIA-Bank Rate spread^(a) prior to UK banks' reporting dates^(b)



Source: Wholesale Market Brokers' Association.

(a) Average spread on individual days prior to reporting dates between 2006 and 2008.

(b) UK banks report semi-annually in June and December.

Table 3.B Enhancements to Pillar 3 supervisory review process

The Basel Committee has recently proposed revisions to existing Pillar 3 requirements to focus on the following six areas:

- securitisation exposures in the trading book;
- sponsorship of off balance sheet vehicles;
- the Internal Assessment Approach for securitisations and other asset-backed commercial paper liquidity facilities;
- resecuritisation exposures;
- valuation with regard to securitisation exposures; and
- pipeline and warehousing risks with regard to securitisation exposures.

Source: Basel Committee on Banking Supervision (2009).

(1) Some high/low and period average trading book VaR data are reported quarterly. In the United States, the leverage ratio for banks is based on a quarterly average of total assets.

(2) Examples of quarterly reports based on regulatory data include: by the Federal Deposit Insurance Corporation banks' and thrifts' balance sheets and earnings; by the Office of the Comptroller of the Currency US commercial banks' and bank holding companies' derivatives activities; and by the Office of Thrift Supervision thrifts' interest rate risk.

(3) The Financial Stability Board (FSB) has also recommended that firms should strengthen risk disclosures and that supervisors should improve risk disclosure requirements under Pillar 3 of Basel II.

Table 3.C Dunfermline Building Society

The Bank of England used the Special Resolution Regime (SRR) provisions of the Banking Act 2009 for the first time in the resolution of Dunfermline Building Society.

Over the weekend of 28–29 March, the Bank of England led an auction process for certain of Dunfermline's assets and liabilities. This process saw Nationwide, as the successful bidder, acquire Dunfermline's retail and wholesale deposits, branches, head office and originated residential mortgages (other than social housing loans and related deposits).

Dunfermline's social housing portfolio (together with related deposits) was temporarily transferred to DBS Bridge Bank Ltd, a 'bridge bank' owned and controlled by the Bank of England, to provide time to reach a permanent solution. On 17 June, it was announced that Nationwide had been selected as the preferred bidder for the social housing loans and related deposits held by DBS Bridge Bank Ltd. Since its transfer to DBS Bridge Bank Ltd, the social housing business has been carried on in the usual course for its customers.

The remainder of Dunfermline's business, including commercial loans, acquired residential assets, subordinated debt and most treasury assets, was placed into the Building Society Special Administration Process.

The Bank and the other tripartite authorities are drawing on recent experiences, including Dunfermline, to continue preparation including:

- Considering additional information relevant to resolution which it will be necessary to collect from firms on an ongoing basis.
- Enhancing information-sharing arrangements between the Bank and the FSA.
- A revised protocol for in-crisis co-ordination between the tripartite authorities to reflect the changes brought about by the Banking Act.

Summary representation of Dunfermline resolution

Assets	Liabilities
Originated residential mortgages → Nationwide	Retail and wholesale deposits → Nationwide
Social housing portfolio → DBS Bridge Bank Ltd	Deposits associated with social housing portfolio → DBS Bridge Bank Ltd
Commercial loans and mortgages → Left in administration	Subordinated debt and general reserve → Left in administration
Other assets → Either transferred to Nationwide/ DBS Bridge Bank Ltd or left in administration	Other liabilities → Either transferred to Nationwide/ DBS Bridge Bank Ltd or left in administration

This summary table sets out only in general terms where the majority of each asset/liability class resides following the resolution. The size of the blocks in the table does not reflect the relative sizes of classes of assets and liabilities. In addition, the description of each asset/liability is generic and does not reflect the actual terminology in the documentation effecting the resolution.

Table 3.D Changes to deposit insurance schemes in selected countries

	Funding method ^{(a)(b)}	Coverage per eligible depositor, May 2009
Belgium	<i>Ex-ante</i>	Increased to €100,000
Germany	<i>Ex-ante</i> and risk-based premium (for voluntary schemes)	Proposed increase to €50,000 minimum by June 2009, and €100,000 by Dec. 2010 and abolition of co-insurance
Netherlands	<i>Ex-post</i>	Increased to €100,000 until October 2009 and abolition of co-insurance
Sweden	<i>Ex-ante</i> and risk-based premium	Increased to SEK500,000
Switzerland	<i>Ex-post</i>	Increased to CHF100,000
United Kingdom	<i>Ex-post</i>	Increased to £50,000 and abolition of co-insurance
United States	<i>Ex-ante</i> and risk-based premium	Increased to US\$250,000 reverting to US\$100,000 in 2014. No limit for non interest bearing transaction accounts until 2010

Sources: Individual country schemes.

(a) Under *ex-ante* funding, deposit insurance premia are collected regularly to contribute to building and maintaining a deposit insurance fund. Under *ex-post* funding, premia are collected to meet the concurrent funding requirements of the deposit insurer that arises from compensation payments.

(b) Risk-based premia are typically adjusted to take into account premium-paying banks' risk of failure.

The creation of a Special Resolution Regime (SRR) in the United Kingdom under the Banking Act 2009 has increased the chances of orderly failure of deposit-taking institutions. The way in which the Bank, working with the Financial Services Authority (FSA), resolved Dunfermline Building Society in March 2009 is arguably testament to that. **Table 3.C** provides more detail. It is likely that the SRR resolution of Dunfermline, which resulted in subordinated debt being left in administration, was a factor which led those institutions that held subordinated debt in West Bromwich Building Society to convert to profit participating deferred shares. This suggests that the existence of SRR tools can influence behaviour even outside a formal resolution.

But a credible threat of closure is inherently more difficult for firms which are large, complex, or which have international reach. There is also an open question in the United Kingdom about whether a different (from the normal corporate insolvency) regime is needed for non-depository institutions to ensure the continuous provision of economically significant services. For example, HMT is currently consulting on developing effective resolution arrangements for investment banks. There may also be a case for a special regime for market infrastructures that could pose a threat to stability.

...and through risk-based premia for deposit insurance.

The UK authorities have substantially strengthened the protection of depositors since the onset of the banking crisis, as have other countries (**Table 3.D**).⁽¹⁾ And work is under way to improve the speed of payout. This should increase depositor confidence and help to avert future bank runs. But the existence of an effective deposit insurance scheme will tend to weaken insured depositors' monitoring incentives. The importance of limiting this moral hazard is recognised in

(1) Deposit insurance limits have been increased and co-insurance removed. The Special Resolution Regime and Bank Insolvency Procedure, introduced under the Banking Act 2009, are designed to give depositors in a failed bank speedy access to their funds.

joint guidance issued by the Basel Committee on Banking Supervision (BCBS) and the International Association of Deposit Insurers.⁽¹⁾

Charging higher deposit insurance premia to riskier banks would go some way towards correcting this distortion. These premia should be collected every year, not only following a bank failure, so that risky banks incur the cost at the time when they are taking on the risk. That would also allow a deposit insurance fund to be built up. This could be used, as in the United States and other jurisdictions, to meet the costs of bank resolutions. It would also reduce the procyclicality of a pay-as-you-go deposit insurance scheme, which places greatest pressures on banks' finances when they can least afford it. For these reasons, the Bank favours a pre-funded, risk-based deposit insurance scheme.

Greater self-insurance

Financial institutions' own resources should be the first line of defence against financial pressures through:

- higher levels of bank capital, consisting of common equity;
- capital buffers built up in periods of strong earnings to absorb losses in times of financial stress;
- reduced reliance on rating agencies;
- larger liquidity buffers, comprising government bonds;
- contingent capital plans for accessing capital in times of stress;
- contingency funding plans, including testing use of the Discount Window Facility;
- contingent wind-down plans in the event of failure or restructuring;
- institutions providing banking services being regulated as banks; constant net asset value MMMFs should be regulated as banks or forced to convert to variable net asset funds; and
- improved cross-border crisis management arrangements.

3.2 Greater self-insurance

Crisis events have revealed that the financial system needs to insure itself to a much greater extent than in the past. In part because of the existence of public insurance, banks will tend to underinsure against their own failure. And they systematically underinsure relative to the social costs of their failure. So regulation is typically required to ensure that appropriate standards of resilience are set. As a by-product, this counters the tendency for financial institutions to factor in official sector support, which distorts private risk-taking incentives. Greater self-insurance, enforced through tighter regulation, is required for firms' capital, liquidity and wind-down plans. The institutional scope of regulation needs also to be reconsidered.

Aggregate levels of capital in the banking system need to rise...

Levels of capital in the banking system need to be sufficient to ensure that banks can survive adverse economic conditions and continue to support the real economy. A clear lesson from the crisis is that banks' levels of capital were inadequate to meet this objective and so need to increase in the medium term.

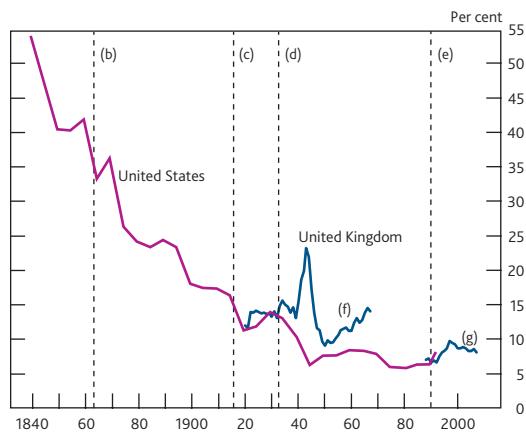
Some increase in levels of capital will be delivered as a result of improvements to the risk calibration of Basel II. For example, the BCBS has proposed changes to increase capital held against trading book exposures, including for complex structured credit products.

The Bank believes that there needs to be a fundamental reassessment of overall levels of capital held in the banking system. In the *Turner Review*, the FSA has already expressed its view that minimum capital levels should increase significantly.⁽²⁾ Certainly, there are historical precedents for the banking system holding substantially higher levels of

(1) Basel Committee on Banking Supervision and International Association of Deposit Insurers (2009), *Core principles for effective deposit insurance systems*, June.

(2) Financial Services Authority (2009), *The Turner Review: a regulatory response to the global banking crisis*, March.

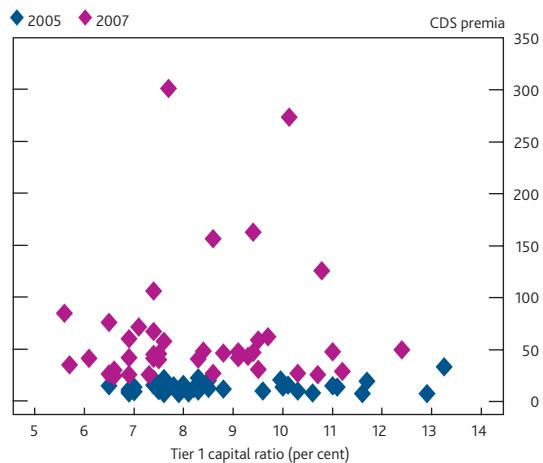
Chart 3.2 Long-run capital levels for UK and US banks^(a)



Sources: Berger, A, Herring, R and Szegö, G (1995), 'The role of capital in financial institutions', *Journal of Banking and Finance*, pages 393–430; United Kingdom: Billings, M and Capie, F (2007), 'Capital in British banking 1920–1970', *Business History*, Vol. 49(2), pages 139–62; British Bankers' Association; and published accounts.

- (a) US data show equity as a percentage of assets (ratio of aggregate dollar value of bank book equity to aggregate dollar value of bank book assets). UK data show risk-weighted Tier 1 capital ratios for a sample of the largest banks.
- (b) National Banking Act 1863.
- (c) Creation of Federal Reserve 1914.
- (d) Creation of Federal Deposit Insurance Corporation 1933.
- (e) Implementation of Basel risk-based capital requirements 1990.
- (f) From Billings and Capie (2007).
- (g) BBA and Bank calculations. This series is not on exactly the same basis as 1920–70, so comparison of levels is merely indicative.

Chart 3.3 Five-year CDS premia versus Tier 1 capital ratio^(a)



Sources: Bankscope published by Bureau van Dijk Electronic Publishing and UBS Delta (Markit Partners).

- (a) Sample includes 40 of the 100 largest banks in the G10 by total assets, due to data availability.

capital than at present (**Chart 3.2**). The BCBS has committed to review the regulatory minimum level of capital in 2010.

Higher returns on equity compared with debt suggest that raising the level of bank capital could be expensive for banks. But the cost should not be overestimated. As a bank raises more equity and reduces its debt, the probability of insolvency falls and with it the cost of debt. In a world of frictionless markets, the fall in the cost of debt would exactly offset the shift towards more expensive equity finance, leaving banks' overall cost of finance unchanged (the Modigliani-Miller theorem).⁽¹⁾

In practice, there are of course frictions which mean that requiring banks to hold more capital may not be costless. But some of the most important frictions may themselves be distortions. For example, the cost of debt may be less sensitive to the bank's financial strength than it should be because of the probability which unsecured creditors attach to the bank receiving public support. As **Chart 3.3** shows, there is not a strong relationship in practice between banks' capital positions and the cost of debt (as proxied by credit default swap (CDS) premia).

...should incorporate countercyclical buffers,...

Capital buffers have also proved insufficient to guard against cyclical fluctuations in the economy, thereby exacerbating adverse feedbacks between the financial system and the real economy. Banks need to build up larger capital buffers during periods of strong earnings growth, which can then be used to absorb losses during periods of economic and financial stress.⁽²⁾ From a technical standpoint, this could be achieved in many different ways — for example, through dynamic provisions (which are not technically part of banks' Tier 1 capital) or through dynamic reserves (which are).⁽³⁾ The key is that these requirements should come in addition to banks' minimum capital requirements, with banks not allowed to 'gear up' on, that is leverage their balance sheet on, the additional capital they accumulate in good times.

...need to comprise common equity alone...

Capital should be used to absorb unexpected losses, thus enabling a bank to continue as a going concern. But over time the quality of banks' regulatory capital has been steadily diluted, as subordinated debt and hybrid instruments have substituted for common equity. This trend has until recently been particularly evident among UK banks (Box 4).

The dilution of capital reduces banks' ability to absorb losses. Capital needs to be permanently available to absorb losses and banks should have discretion over the amount and timing of

(1) Modigliani, F and Miller, M H (1958), 'The cost of capital, corporation finance and the theory of investment', *American Economic Review*, Vol. 48, pages 261–97.

(2) This is consistent with the recommendations of the FSB in its April 2009 *Recommendations for addressing procyclicality in the financial system*.

(3) The FSA's Turner Review contains a useful discussion on this.

distributions. The only instrument reliably offering these characteristics is common equity. For that reason, the Bank favours a capital ratio defined exclusively in these terms — so-called core Tier 1 capital. This has increasingly been the view taken by market participants during the crisis, which is one reason why a number of global banks have undertaken buybacks and exchanges of hybrid instruments (Box 4).

Pre-committed capital insurance instruments and convertible hybrid instruments (debt which can convert to common equity) may also satisfy these characteristics. As such, these instruments could also potentially form an element of a new capital regime, provided banks and the authorities have appropriate discretion over their use. Taken together, these instruments might form part of banks' contingent capital plans. There is a case for all banks drawing up such plans and regularly satisfying regulators that they can be executed. Subordinated debt should not feature as part of banks' contingent capital plans, even though it may help to protect depositors in an insolvency.

...and banks should rely less on external credit ratings.

External ratings are used to determine banks' capital requirements under the Standardised Approach of Basel II, and for securitisation exposures under the Internal Ratings Based Approach. This reduces the incentives for firms to perform their own independent internal assessment of risks. It can also result in lower than optimal levels of capital if credit rating agencies' (CRAs) methodologies and models fail to reflect credit risk accurately. That was the case for structured finance products during the current crisis, as discussed in previous Reports (see, for example, pages 54–55 and Box 6 of the October 2007 Report).

The Joint Forum has published a stock-take of the use of credit ratings, including ways of reducing any adverse incentive effects of their use in regulation. In addition, the European Union will be introducing regulation later this year intended to deal with CRAs' conflicts of interest, the quality of their methodologies and disclosure practices. A reduction in the use of external ratings in regulatory rules would encourage firms to improve their own due diligence and risk models. For that reason, the Bank encourages this migration.

Firms' resilience to liquidity risk needs to improve...

As previous Reports have highlighted, and as the crisis has demonstrated, regulatory rules for liquidity risk need to be strengthened materially. The FSA's proposals published in December represent a significant step forward.⁽¹⁾ But it is important that higher standards for managing liquidity risk are also agreed internationally. The BCBS took a significant step towards this goal in 2008 with the publication of *Principles for*

(1) Financial Services Authority (2008), CP08/22: *Strengthening liquidity standards*, December.

sound liquidity risk management and supervision.⁽¹⁾ It continues to pursue actively further agreement on a harmonised international standard.

...through holding larger buffers of reliably liquid assets...

A key in protecting banks, and the wider financial system, against acute periods of liquidity stress is the maintenance of a large buffer of high-quality, unencumbered securities that can reliably be traded or exchanged in private markets, including in stressed circumstances. In many economies, that would mean the buffer should focus on government bonds. The guidance issued by the BCBS and the FSA's proposals for reform of liquidity regulation in the United Kingdom support this definition of the buffer, and are strongly endorsed by the Bank.

It is essential that there is no automatic link drawn between eligibility in central bank operations and definition of the regulatory liquidity buffer. A regulatory regime that defined liquid assets as those that were central bank eligible, but were not reliably liquid in private markets, would imply a reliance on central banks as liquidity providers of first resort rather than last. Knowing this, the incentives for firms to manage their liquidity risk prudently would be reduced, with a commensurate increase in the risk of financial instability.

Chart 3.4 shows a long-term decline in banks' holding of liquid assets in the United Kingdom. The FSA's proposals make clear that banks' liquidity buffers have been too low and must increase substantially once normal conditions in funding markets are restored. The required size of the buffer should depend on the liquidity risk that each firm runs across its whole balance sheet. That will provide incentives for firms to manage their liquidity risk prudently — for example, to maintain a prudent funding maturity structure relative to their asset base and contingent commitments.

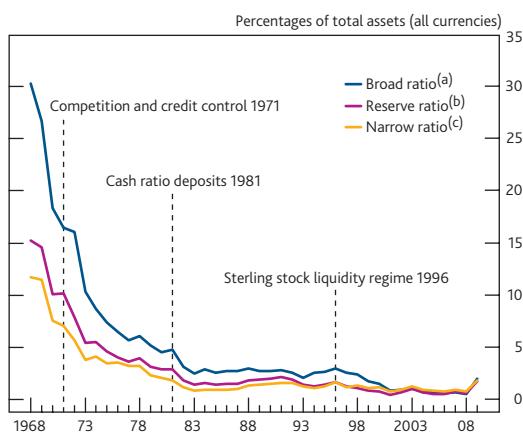
...and ensuring that contingency funding plans can be used in times of stress.

Firms should maintain contingency funding plans and should test them regularly. For example, firms should periodically turn over a meaningful share of their liquid assets buffer in the market and should test/use regularly central bank facilities such as the Bank's Discount Window Facility (DWF). This will reduce the potential for these actions — when needed in periods of stress — to attract negative reaction in the market. These contingent liquidity plans are an essential self-insurance device and should regularly be reviewed by regulators and central banks to ensure they are up to date and operational.

Firms should actively consider and plan for their own failure...

The Bank believes firms should also develop and maintain contingency plans for dealing with their own wind-down or

Chart 3.4 Sterling liquid assets relative to total asset holdings of UK banking sector



Sources: Bank of England and Bank calculations.

- (a) Cash + Bank of England balances + money at call + eligible bills + UK gilts.
- (b) Proxied by: Bank of England balances + money at call + eligible bills.
- (c) Cash + Bank of England balances + eligible bills.

(1) Basel Committee on Banking Supervision (2008), *Principles for sound liquidity risk management and supervision*, September.

restructuring in the event of problems. In effect, this would be asking banks to 'write a will'. The authorities should review these plans regularly to ensure they are up to date and feasible. Resolution authorities and insolvency practitioners should specify what information they would expect to see in these plans. Firms should provide the data underlying these plans to the authorities on an ongoing basis. They should be based on information on a legal entity, rather than business line, basis and should include information that could be used by insolvency practitioners or resolution authorities in a wind-down.

Developing contingent wind-down plans could help to incentivise firms to avoid complex group structures and discourage practices, such as not segregating clients' assets and funds from those of the firm, that make wind-down more difficult and costly. They would force management to contemplate failure in good times and would thus encourage them to prepare better for risks. They would also provide the authorities with a richer data set with which to assess the systemic impact of a firm's failure. Disclosing wind-down plans would mean investors would be less likely to adopt investment strategies that assume the liabilities of large banks have government support.

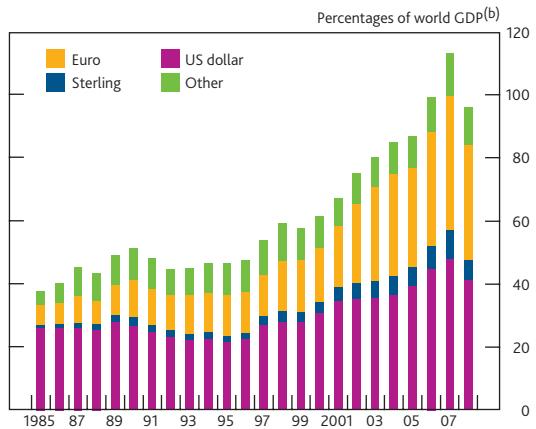
The *Principles for cross-border co-operation on crisis management*, agreed by the Financial Stability Board (FSB) in April 2009, recognise the need for firms to develop wind-down plans and for the authorities to review them.⁽¹⁾ The Bank strongly supports this initiative.

...and robust international co-ordination arrangements are a priority.

Cross-border banking activity has roughly doubled over the past decade (**Chart 3.5**). UK-resident banks in aggregate hold 50% of their assets abroad. These developments pose additional challenges for resolution. Practically, there is a need to collect and collate information from a range of foreign authorities and to co-ordinate a timely intervention involving multiple authorities, often in different time zones. Legally, different regimes may create frictions in implementing a co-ordinated resolution. And because national authorities are each accountable to their own fiscal authorities, incentives may not necessarily be aligned. During the recent crisis, there have been renewed lessons about the importance of international co-operation.

Recommendations to address some of these challenges were made in a 2001 report by an FSF G10 Task Force on the Winding Down of Large and Complex Financial Institutions. A number of recent cases of distress at cross-border banks have highlighted their ongoing importance. Recognising this, the FSB's *Principles for cross-border co-operation on crisis*

Chart 3.5 BIS reporting banks' cross-border claims^(a)



Sources: BIS locational banking statistics by residence and World Bank World Development Indicators.

(a) Cross-border claims are the sums of cross-border assets and liabilities of all BIS reporting banks.

(b) 2008 world GDP based on forecast by World Bank.

(1) Financial Stability Board (2009), *Principles for cross-border co-operation on crisis management*, April.

Table 3.E Financial Stability Board (FSB)^(a) Principles for cross-border co-operation on crisis management

The FSB Principles cover three types of co-ordination arrangements:

- (a) **Common support tools**, to develop a common language/expectations that countries can draw on in preparing for and managing a crisis. As well as the principles themselves, under the FSB a group will develop: a list of key data that authorities will share; a systemic impact assessment framework; an 'experience library' that pools lessons from senior policymakers who have had to deal with distress in cross-border firms recently; and a generic crisis preparations template/menu that can be used when discussing specific firms.
- (b) **Firm-specific crisis preparation discussions**: relevant authorities from key countries that have an interest in a specific firm will meet at least annually to discuss the specific barriers that they might face in co-ordinating action in the event of distress at that firm. These crisis preparations groups will include supervisors, central banks and finance ministries, for each bank that has an FSB core supervisory college.
- (c) **In-crisis co-ordination principles**: in handling a financial crisis, authorities will look for internationally co-ordinated solutions that take account of the impact of the problem on other countries. They will look to share information as freely as possible, including assessments of systemic impact, from an early stage, and to discuss national measures and share plans for public statements where a fully co-ordinated solution is not possible.

The full version of the principles is available at:
www.financialstabilityboard.org/publications/r_0904c.pdf.

Source: Financial Stability Board (2009), *Principles for cross-border co-operation on crisis management*, April.

(a) The FSB was called the Financial Stability Forum when the principles were published.

management provide a systematic framework for improving cross-border preparations for a financial crisis (**Table 3.E**). The G20 Heads of Government agreed at their April summit that implementation of the FSB principles should begin immediately. Specifically, supervisors, central banks and finance ministries from relevant countries need to engage in *ex-ante* discussions to understand the barriers they may face in resolving specific cross-border firms.

Appropriate standards should be set for institutions performing 'bank-like' functions...

Measures to strengthen regulation and supervision will inevitably also increase avoidance incentives. Left unaddressed, this potentially poses risks for the future. Money market mutual funds (MMMFs) and structured investment vehicles (SIVs) are just two examples from the recent crisis of entities which contributed importantly to the build-up of risk in the financial system, but were not appropriately regulated.

By offering to redeem their liabilities at par and effectively on demand, constant net asset value MMMFs in effect offer banking services to investors, without being regulated accordingly. The majority of the global industry comprises US domestic funds, with over US\$3 trillion under management. During the crisis, as fears grew that these funds would not be able to redeem liabilities at par — so-called 'breaking the buck' — official sector interventions to support MMMFs were required. To guard against a recurrence, such funds need in future either to be regulated as banks or forced to convert into variable net asset value funds.⁽¹⁾

...and institutions posing potential systemic threats.

At present, regulation of hedge funds or other investment vehicles is indirect, either through authorisation of investment managers or restrictions on the providers of leverage to the funds. The current debate centres on whether to enhance these arrangements — for example, by regulating hedge funds themselves directly. The overarching aim should be to give regulators the ability, directly or indirectly, to control leverage in the financial system as a whole, collect data to assess developing risks and set standards for enhanced transparency.

Direct regulation would undoubtedly cause a fundamental shift in the structure of the hedge fund and private equity industries. If it were to drive activity offshore, it could prove counterproductive to stability over the longer run. More broadly, direct regulation needs also to weigh the potential liquidity benefits that hedge funds bring to markets. A combination of regulatory reporting of counterparty exposures from the banks, allied with information on risk exposures

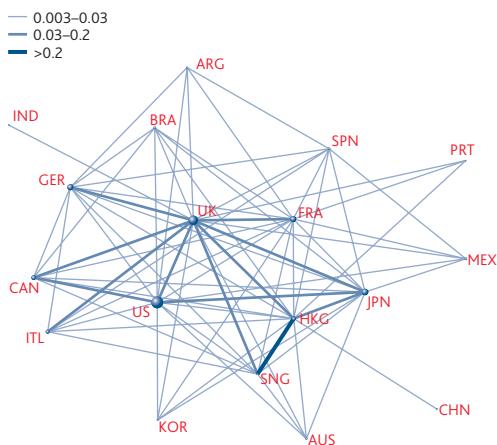
(1) In the United States, the Department of the Treasury has recently announced plans to strengthen the regulatory framework around MMMFs. The Group of Thirty, under Paul Volcker's chairmanship, has recommended that MMMFs be recognised as special-purpose banks, with appropriate prudential regulation and supervision.

Improved management of risks arising from interactions among firms and with the real economy

The authorities need better information and means of managing interconnections between financial institutions and between the financial system and the real economy through:

- improved information on connections between financial institutions, including flow of funds data, and improved information on the activities of key market participants;
- common stress tests that factor in feedback effects from financial institutions' response to shocks;
- capital and liquidity buffers gauged to firms' systemic importance;
- countercyclical prudential policy in order to limit the growth of financial imbalances;
- an international monetary system that limits the build-up of international imbalances;
- expanded use of central counterparties for clearing financial contracts;
- more trading of key financial instruments on exchange or other well-designed and open trading platforms; and
- measures to improve the robustness of key markets.

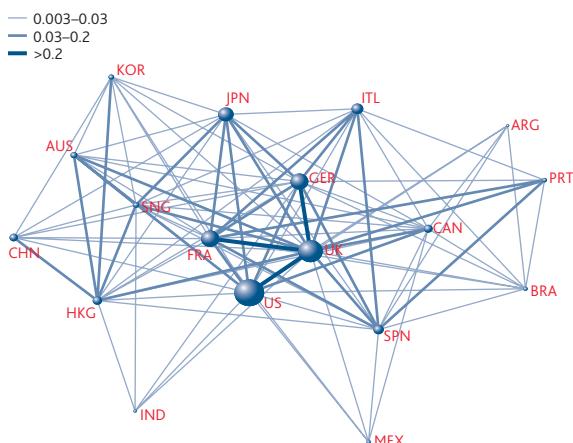
Chart 3.6 Global financial network, 1985^(a)



Sources: BIS, IMF, OECD, UNCTAD and Kubelec and Sa (2009).

(a) Nodes represent countries and are scaled in proportion to a country's gross external financial stocks (Total External Assets + Total External Liabilities). The thickness of the lines between the nodes is proportional to the bilateral external financial stocks, relative to the nodes' combined GDP, ie $(\text{Total External Assets}_{ij} + \text{Total External Liabilities}_{ij}) / (\text{GDP}_i + \text{GDP}_j)$.

Chart 3.7 Global financial network, 2005^(a)



Sources: BIS, IMF, OECD, UNCTAD and Kubelec and Sa (2009).

(a) See footnote (a) in Chart 3.6 above.

collected by investment management industry associations, may represent a baseline approach. The appropriate regulatory perimeter is being considered by the FSB as input to the G20 deliberations.⁽¹⁾

3.3 Improved management of risks arising from interactions among firms and with the real economy

Better data on interconnections within the financial system are needed...

In assessing risks across the financial system as a whole, the authorities need new and better sources of data. In particular, better data are needed on the network of exposures that exist between individual institutions. This information is not typically captured by firm-by-firm regulatory reporting systems, but is essential if spillovers across the financial system are to be identified and gauged quantitatively.

Financial interdependencies have increased over time.

Charts 3.6 and **3.7** show how cross-border stocks of external assets and liabilities in 18 countries have increased between 1985 and 2005. The strong spillovers following the failure of key firms during this crisis suggest connections between financial institutions have also increased over time. **Chart 3.8** shows that certain firms within the UK financial network are particularly important to the resilience of the system as a whole.

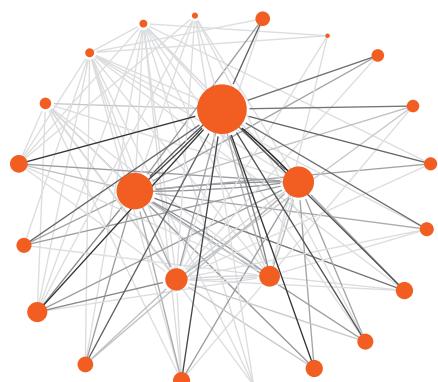
The United States publishes detailed data on financial linkages between domestic and foreign residents and between different parts of the financial sector and the real economy.⁽²⁾ This allows a more comprehensive assessment of global risks to the US financial system. And the high frequency of these data allows for a better understanding of sharp shifts in the international flow of funds, as have occurred over the past six months (Box 2). The Bank proposes that these data should be collected across a broader range of countries and markets, to enable construction of an improved map of the domestic and international flow of funds. As well as work on UK 'Flow of Funds' data, part of such an initiative might ideally be co-ordinated at an international level — for example, as with the BIS international banking statistics.

There is a case for augmenting these institutional data with improved trading information from central repositories such as exchanges, clearing corporations and registries. In the United States, industry representatives have committed to reporting credit default swaps, interest rate and equity derivatives trades in either central counterparties (CCP) or

(1) In the United States, the Department of the Treasury has called for national authorities to require hedge funds or their managers to be registered. The European Commission has proposed a new Directive on Alternative Investment Funds and Managers.

(2) 'Flow of Funds' data.

Chart 3.8 Network of large exposures^(a) between UK banks^{(b)(c)}



Source: FSA returns.

- (a) A large exposure is one that exceeds 10% of a lending bank's eligible capital during a period. Eligible capital is defined as Tier 1 plus Tier 2 capital, minus regulatory deductions.
- (b) Each node represents a bank in the United Kingdom. The size of each node is scaled in proportion to the sum of (1) the total value of exposures to a bank, and (2) the total value of exposures of the bank to others in the network. The thickness of a line is proportionate to the value of a single bilateral exposure.
- (c) Based on 2008 Q1 data.

trade repositories. As more instruments are cleared by a CCP, these data would allow an improved assessment of the build-up of risk within key financial markets. This should be considered elsewhere.

...with improvements in firms' stress testing...

Recent events have shown that firms have devoted insufficient resources to contingency planning and stress testing. One deficiency of stress testing has been the failure to test against sufficiently extreme macroeconomic outcomes. Another is the failure to take account of adverse effects arising from the behaviour of other firms in markets or via the real economy, such as banks' tightening credit conditions.

To address these weaknesses, regulators should periodically ask groups of firms to test the impact of a prescribed, common stress scenario on their financial position. These common stress tests should consider the interactions among firms and their consequences for system-wide risk. Some of these features have been evident in the stress-testing exercises recently undertaken in the United States and the United Kingdom.

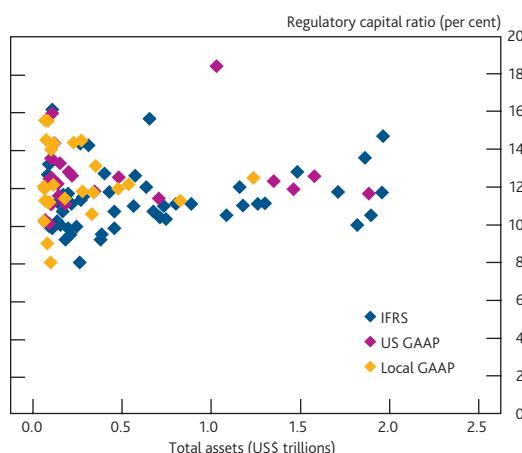
The authorities should also engage with the industry to promote the adoption of stress-testing best practice guidelines. The proposed introduction of a new reverse stress-test requirement on firms by the FSA later this year should promote more imaginative thinking when devising risk scenarios.⁽¹⁾ These stress-tests results need then to inform firms' choices about risk appetite. The Bank strongly supports these initiatives.

...and regulatory standards calibrated to firms' contribution to systemic risk.

Banks' resilience should be commensurate with the costs that their failure would impose on the financial system and economy as a whole. To deliver that objective, capital and liquidity requirements need to be calibrated, *inter alia*, to reflect each firm's contribution to systemic risk. Regulation should in that sense 'tax' the potential spillover costs that each firm imposes on the financial system and thus, potentially, the public taxpayer. Appropriately designed, such a systemic regulatory regime would help deter banks from taking on excessive risk or becoming too large or interconnected to be allowed to fail in a disorderly way.

In the past, larger banks have tended, if anything, to have lower capital ratios (**Chart 3.9**). This generated perverse risk-taking incentives, especially among large, interconnected banks ahead of crisis. Switzerland now sets higher standards of resilience for especially large or significant firms, and the United States has announced its intention to do so. The next

Chart 3.9 Regulatory capital ratios and total assets for the 100 largest banks in G10 countries^{(a)(b)}



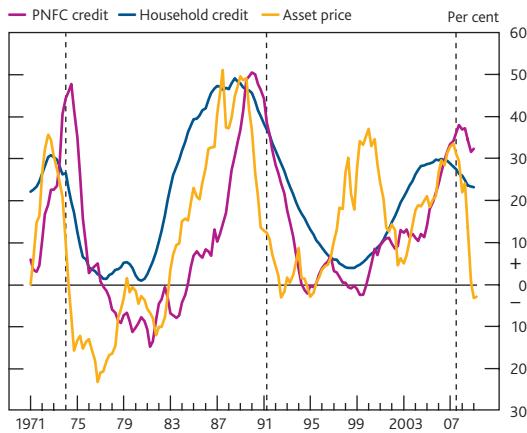
Sources: *The Banker* and published accounts.

(a) Bank size defined by total assets. Sample contains 97 of the largest 100 banks in the G10, due to data availability.

(b) Data from end-2006 are used here to illustrate the pre-crisis relationship between capital and size.

(1) Financial Services Authority (2008), CP 08/24: *Stress and scenario testing*, December.

Chart 3.10 Asset prices and credit in the United Kingdom^{(a)(b)}



Sources: Bank of England, Global Financial Data Inc., Halifax, Nationwide, ONS, Thomson Datastream and Bank calculations.

- (a) The chart shows ratios of real asset prices, household credit and private non-financial corporate (PNFC) credit to GDP, relative to their ten-year moving averages. A positive level thus indicates above-trend growth.
- (b) The dashed lines show start dates for banking crises. The chart shows the secondary banking crisis, small banks crisis and the current crisis.

step is to give such systemic regulation practical effect by devising an operational, internationally agreed framework.

Additional tools are needed to offset procyclicality in the financial system...

Higher levels of capital should help make banks sufficiently resilient to continue lending through a downturn. But they will not necessarily prevent the build-up of financial imbalances in the first place. The crisis has demonstrated the need to curtail the accumulation of excessive leverage across the system. Stock imbalances were widespread in the run-up to the crisis, both domestically and internationally. Between the early 1990s and 2007, the ratio of debt to GDP has risen sharply in the United Kingdom and in other countries (see Chart A in Box 7). And the subsequent unwinding of these imbalances has had adverse macroeconomic consequences (Chart 3.10).

These developments have exposed a gap between existing macroeconomic policy instruments and regulatory instruments designed to preserve sound banks. The Bank believes a set of instruments is needed to control the growth of the financial sector and its interactions with the wider economy. There is an emerging consensus among the official sector on the need for such countercyclical instruments.

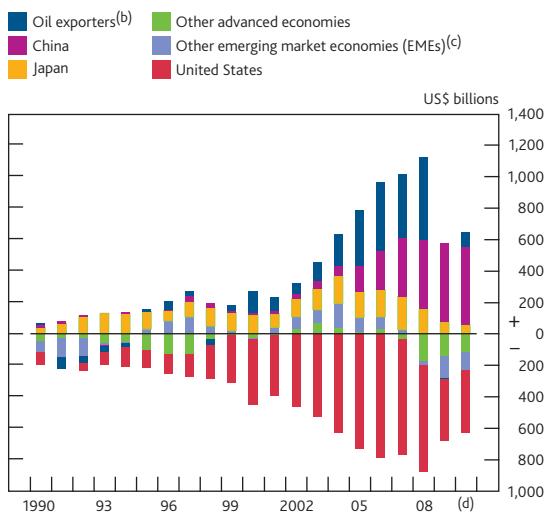
As yet, however, there is no clear consensus on the precise objectives which such instruments are intended to serve. As discussed in Box 7, a variety of potential objectives and instruments of countercyclical regulatory policy are possible.⁽¹⁾ The successful implementation of a countercyclical regime will depend critically on its robustness and credibility. For that reason, its design and implementation should not be rushed.

...with reform of the international monetary system to prevent the build-up of international imbalances.

The build-up of risk prior to the recent crisis was closely linked to the accumulation of large imbalances between countries (Chart 3.11). The authorities need in future to take better account of this interaction between financial institutions and the macroeconomic strategies pursued by different countries.

The international monetary system needs to be designed to ensure that countries are made responsible for the external implications of their actions. For example, ideally mechanisms would be found for placing symmetric obligations on countries that run persistent current account surpluses or deficits — a problem identified, but not solved, at the Bretton Woods conference in 1944. Means of achieving this would include making reserve accumulation less attractive or providing collective alternatives to individual countries insuring themselves against financial stress.

Chart 3.11 Global current account balances^(a)

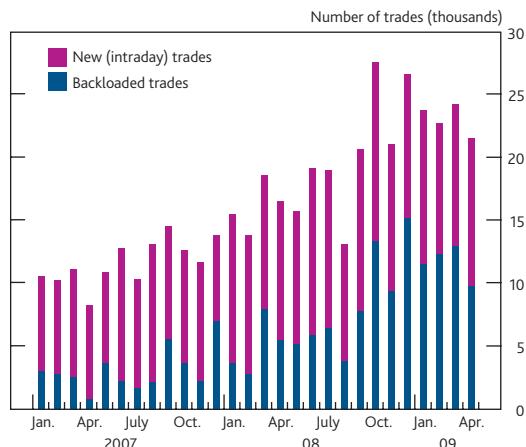


Sources: IMF *World Economic Outlook* (April 2009) and Bank calculations.

- (a) Global current account balances do not sum to zero due to errors and omissions.
- (b) The sum of the ten largest oil exporters in 2004: Algeria, Iran, Kuwait, Mexico, Nigeria, Norway, Russia, Saudi Arabia, United Arab Emirates and Venezuela.
- (c) Other EMEs includes the newly industrialised Asian economies.
- (d) IMF *World Economic Outlook* (April 2009) forecast for 2009 and 2010.

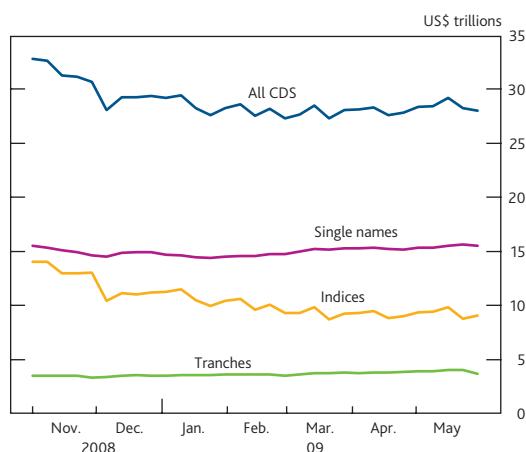
(1) The FSA's *Turner Review* also contains a useful discussion on possible instruments.

Chart 3.12 Interest rate swaps — SwapClear trade registration volumes by month



Source: LCH.Clearnet Ltd.

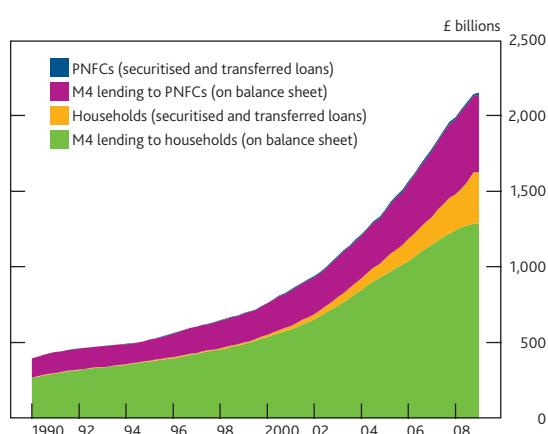
Chart 3.13 Gross notional outstanding credit products^{(a)(b)}



Source: Depository Trust and Clearing Corporation.

(a) Decomposes total notional outstanding values of all CDS into: (1) single names; (2) indices; and (3) tranches.
(b) Data based on an estimated 90% of total CDS trades.

Chart 3.14 Lending^(a) by UK banks and building societies to UK households and PNFCs^(b)



Sources: Bank of England and Bank calculations.

(a) Lending covers loans, advances and securities held by banks and building societies, all in sterling only. Data are not seasonally adjusted.
(b) Private non-financial corporations.

The use of central counterparties should be expanded...

Risks arising from connections between firms can also be addressed through the more widespread adoption of CCP clearing. CCPs typically adopt transparent and consistent counterparty risk management procedures, including in valuations and haircuts. A CCP also offers transparent participant default management processes, as was evident following the Lehman's default. And by acting as counterparty to every trade, a CCP can reduce the multi-dimensionality, and hence uncertainty, that characterises the network of bilateral exposures in financial markets.

Central clearing can also play a role in ensuring or reviving market liquidity. By substituting its own credit standing for that of market participants, a CCP, by offering prudent but wide access, can facilitate anonymous trading by eliminating name-specific credit risk. This can aid market liquidity and efficiency, increasing the range of counterparties who may trade with each other and reducing the constraints imposed by bilateral trading limits.

The benefits of central clearing are maximised for standardised products with liquid secondary markets (Box 8). There is some evidence that trading in certain markets has recently shifted to CCP clearing where it has been available. For example, the value of OTC interest rate swaps cleared through LCH.Clearnet Ltd's SwapClear has increased, including the backloading of existing contracts (**Chart 3.12**).

Going forward, the authorities may need to be more active in facilitating, and where necessary in managing, the transition from bilateral to central clearing in markets where CCP clearing is warranted but product standardisation is not yet sufficiently advanced. This would include a range of OTC instruments, both cash and derivatives (Box 8). A commitment to central clearing can act as a catalyst for greater product standardisation and fungibility, which in turn can lead to better market liquidity. Recent US initiatives are a good case study of this approach and the Bank supports them.

The benefits of central clearing are smaller for bespoke contracts. In those circumstances, it is important that bilateral clearing arrangements are transparent and robust. Much has already been achieved on operational standards and electronic trade confirmation for OTC derivatives. Portfolio compression services in certain markets also appear to have reduced the size of bilateral exposures (**Chart 3.13**). But more work should be done in this area, particularly by requiring greater, more regular and more consistent collateralisation of exposures when trading OTC products.

...and continuity of key financial markets needs to be assured...

Key markets should be more resilient in times of stress, without the need for public intervention. In the recent crisis, a

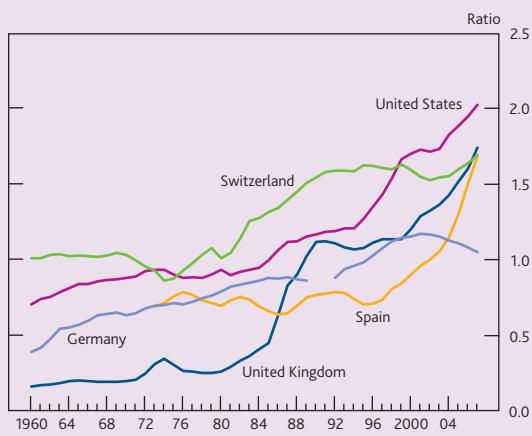
Box 7

The objectives and instruments of countercyclical regulatory policy

Recent events have exposed a gap in policy frameworks in the United Kingdom and other countries. Monetary policy was aimed at stabilising inflation through balancing aggregate supply with demand. Microprudential policy was focused on the regulation and resilience of individual firms with the aim of protecting depositors. Neither policy focused explicitly on the build-up financial imbalances. There is broad consensus that this gap needs to be filled by a 'macroprudential' toolkit. There are a range of important dimensions to macroprudential policymaking, as discussed throughout this *Report*, which could address the resilience of the system as well as the build-up of imbalances both across the system and over time. This box discusses instruments that could deal with the build-up of financial imbalances in one of these dimensions, namely over time.

Between 2000 and 2007, the ratio of private credit to GDP in the United Kingdom grew by around 45% (**Chart A**). During the same period, major UK banks' balance sheets roughly trebled in size. Without a policy instrument to exert influence over the financial system as a whole, vulnerabilities were allowed to build up. In dealing with this problem, authorities could use countercyclical regulatory instruments (CRI) to moderate excessive growth in the financial sector and its interactions with the real economy.

Chart A Ratio of private credit to GDP in selected countries^(a)



Source: World Bank.

(a) Private credit defined as claims on the private sector by deposit money banks and other financial institutions. It excludes credit issued to governments and public enterprises. The ratio is designed to measure the activity of financial intermediaries in channelling savings to investors. Measured on real (deflated) basis.

The design of a countercyclical regulatory policy framework should ideally occur in three stages. Drawing on the analysis of underlying frictions and market failures in the financial

sector, a key first step is for the authorities to determine the objectives which the new instrument (or instruments) is intended to serve. Second, a set of criteria for assessing the suitability of various instruments in achieving these objectives must be established. Only then does it make sense to consider the third step, the appropriate institutional arrangements for the operation of instruments.

Objectives

Clarity over the objective of CRIs is an essential first step in the design of a new policy framework. To date, however, such an assessment has largely been absent from the debate. In considering objectives, there is a useful distinction to be drawn between measures aimed at increasing the resilience of individual banks and those aimed at protecting the economy from excessive risk-taking in the financial sector.

Changes designed to increase resilience speak to an augmentation of the traditional objective of prudential regulation, which is to reduce the likelihood of individual bank failure. The application of CRIs to meet this objective would make banks in future more resilient against cyclical variations in the economy. An example of an instrument which could meet this objective is the Spanish policy of dynamic provisioning (see, for example, Box 6 of the October 2008 *Report*).

A broader objective of CRIs would be the protection of the real economy from financial imbalances. Recent events have highlighted the vulnerabilities created when credit supply is allowed to grow unmoderated. As such, instruments could be used to dampen excessive growth in credit, thereby reducing the potential for undesirable macroeconomic feedback effects when the credit cycle reverses. With this more ambitious objective, the real economy would, to a degree, be insulated against shocks emanating from within the financial system.

The first objective does not necessarily ensure that the second, more macro-oriented, objective would be met. In other words, requiring banks to build up buffers in good times to protect them in a future downturn may not be a sufficient condition for controlling the systemic implications of financial imbalances.

Instruments

Categorisation

One way of categorising CRIs is by their precise sphere of influence within the financial system. A number of tools target components of individual bank balance sheets, using restrictions on either prices (p) or quantities (q) (**Table 1**). But, in principle, these restrictions need not be applied solely to banks. Controls could be widened beyond banks to include certain non-bank financial institutions.

Table 1 Instruments targeting the size and composition of bank balance sheets

Assets	q	Gross quantity: Direct controls on the level or growth of lending. Asset mix/quality: Concentration limits, reserve requirements, maximum loan to value/loan to income ratios.
	p	Controls on lending rates.
Liabilities	q	Gross quantity: Direct controls on the level or growth of liabilities. Debt mix/quality: Structural funding limits.
	p	Debt/equity structure: Various types of capital requirement can constrain the structure of bank liabilities, including risk-weighted capital requirements, leverage ratios, dynamic provisioning, and capital requirements which are linked to the growth of certain lending concentrations. Controls on deposit rates.

Other instruments target financial market behaviour — for example, minimum requirements for initial margins and haircuts for over-the-counter derivatives and securities financing transactions. Existing margining practices tend to be procyclical. Enforceable minimum margin requirements that are more stable across the cycle, or even countercyclical, would provide a constraint on the growth of trading books during the upswing.

Finally, an instrument could target aggregate debt directly — for example, through a tax levied on any type of debt, at issuance or on interest payments.⁽¹⁾ This could be varied in a countercyclical way to exert some degree of control over the aggregate credit cycle.

Assessing the instruments

CRIIs can be assessed against a set of desired properties, including:

- **Effectiveness** — The effectiveness of a CRI depends on the strength and resilience of the link between the instrument and financial imbalances. For example, although countercyclical capital requirements appear to be a popular candidate instrument, the link between required capital and credit availability is far from well established.
- **Minimal economic distortions** — A CRI will inevitably lead to some degree of distortion to financial sector behaviour and the allocation of credit within the economy. There is an inherent tension in separating unsustainable credit growth from innovation-driven expansion. Under an effective countercyclical regulatory policy, some marginal borrowers such as low-income households or small firms may be denied access to credit in an economic upturn.
- **Resilience to regulatory arbitrage** — The resilience of the instrument to cross-sector and cross-border arbitrage is of special importance. Historical experience suggests that there will inevitably be strong incentives to avoid regulatory

rules by moving business outside the regulatory boundary, whether drawn in institutional or geographic terms.

- **Ease of implementation** — A major operational difficulty will be to judge the economy's position in the credit cycle and to calibrate use of the instrument accordingly. The cross-border nature of banking could compound this problem. Banks operate in many countries and none of those countries will have perfectly aligned credit cycles.

Other practical issues

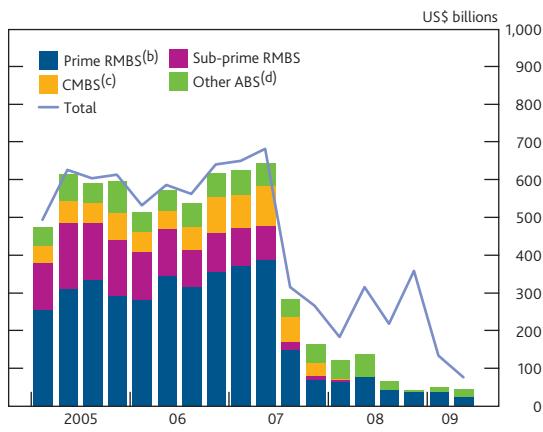
Several other practical issues are relevant to the design and implementation of a set of CRIs, including:

- **Single or multiple instruments** — As authorities analyse the merits of different instruments, they should consider whether there should be a single CRI or a framework of multiple instruments in which each contributes incrementally to the objective.
- **Rules or discretion** — Another issue is whether the operation of the instrument should be left to the discretion of authorities or achieved through a set of rules which are applied quasi-mechanically. Rules are effective as a pre-commitment device for policymakers. But the subjectivity involved in the evaluation of credit conditions may favour discretion. The principle of 'constrained discretion', where broad rules are defined before the application of discretion, is used in monetary policy and may well be the best approach.

Conclusion

Clearly, there is a formidable set of issues that needs to be resolved in the design and implementation of CRIs. Work aimed at mitigating procyclicality in the financial system is being undertaken internationally in fora such as the Financial Stability Board and the Basel Committee on Banking Supervision. Past experience suggests that even carefully considered regulatory interventions can have unexpected consequences — for example, the credit controls used in the 1960s and 1970s led to disintermediation of the banking sector. This suggests that the process this time should not be rushed.

(1) See Jeanne, O (2008), 'Dealing with credit booms and busts: the case for prudential taxation', available at <http://econ.jhu.edu/people/jeanne>.

Chart 3.15 Global issuance of asset-backed securities^(a)

Source: Dealogic.

(a) Bars show non-retained issuance proxied by issuance eligible for inclusion in underwriting league tables. Line includes retained issuance proxied by issuance not eligible for inclusion.

(b) Residential mortgage-backed securities.

(c) Commercial mortgage-backed securities.

(d) Other asset-backed securities. Includes auto, credit card and student loan ABS.

range of capital markets have been impaired. This has required extraordinary interventions by the authorities to reinvigorate them, including in the United Kingdom, the Asset Purchase Facility (APF); in the euro area, the ECB's covered bonds programme; and in the United States, the Federal Reserve's Commercial Paper Funding Facility and the Term Asset-Backed Securities Loan Facility.

No one structure would have necessarily ensured robust liquidity in all markets. In some cases, exchanges with their central limit order books represent the best trading structure to ensure continuous liquidity. For example, it is worth considering whether liquidity of corporate bond and asset-backed securities markets might be improved if these instruments were traded on exchange.

Exchange trading may be less suitable for financial products that are infrequently traded. For these products, formalised electronic trade platforms, as well as electronic broking services or electronic auctions, may be more important. In less liquid markets still, dedicated market makers can play an important role if they have the incentive to carry on in all conditions. Many modern exchanges are hybrids, offering different trading arrangements that reflect different products' trading characteristics. Conflicting interests between market participants, and the potential for systemic disruption if these markets fail, suggest the authorities might play a more proactive role in shaping future trading infrastructures.

...including measures to improve the robustness of securitisation markets.

Securitisation has played a significant role since around 2000 in channelling capital from money market funds, hedge funds, insurance companies and other non-bank lenders to the real economy. **Chart 3.14** shows that the proportion of lending to private non-financial corporations and households via asset-backed securities (ABS) has risen to 20% since the start of the century. But since the onset of the crisis, securitisation markets have effectively shut and issuance has collapsed (**Chart 3.15**).

Specific measures are needed to ensure continuity of market functioning in the future. First, there needs to be greater transparency, with standardisation of core parts of the documentation used in ABS transactions. **Table 3.F** describes some of the industry-led measures which have been undertaken to address this problem. There is also a need to reduce end-investors' overreliance on external credit ratings, to ensure independent due diligence on securities.⁽¹⁾

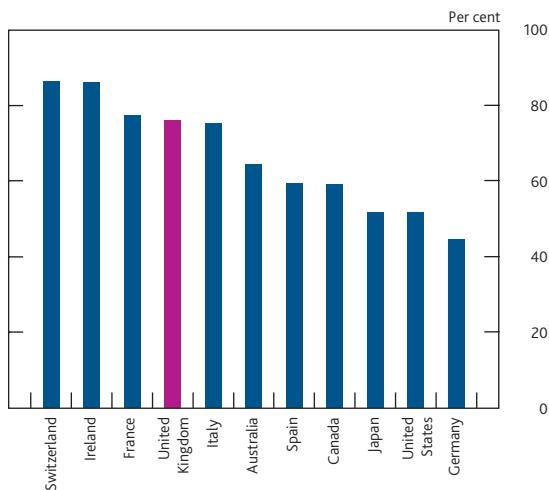
(1) The Group of Thirty has made various recommendations which are intended to restore confidence in securitisation markets and improve transparency in structured product markets.

Banks should not be too big or complex

The size and structure of the financial system needs to be compatible with maintaining financial stability through:

- simpler, more transparent, legal structures that are capable of being supervised and resolved; and
- potential changes to the structure or size of banks to ensure they can be effectively supervised and wound up.

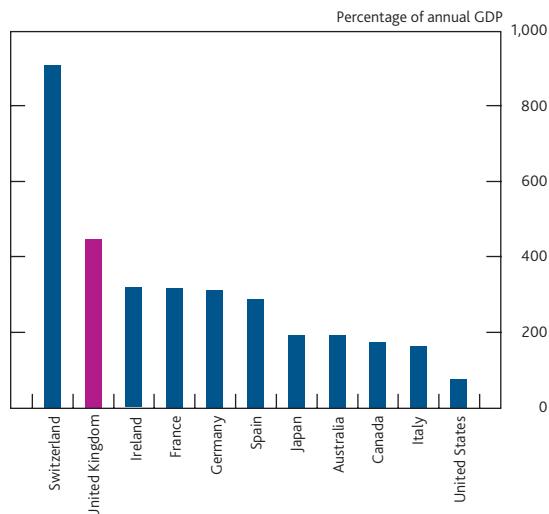
Chart 3.16 Concentration of domestically owned banking sector^{(a)(b)(c)}



Sources: *The Banker*, Bankscope published by Bureau van Dijk Electronic Publishing and Bank calculations.

- (a) Share of the three largest domestically owned banks in total domestically owned banking sector assets. This includes assets of domestic banks held abroad.
- (b) End-2007, except in the United Kingdom, which is at end-2008.
- (c) Data for all countries except the United Kingdom are from *The Banker's* ranking of the world's largest 1,000 banks by assets. This measure will underestimate the size of banking systems that have a large proportion of banking sector assets outside of the list. The UK data are from Bankscope and include all banks and building societies.

Chart 3.17 Consolidated banking group assets relative to GDP by nationality of ownership^{(a)(b)(c)}



Sources: *The Banker*, Bankscope published by Bureau van Dijk Electronic Publishing, International Monetary Fund and Bank calculations.

- (a) Total consolidated banking group assets for domestically owned banking sector only. This includes assets of domestic banks held abroad.
- (b) End-2007, except for the United Kingdom, which is at end-2008.
- (c) Data for all countries except the United Kingdom are from *The Banker's* ranking of the world's largest 1,000 banks by assets. This measure will underestimate the size of banking systems that have a large proportion of banking sector assets outside of the list. UK data are from Bankscope and include all banks and building societies.

3.4 Banks should not be too big or complex

Greater market discipline, self-insurance and a systemic focus to regulation and infrastructure design and use would increase the resilience of the financial system. Another important question, both for effective *ex-ante* regulation and crisis resolution, is the appropriate structure and size of banking groups. A number of commentators have drawn attention to problems caused by the size and concentration of banking systems in some countries. Balance sheet size may reduce the number of tools available to the authorities to resolve a bank — for example, there may be fewer private sector firms able to provide necessary support. This is a particularly relevant consideration when banking sectors are both large and concentrated, as in the United Kingdom (**Charts 3.16** and **3.17**).

That puts a premium on ensuring large firms are not too complex. Complex legal structures can impede orderly resolution in a number of ways. Some large, complex banks have over 2,000 distinct legal entities across different countries. The legal structure of a banking group is important in a crisis because it is legal entities, not business functions, that go into insolvency. Because of that, the resolution authorities need to have access to information on a legal entity basis. But firms sometimes do not produce data in that form, given their day-to-day focus on business functions. That needs to be addressed.

Authorities must ensure that groups providing economically critical functions are capable of being supervised and resolved.

Authorities, domestically and internationally, should consider whether they need more actively to influence or constrain the future size and structure of the system to support stability. It has to be possible to supervise effectively institutions that pose greater risks to the economy or the taxpayer in the event of failure and to resolve them if need be in the event of severe distress. Possible measures could include limiting the scope of banks' businesses to a narrower range of relatively low-risk activities, or imposing higher capital and liquidity charges on institutions that pose greater risks to the economy or taxpayer in the event of failure. Such measures ought to go hand in hand with improved resolution powers to wind down large and complex financial institutions in an orderly manner. Determining the optimal policy mix poses major challenges, including how to determine the boundary between functions and how to prevent activities beyond any perimeter themselves becoming a threat to stability, but merits further debate internationally.

Box 8

Expanding the use of central counterparties

There are a range of potential costs and benefits from central counterparty (CCP) clearing. Recent events have demonstrated some of the benefits, including following the default of Lehman Brothers, a major market participant.

This raises the question of whether the use of CCP clearing should be expanded. In the past, CCP clearing houses have typically served liquid markets in vanilla contracts and where transacting incurs significant counterparty credit risk. The best examples of this are standardised derivatives markets, where participants commit to make and receive future, state-dependent payments that can be large and long-dated.

These factors can give rise to significant counterparty credit risk, which is unrelated to the risks that market participants seek to hedge or speculate on through the derivatives contract. A CCP can monitor and manage this counterparty credit risk over the life of the contract, ensuring that positions are marked-to-market and guaranteeing contract performance.

Some CCPs also serve markets where counterparty credit risk is negligible. These include secondary markets for third-party obligations, including equities and some debt securities. In these cases, the key benefits of a CCP can include a reduction in cash and physical settlement exposures through multilateral netting. A CCP also facilitates anonymous, exchange-based trading by eliminating name-specific credit risk.

CCP clearing has traditionally limited itself to exchange-traded products. However, authorities in the United States and Europe — in conjunction with market participants — have recently announced their intention to expand the use of CCPs for the clearing of over-the-counter (OTC) derivative products.

Expanding CCP clearing for OTC derivatives

Table 1 sets out the size of some key OTC derivative markets. While the notional value aggregates the reference amounts for each outstanding contract, the gross market value better reflects the risk transferred through these contracts. It is the absolute sum of all positive and negative market values of outstanding contracts.

Interest rate swaps are by far the largest category of OTC derivatives. This market has been served by a CCP operated by LCH.Clearnet Ltd (**Chart 3.12**) since 1999. A range of other derivatives markets are also currently CCP cleared. Greater use of these services — by existing members, through expanding membership, or by broadening the product range — could increase the proportion of CCP-cleared trades further.

Table 1 Outstanding amounts of derivatives^(a)

\$US billions	Notional	Gross
Interest rate		
Interest rate swaps	328,114	16,573
Options	51,301	1,694
Forward rate agreements	39,262	153
Total	418,678	18,420
Foreign exchange		
Forwards and foreign exchange swaps	24,562	1,732
Currency swaps	14,725	1,588
Options	10,466	597
Total	49,753	3,917
Credit default swaps		
Single-name instruments	25,730	3,695
Multi-name instruments	16,138	1,957
Total	41,868	5,652
Equity		
Forwards and swaps	1,632	338
Options	4,862	775
Total	6,494	1,113

Source: Bank for International Settlements.

(a) Amount outstanding in December 2008.

The settlement of foreign exchange transactions has received much attention from the authorities and the industry in recent times, culminating in the establishment of CLS Bank. Relatively less attention has been paid to pre-settlement risks. As foreign exchange forward and swap contracts generally involve a two-way payment obligation through the exchange of different currencies, pre-settlement risks can be limited. But they can be important for high-value or long-lived contracts. Further investigation into the potential benefits of expanding CCP clearing in these markets is warranted.

Credit default swaps (CDS) based on indices were cleared through ICE US Trust's CCP service for the first time in March. Expansion of CCP clearing to other index products — as well as CDS referencing single-name index constituents — is expected. These developments are an example of products that may have become sufficiently standardised to move into CCP clearing arrangements. Care will need to be taken to ensure that such expansion is limited to suitably liquid instruments, particularly in the case of single-name contracts which can have jump-to-default risks and so demand very high margin requirements. That underlines the vital significance of effective risk management by the clearing houses.

Expanding CCP clearing for cash markets

Unlike derivatives markets, cash markets generally give rise to limited counterparty credit risk. Principal risk can be eliminated through delivery-versus-payment settlement. Replacement cost risk — the risk that a trader will need to

replace a failed transaction following a counterparty's default — is small for short settlement periods. A CCP can probably help to manage this residual replacement cost risk through prudent risk management and novation, by which the CCP substitutes itself as counterparty to the transaction.

A range of cash markets are supported by CCP clearing. This includes many equities markets, as well as markets for sovereign debt securities and repo transactions. These products tend to be standardised, liquid and traded across electronic platforms and exchanges.

In contrast, the markets for commercial paper and corporate debt are not generally supported by CCP clearing. These products can be highly customised, in terms of maturity, seniority, collateralisation and call provisions. The market might debate whether a CCP — coupled with greater transparency and appropriate trading arrangements — could help to underpin liquidity in these markets.

There are also some markets where CCP clearing is likely to provide little benefit due to the intrinsic characteristics of the product. Unsecured money markets and loans have not had ready secondary markets, within which a CCP could act to mitigate counterparty credit risk arising from the transfer of third-party obligations. In these cases it is important that ready alternatives — such as repo markets — are robust and supported by appropriate post-trade infrastructures.

The integrity and soundness of CCP clearing houses will be vital as they expand the scale and range of markets cleared. As overseer of the payments systems embedded in clearing houses, the Bank will work with the FSA and international counterparts to ensure that this is the case.

Clear principles for public safety nets

Where self-protection fails, a safety net is needed that encourages prudent behaviour and contains risks to the public finances through:

- clear principles guiding market maker of last resort interventions; and
- principles for public sector provision of capital support.

3.5 Clear principles for public safety nets

The first line of defence against financial stress should be the buffers held by firms. Where these are inadequate, the firm ought to be allowed to fail in an orderly fashion under the control of an appropriate resolution regime. Even with these measures in place, however, there may be situations where public sector support is needed as the ultimate backstop. To be effective and time-consistent, these public sector insurance frameworks need to be robustly designed and transparent. That, together with appropriate self-insurance, guards against risk-taking incentives becoming distorted.

Enhancing the framework for central bank liquidity insurance...

In the United Kingdom, the Bank has introduced substantial changes to its framework for providing liquidity insurance to the banking system.⁽¹⁾ The Bank confirmed that it stands ready, via its public facilities, to lend against a wide range of collateral, subject to haircuts and other terms, notably through its DWF and long-term repos.

As with other types of public insurance, this must not encourage imprudent behaviour on the part of banks. The Bank aims to deal with this risk through appropriate pricing and collateral haircuts. It is also important that banks know that these public facilities will not be available when there is serious doubt about their viability or solvency.

It is important that banks regularly use the Bank's DWF as part of their contingency planning, including using the government securities which they borrow from the Bank to generate liquidity by repoing them out. This will reduce the risk that, when they actually need to use the DWF in periods of stress, they encounter operational problems or attract negative reactions in the market. The Bank also believes that all banks and building societies should sign up for the DWF.

...central banks acting to maintain liquidity in key asset markets...

The current crisis has illustrated the problems that can result from a severe reduction in liquidity in important markets. For example, through its APF, the Bank aims to catalyse liquidity in sterling corporate markets. These types of intervention take central banks into largely uncharted territory.

That underlines the importance of having a set of clear principles to guide these actions in future.⁽²⁾ As well as consistency with monetary policy, these might include that

(1) *The development of the Bank of England's market operations*, Bank of England, October 2008.

(2) Tucker, P (2009), 'The repertoire of official sector interventions in the financial system: last resort lending, market-making, and capital', speech at the Bank of Japan 2009 International Conference on Financial System and Monetary Policy Implementation, 27–28 May, Tokyo, available at www.bankofengland.co.uk/publications/speeches/2009/speech390.pdf.

the central bank balance sheet should not assume large amounts of risk. The interventions should take place at prices which discourage use when normal market conditions return — for example, by purchasing at prices below fundamental values. That is consistent with these interventions being catalytic in nature, aiming to help kick-start a market rather than replace it. The Bank's APF schemes were designed with such principles in mind.

...and capital provider of last resort.

There may be situations where the authorities need to provide capital support to the financial system — a capital provider of last resort (COLR). At a high level, the principles for COLR could mirror those for central bank liquidity insurance: the terms of capital provision should not incentivise imprudent behaviour; COLR policies should be clear and time-consistent; and they should have a well-defined exit strategy.

One possibility is to establish a regime where the eventual cost of any COLR would be allocated back to the banking system rather than the general taxpayer. For example, the authorities could claim back the cost of any support via an insurance levy on the banking system once the crisis had safely passed. The authorities would in effect provide a bridging loan to banks in need of capital, repaid from the banking system once crisis has abated. The Bank supports further work in developing principles and a clearer framework for the operation of all of these public sector insurance schemes.⁽¹⁾

(1) See Tucker, P (2009) as above.

Annex

Timeline of crisis events

This timeline details key events since Spring 2007.

Date	Event
5 Mar. 07	HSBC announces one portfolio of purchased sub-prime mortgages evidenced much higher delinquency than had been built into the pricing of these products.
22 June 07	Bear Stearns pledges a collateralised loan to one of its hedge funds but does not support another.
30 July 07	IKB announces that profit will be 'significantly' lower than forecast as a result of sub-prime mortgage exposures.
9 Aug. 07	BNP Paribas suspends calculation of asset values of three money market funds exposed to sub-prime and halts redemptions. AXA had earlier announced support for its funds.
9 Aug. 07	European Central Bank (ECB) injects €95 billion overnight to improve liquidity. Injections by other central banks.
17 Aug. 07	Sachsen LB receives bailout from German savings bank association.
17 Aug. 07	Federal Reserve approves temporary 50 basis points reduction in the discount window borrowing rate, extends term financing, and notes it will 'accept a broad range of collateral'.
10 Sep. 07	Victoria Mortgage Funding is the first UK mortgage company to fail.
13 Sep. 07	Bank of England announces that it will widen the range on banks' reserves targets within which they are remunerated at Bank Rate.
14 Sep. 07	Bank of England announces it has provided a liquidity support facility to Northern Rock.
17 Sep. 07	Following a retail deposit run, the Chancellor announces a government guarantee for Northern Rock's existing deposits.
19 Sep. 07	Bank of England announces plans to undertake a series of three-month auctions against a broader range of collateral (including mortgage collateral).
Oct. 07	Citi, Merrill Lynch and UBS report significant write-downs.
8 Nov. 07	Moody's announces it will re-estimate capital adequacy ratios of US monoline insurers/financial guarantors.
20 Nov. 07	Freddie Mac announces 2007 Q3 losses and says it is considering cutting dividends and raising new capital.
10 Dec. 07	UBS announces measures to deal with capital concerns following further write-downs.
12 Dec. 07	Joint Bank of England, Federal Reserve, ECB, Swiss National Bank (SNB) and Bank of Canada announcement of measures designed to deal with pressures in short-term funding markets. Actions taken by the Federal Reserve include the establishment of a temporary Term Auction Facility (TAF).
20 Dec. 07	Bear Stearns announces expected 2007 Q4 write-downs.
Jan. 08	Announcements of significant 2007 Q4 losses, by Citi and Merrill Lynch, among others.
11 Jan. 08	Bank of America confirms purchase of Countrywide.
15 Jan. 08	Citi announces it is to raise US\$14.5 billion in new capital.
24 Jan. 08	Société Générale reveals trading losses resulting from fraudulent trading by a single trader.
11 Feb. 08	American International Group (AIG) announces its auditors have found a 'material weakness' in its internal controls over the valuation of the AIGFP super senior credit default swap portfolio.
17 Feb. 08	UK Government announces temporary nationalisation of Northern Rock.
19 Feb. 08	Credit Suisse announces they have identified mismarkings and pricing errors by a small number of traders.
11 Mar. 08	Federal Reserve announces the introduction of a Term Securities Lending Facility and Bank of England announces it will maintain its expanded three-month long-term repo against a wider range of high-quality collateral.
14 Mar. 08	JPMorgan Chase & Co. announces that it has agreed, in conjunction with the Federal Reserve Bank of New York, to provide secured funding to Bear Stearns for an initial period of up to 28 days.
16 Mar. 08	JPMorgan Chase & Co. agrees to purchase Bear Stearns. Federal Reserve provides US\$30 billion non-recourse funding.
16 Mar. 08	Federal Reserve announces establishment of Primary Dealer Credit Facility.
21 Apr. 08	Bank of England launches its Special Liquidity Scheme (SLS) to allow banks to swap temporarily their high-quality mortgage-backed and other securities for UK Treasury bills.
22 Apr. 08	RBS announces £12 billion rights issue.
29 Apr. 08	HBOS announces £4 billion rights issue.

Date	Event
2 May 08	Co-ordinated announcement from the Federal Reserve, ECB and SNB regarding further liquidity measures.
14 May 08	Bradford & Bingley proposes £300 million rights issue.
2 June 08	Bradford & Bingley discloses that private equity firm TPG Capital is to obtain a 23% stake.
9 June 08	RBS confirms that 5% of shares offered were left with underwriters.
16 June 08	Lehman Brothers confirms a net loss of US\$2.8 billion in Q2.
18 June 08	Morgan Stanley reports losses from mortgage proprietary trading and bad loans.
25 June 08	Barclays announces plans to raise £4.5 billion in a share issue.
11 July 08	Closure of US mortgage lender IndyMac.
13 July 08	US Treasury announces a rescue plan for Fannie Mae and Freddie Mac.
15 July 08	US Securities and Exchange Commission (SEC) issues an emergency order to enhance investor protection against 'naked short-selling'.
30 July 08	Federal Reserve announces the introduction of an 84-day TAF in addition to its existing 28-day loans. The ECB and SNB announce they will provide 84-day US dollar liquidity in addition to their existing operations with a maturity of 28 days.
7 Sep. 08	Fannie Mae and Freddie Mac taken into conservatorship.
15 Sep. 08	Lehman Brothers files for bankruptcy. Bank of America announces purchase of Merrill Lynch.
16 Sep. 08	US Government provides emergency loan to AIG of US\$85 billion in exchange for a 79.9% stake and right to veto dividend payments.
17 Sep. 08	Bank of England extends drawdown period for SLS.
18 Sep. 08	Lloyds TSB/HBOS merger announced.
18 Sep. 08	Announcement of co-ordinated central bank measures to deal with continued elevated pressures in US dollar short-term funding markets. Bank of England concludes a reciprocal swap agreement with the Federal Reserve.
18 Sep. 08	Financial Services Authority (FSA) announces regulations prohibiting short-selling of financial shares.
19 Sep. 08	US Treasury announces temporary guarantee program for the US money market mutual funds (MMMFs). The Federal Reserve Board announces it will extend non-recourse loans to banks to finance purchases of asset-backed commercial paper from MMMFs.
19 Sep. 08	SEC prohibits short-selling in financial companies. Bans follow from a number of European regulators.
20 Sep. 08	US Treasury announces draft proposals to purchase up to US\$700 billion of 'troubled assets', later to become the Troubled Asset Relief Program (TARP).
21 Sep. 08	The Federal Reserve approves transformation of Goldman Sachs and Morgan Stanley into bank holding companies.
23 Sep. 08	Announcement that Berkshire Hathaway is to invest US\$5 billion in Goldman Sachs.
24 Sep. 08	Bradford & Bingley announces the renegotiation of their mortgage forward sale agreement with GMAC-RFC.
25 Sep. 08	JPMorgan Chase & Co. buys the deposits, assets and certain liabilities of Washington Mutual bank.
29 Sep. 08	Bradford & Bingley is nationalised by UK Government. Abbey buys its branches and retail deposit book.
29 Sep. 08	Icelandic Government buys stake in Glitnir Bank.
29 Sep. 08	Belgian, Dutch and Luxembourg governments announce they will invest €11.2 billion in Fortis.
29 Sep. 08	Federal Reserve increases swap lines to foreign central banks.
29 Sep. 08	Announcement of Citi's intention to acquire the banking operations of Wachovia in a transaction facilitated by the Federal Deposit Insurance Corporation (FDIC), protecting all depositors (under the systemic risk exception of the FDIC Improvement Act of 1991).
30 Sep. 08	Dexia receives equity capital injection from Belgian, French and Luxembourg governments and from existing shareholders.
30 Sep. 08	Irish Government announces deposit guarantee. Other governments follow with extensions to deposit guarantees.
3 Oct. 08	US House of Representatives passes US\$700 billion TARP, a government plan to rescue the US financial sector (having voted against an earlier version of the plan on 29 September 2008).

Date	Event
3 Oct. 08	FSA raises the limit of the deposit guarantee to £50,000 (with effect from 7 October 2008).
3 Oct. 08	Wells Fargo and Wachovia agree to merge in a transaction requiring no financial assistance from the FDIC.
3 Oct. 08	Dutch Government acquires Fortis Bank Nederland (Holding) N.V.
6 Oct. 08	German authorities announce package to save Hypo Real Estate.
6 Oct. 08	BNP Paribas announces it has agreed to take control of Fortis' operations in Belgium and Luxembourg as well as the international banking franchises.
7 Oct. 08	The Icelandic Government takes control of Glitner and Landsbanki, which owns Icesave.
7 Oct. 08	Federal Reserve announces the creation of the Commercial Paper Funding Facility.
8 Oct. 08	The Chancellor announces that the retail deposit business of Heritable and the Kaupthing Edge deposit business of Kaupthing Singer & Friedlander has been transferred to ING Direct. The remainder of the two businesses were put into administration.
8 Oct. 08	UK support package announced — including provision of capital to UK incorporated banks, guarantee for new short to medium-term senior unsecured debt issuance and the extension and widening of the SLS.
8 Oct. 08	Co-ordinated interest rate cuts of 0.5 percentage points (including the Bank of England, the Federal Reserve and ECB).
13 Oct. 08	Further details of the UK support package released.
13 Oct. 08	Members of the euro zone announce measures to provide their banks with capital funding. Further co-ordinated action to provide US dollar liquidity.
14 Oct. 08	US Government announces Capital Purchase Program (CPP) of up to US\$250 billion.
16 Oct. 08	Bank of England releases consultative paper on planned developments to its market operations.
19 Oct. 08	Dutch Government injects €10 billion into ING.
21 Oct. 08	Federal Reserve announces the creation of the Money Market Investor Funding Facility.
29 Oct. 08	Federal Reserve announces the establishment of swap lines with the Banco Central do Brasil, Banco de Mexico, Bank of Korea, and the Monetary Authority of Singapore for up to US\$30 billion each.
31 Oct. 08	Barclays announces plans to raise up to £7.3 billion of additional capital, including £5.8 billion from investors in Abu Dhabi and Qatar.
3 Nov. 08	HM Treasury announces that its shareholding in banks will be managed on a commercial basis by a new arm's-length company, UK Financial Investments Limited, which is wholly owned by the UK Government.
6 Nov. 08	Bank of England reduces Bank Rate by 1.5 percentage points to 3%.
6 Nov. 08	International Monetary Fund (IMF) approves US\$15.7 billion Stand-By Arrangement (SBA) for Hungary.
10 Nov. 08	US authorities announce a restructuring of the financial support of AIG. The US Treasury will purchase US\$40 billion of AIG senior preferred shares, which will be used to reduce the Federal Reserve's loan to AIG.
21 Nov. 08	FSA confirms Derbyshire Building Society merger with the Nationwide Building Society.
23 Nov. 08	Citigroup to issue preferred shares to the US Treasury and FDIC in exchange for protection against unusually large losses on a US\$306 billion pool of loans and securities. The US Treasury will invest an additional US\$20 billion in Citigroup from the TARP.
24 Nov. 08	UK Government announces a temporary cut in VAT from 17.5% to 15% in the Pre-Budget Report.
25 Nov. 08	Federal Reserve announces the creation of the Term Asset-Backed Securities Loan Facility (TALF) and a new program to purchase direct obligations of Fannie Mae and Freddie Mac.
26 Nov. 08	Federal Reserve announces approval of the notice of Bank of America Corporation to acquire Merrill Lynch.
1 Dec. 08	National Bureau of Economic Research announces that a peak in US economic activity occurred in December 2007 and that the economy has since been in a recession.
4 Dec. 08	Bank of England reduces Bank Rate by 1.0 percentage points to 2.0%.
4 Dec. 08	FSA consults on liquidity rules for banks, building societies and investment firms.
5 Dec. 08	FSA confirms Cheshire Building Society merger with the Nationwide Building Society.

Date	Event
15 Dec. 08	UK Government announces changes to the Credit Guarantee Scheme, adjusting the formula that determines the fees paid by participating institutions for use of the Government guarantees.
16 Dec. 08	Federal Reserve establishes a target range for the effective federal funds rate of 0% to 0.25%.
16 Dec. 08	FSA confirms Catholic Building Society merger with the Chelsea Building Society.
23 Dec. 08	IMF approves US\$2.35 billion SBA for Latvia.
24 Dec. 08	FSA confirms Barnsley Building Society merger with the Yorkshire Building Society.
7 Jan. 09	Lloyds Banking Group (LBG) offers to exchange upper Tier 2 for Tier 1 securities.
8 Jan. 09	Bank of England reduces Bank Rate by 0.5 percentage points to 1.5%.
14 Jan. 09	UK Government announces loan guarantees to the value of more than £20 billion to help small and medium-sized businesses.
15 Jan. 09	Irish Government announces that Anglo Irish Bank is to be nationalised.
19 Jan. 09	UK Government announces the Asset Purchase Facility (APF), authorising the Bank of England to purchase a range of high-quality assets as part of a package of measures to support lending.
19 Jan. 09	UK Government announces the Asset Protection Scheme (APS) designed to protect financial institutions against exposure to exceptional future credit losses on certain portfolios of assets.
19 Jan. 09	FSA issues a statement clarifying that banks are expected to maintain a minimum core Tier 1 capital ratio of 4% and expressing its preference for the capital regime to incorporate countercyclical measures.
23 Jan. 09	ONS releases preliminary estimate of 2008 Q4 GDP which shows a second consecutive quarter of negative growth implying that the UK economy has entered recession based on a definition of two quarters of negative growth.
3 Feb. 09	Federal Reserve announces the extension, to 30 October 2009, of the existing liquidity programs and swap lines with foreign central banks.
5 Feb. 09	Bank of England reduces Bank Rate by 0.5 percentage points to 1.0%.
6 Feb. 09	Bank of England publishes operational details about the APF agreed with HM Government.
10 Feb. 09	US Treasury announces a Financial Stability Plan, involving 'stress tests' to inform the need for capital injections, the creation of a Public-Private Investment Fund to acquire troubled loans and other assets from financial institutions, expansion of the TALF, and new initiatives to stem residential mortgage foreclosures and to support small business lending.
17 Feb. 09	President Obama signs into law the 'American Recovery and Reinvestment Act of 2009' which includes a variety of spending measures and tax cuts intended to promote economic recovery.
21 Feb. 09	UK Banking Act 2009 comes into effect implementing the Special Resolution Regime (SRR) and replaces temporary powers provided by the Banking (Special Provisions) Act 2008.
23 Feb. 09	UK Government announces plans for Northern Rock to increase mortgage lending by up to £14 billion over the next two years.
26 Feb. 09	RBS announces an attributable loss of £24.1 billion. UK Government announces details of the APS and an agreement in principle with RBS to participate in the APS including increased lending commitments.
27 Feb. 09	US Treasury announces its willingness to convert up to US\$25 billion of Citigroup preferred stock issued under the CPP into common equity.
27 Feb. 09	LBG announces results, including pre-tax loss of £10.8 billion for HBOS.
Mar.–Apr. 09	Various UK banks offer to buy back or exchange for senior debt Tier 1 and Tier 2 capital securities.
2 Mar. 09	US authorities announce a restructuring of their assistance to AIG. Under the restructuring, AIG will receive as much as US\$30 billion of additional capital.
2 Mar. 09	HSBC announces plans to raise £12.5 billion in a rights issue.
3 Mar. 09	US authorities announce the launch of the TALF. Under the program, the Federal Reserve Bank of New York will lend up to US\$200 billion to eligible owners of certain AAA-rated asset-backed securities.
5 Mar. 09	Bank of England reduces Bank Rate by 0.5 percentage points to 0.5% and announces £75 billion asset purchase programme.
7 Mar. 09	UK Government announces an agreement in principle with LBG to participate in the APS, including additional lending commitments.

Date	Event
18 Mar. 09	Federal Reserve maintains the target range for the effective federal funds rate at 0% to 0.25% and announces an expansion of over US\$1 trillion in its planned asset purchases this year.
19 Mar. 09	Bank of England publishes details of its Corporate Bond Secondary Market Scheme as part of its APF.
20 Mar. 09	FSA confirms Scarborough Building Society merger with the Skipton Building Society.
23 Mar. 09	US Treasury announces details on the Public-Private Investment Program for Legacy Assets. The Treasury will provide 50% of the equity capital.
24 Mar. 09	IMF creates the Flexible Credit Line (FCL), inviting applications from strong-performing countries.
30 Mar. 09	Standard & Poor's (S&P) lowers the long-term sovereign credit rating of Ireland from AAA to AA+, with a negative outlook.
30 Mar. 09	Bank of England announces that key parts of Dunfermline Building Society have been transferred to Nationwide Building Society under the SRR.
2 Apr. 09	G20 Summit communiqué announces a trebling of the IMF's available resources to US\$750 billion.
7 Apr. 09	Irish Government announces plans for the National Asset Management Agency to manage the worst-performing land and development loans of Irish banks.
9 Apr. 09	German Government begins the process to take over Hypo Real Estate.
9 Apr. 09	CVC Capital Partners Ltd. agrees to buy iShares from Barclays for £3.0 billion.
17 Apr. 09	IMF approves a US\$47 billion credit line for Mexico under the new FCL.
22 Apr. 09	UK Government launches Asset-backed Securities Guarantee Scheme, under which HM Treasury will provide credit guarantees and liquidity guarantees on residential mortgage-backed securities issued by UK banks and building societies.
22 Apr. 09	IMF publishes its <i>World Economic Outlook</i> warning that the global economy will decline by 1.3% in 2009, the weakest performance by far of the whole post-war period.
6 May 09	IMF approves a US\$20.6 billion credit line for Poland under the IMF's new FCL.
7 May 09	Federal Reserve releases the results of the 'stress test' of the 19 largest US bank holding companies. The assessment finds that losses at the 19 firms during 2009 and 2010 could be US\$600 billion and ten firms would need to add, in aggregate, US\$185 billion to their capital to maintain adequate buffers if the economy were to track the more adverse scenario considered in the programme.
7 May 09	Bank of England maintains Bank Rate at 0.5% and increases size of asset purchase programme by £50 billion to £125 billion.
7 May 09	ECB announces it will lower its policy interest rate to 1.0%, after reducing it by 50 basis points in March and 25 basis points in April. It expects to purchase around €60 billion of covered bonds, and the European Investment Bank will become an eligible counterparty in the Eurosystem's monetary policy operations.
21 May 09	S&P affirms the long-term sovereign credit rating of the United Kingdom but revises the outlook to negative.
28 May 09	FSA issues a statement that clarifies how stress tests have been used within the United Kingdom and provides information on the key macroeconomic parameters.
1 June 09	General Motors Corporation and three domestic subsidiaries announce that they have filed for relief under Chapter 11 of the US Bankruptcy Code.
8 June 09	S&P lowers the long-term sovereign credit rating of Ireland from AA+ to AA, with a negative outlook.
8 June 09	LBG repays some of the Government's capital.
9 June 09	US Treasury announces that ten of the largest US financial institutions participating in the CPP have met the requirements for repayment.
11 June 09	BlackRock agrees to pay US\$13.5 billion to buy Barclays Global Investors.
12 June 09	West Bromwich Building Society announces a significant strengthening of its core Tier 1 capital position by swapping subordinated debt for a new instrument which will qualify as core Tier 1 capital.
17 June 09	President Obama announces a comprehensive plan for regulatory reform. The plan would give the Federal Reserve new responsibilities for consolidated supervision of systemically important banks among other changes.

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Other financial stability publications

This section provides a short summary of other financial stability related publications and speeches released by the Bank of England since the October 2008 Report.

Regular publications

Markets and operations article, *Bank of England Quarterly Bulletin*, 2008 Q4.

This article reviews developments in global financial markets since the 2008 Q3 *Quarterly Bulletin* up to late November 2008. The article also reviews the Bank's official operations during this period.

www.bankofengland.co.uk/publications/quarterlybulletin/qb0804.pdf

Markets and operations article, *Bank of England Quarterly Bulletin*, 2009 Q1.

This article reviews developments in sterling financial markets since the 2008 Q4 *Quarterly Bulletin* up to the end of February 2009. The article also reviews the Bank's official operations during this period.

www.bankofengland.co.uk/publications/quarterlybulletin/qb0901.pdf

Markets and operations article, *Bank of England Quarterly Bulletin*, 2009 Q2.

This article reviews developments in sterling financial markets since the 2009 Q1 *Quarterly Bulletin* up to 22 May 2009. The article also reviews the Bank's official operations during this period.

www.bankofengland.co.uk/publications/quarterlybulletin/qb0902.pdf

Speeches

Rebuilding confidence in the financial system.

Sir John Gieve, Deputy Governor, October 2008.

www.bankofengland.co.uk/publications/speeches/2008/speech363.pdf

In this speech, John Gieve set out a blueprint for the reforms that would have to be put in place to restore confidence in the financial system. He began by detailing the case for the co-ordinated policy intervention. Structural vulnerabilities in the banking system had become apparent: access to cheap funds in wholesale markets had enabled a spectacular expansion of banks' balance sheets, leaving banks with

insufficient capital and liquidity buffers. The package of recapitalisation, guaranteed funding and enhanced liquidity had been necessary to demonstrate that banks were capable of surviving the downturn. Looking ahead, John Gieve outlined three key lessons that needed to be learned by policymakers around the globe. First, macroprudential policies, perhaps along the lines of the Spanish system of 'dynamic provisioning', need to be developed. Second, a more effective regime for managing failing banks needs to be introduced. Third, cross-border crisis management has to be improved.

Learning from the financial crisis.

Sir John Gieve, Deputy Governor, November 2008.

www.bankofengland.co.uk/publications/speeches/2008/speech367.pdf

In this speech, John Gieve highlighted the fact that the crisis is a truly global event because its roots lie in unbalanced global growth and its consequence is a severe downturn worldwide. The crisis has changed in nature over fifteen months so the policy response has had to evolve too, in terms of monetary policy, emergency liquidity measures, bank recapitalisation, and lending guarantees. He then outlined lessons from the crisis which policymakers should draw for the medium term. These include closer international co-ordination of monetary policy, better ground rules for cross-border financial crises, and the development of macroprudential tools, aimed at dampening the financial cycle. He described three possible macroprudential tools: dynamic provisioning, where banks build up provisions which can be drawn upon in a downturn; growth-related capital requirements; and tougher liquidity standards that will discourage banks from using less stable sources of funding to grow rapidly.

The Governor's speech to the CBI Dinner, Nottingham, at the East Midlands Conference Centre.

Mervyn King, Governor, January 2009.

www.bankofengland.co.uk/publications/speeches/2009/speech372.pdf

In this speech, the Governor argued that the crisis — driven by the build-up of global imbalances and the explosion in the size of the financial system — pointed to the need to create a new policy instrument to limit the build-up of debt. Bank Rate should be used for its traditional task of targeting inflation, rather than being diverted to try to control financial imbalances. The Governor pointed to a 'paradox of policy', where almost any policy measure that was desirable in the short run was diametrically opposite to the direction policy would need to take in the long run. In the short run spending must be encouraged to support the economy, but in the long term we would need to save more as a nation. Similarly banks should be encouraged to run down their capital now to enable

them to absorb losses while continuing to lend, but in the long run they would need more capital. That suggested a need for clear policy frameworks to guide the policy response. In the area of monetary policy that framework is provided by the inflation target. With Bank Rate already very low, the MPC were preparing for the possibility that they may need to consider a range of unconventional measures to meet their remit. Those would need to be carefully designed.

Why banks failed the stress test.

Andrew Haldane, Executive Director for Financial Stability, February 2009.

www.bankofengland.co.uk/publications/speeches/2009/speech374.pdf

In this speech, Andrew Haldane diagnosed some of the market failures in stress-testing practices highlighted by the financial crisis of the past 18 months. These roughly fall into three categories: disaster myopia, network externalities and misaligned incentives. He then went on to propose a five-point plan for improving stress-testing practices going forward to address these weaknesses. These measures involved better specification and regular evaluation of stress scenarios, including their second-round effects; plus a greater degree of engagement between risk managers and senior management and between financial firms and the authorities. They would also involve much greater public transparency about risk metrics and accompanying management actions.

Opening remarks for an LSE panel on the global economic crisis: meeting the challenge.

Timothy Besley, Monetary Policy Committee member, February 2009.

www.bankofengland.co.uk/publications/speeches/2009/speech376.pdf

In this speech, Professor Tim Besley described the three main elements of the policy responses to the downturn. The first is a series of measures aimed at limiting directly the fallout from the financial crisis — including efforts to improve liquidity in financial markets, to recapitalise banks and to limit the impact of their 'difficult to value' assets on their lending activity. The second is the loosening of monetary policy — mainly so far by lowering official policy rates. Third, there have been fiscal policy responses, which are geared towards supporting demand in the face of weakening private investment spending and softening household demand. Professor Besley concluded that direct measures to prevent a sharper-than-desirable credit contraction should be understood and evaluated against the background of clearly defined policy objectives. The inflation-targeting framework with independent decisions by the MPC remains in his view a sound structure for monetary policy in the United Kingdom.

Seven lessons from the last three years.

Sir John Gieve, Deputy Governor, February 2009.

www.bankofengland.co.uk/publications/speeches/2009/speech377.pdf

In his final speech as Deputy Governor, John Gieve looked back at the period of Great Stability and described seven lessons from his time at the Bank of England. First, he believed regulators should have a say in banks' risk management, as the recent crisis had shown that banks relied too heavily on flawed systems. Second, he outlined the gaps that existed in the United Kingdom's arrangements for resolving failing banks. He welcomed the new arrangements established by the Banking Act which bridge those gaps. Third, he noted that international co-operation and co-ordination procedures for resolving cross-border institutions were lacking and needed improvement. Fourth, he argued that the current generation of macroeconomic models used by central banks have drawbacks that need to be addressed. Fifth, he proposed that it may be less costly to avoid a bubble forming in financial markets than simply 'mopping up' after the crash. Sixth, he believed that central banks should adopt an 'intelligent approach to inflation targeting' to counter asset price booms and credit expansion. His final lesson was that the authorities require another instrument to stabilise the economy. He considered what form the instrument could take and who should be in charge of it.

Finance: a return from risk.

Mervyn King, Governor, March 2009.

www.bankofengland.co.uk/publications/speeches/2009/speech381.pdf

In this speech, the Governor discussed the nature of risk in the financial system to draw lessons about the policy responses that are required to ensure greater monetary and financial stability in the future. He considered the design of future banking regulation and the more urgent need to recover from the present crisis.

The Governor stated that at the heart of the crisis was an inability to perceive the true nature of the risks involved, which has been a persistent feature of crises over time. He stressed that regulation should be 'simple and robust'. He argued that, 'To correct these types of market failure will require a system of regulation that effectively marries the 'top down' assessment of the risks to the system as a whole to the 'bottom up' supervision of individual institutions.'

He went on to discuss why these measures should not involve monetary policy being diverted from its role of controlling inflation. Instead, he supported the introduction of additional tools. 'What is needed is an additional instrument... to

provide the authorities with the ability to control the growth of the financial sector and its interactions with the wider economy.'

He also spelt out the need to address the weaknesses in the international monetary system that allowed global imbalances — one of the underlying causes of the crisis — to grow unchecked.

Remarks to the Turner Review Conference by Paul Tucker.
Paul Tucker, Deputy Governor, March 2009.

www.bankofengland.co.uk/publications/speeches/2009/speech384.pdf

In these remarks, Paul Tucker summarised views on a range of policy issues for making the global and domestic financial system more resilient in future. He defined 'financial stability' to a large degree as being about maintaining the value of private sector money (deposits with banks) in terms of central bank money. Alongside low and stable inflation, that is essential for broader monetary stability. He reviewed a few key issues in microprudential regulation: having supervisors prepared to face down bank management where necessary, but act with restraint; avoiding overly large exposures of any kind; and avoiding business structures that are too complex to supervise, a lesson from BCCI. He emphasised that all banks should hold a core liquidity buffer of high-quality government bonds; and that regulatory capital should essentially comprise equity, as only it can absorb losses. On the debate about macroprudential supervision, he identified five big issues that need to be resolved: whether the objective should be to dampen the credit cycle; whether it is enough to focus on banks; what the instruments should be; whether the policy should be based on rules or discretionary judgements; whether individual national authorities would need to co-operate or co-ordinate in any way. Finally, he stressed that policies to make the banking system and capital market more resilient in the event of a future bubble bursting were just as important as taming the cycle.

Rethinking the financial network.

Andrew Haldane, Executive Director for Financial Stability, April 2009.

www.bankofengland.co.uk/publications/speeches/2009/speech386.pdf

In this speech, Andrew Haldane applied lessons from other disciplines, including ecology, epidemiology and engineering, to consider the financial system as a complex adaptive network. Using network theory, he outlined how the emergence of complexity and homogeneity in the financial network over the past decade had resulted in sharp discontinuities in the financial system. He then went on to

suggest three broad areas for improvement in the robustness of the financial network. First, improvements in data are needed, in terms of better data collection, better analysis of the data, and better communication of the results to the public. Second, regulation of the network is needed to ensure appropriate control of the damaging network consequences of the failure of large, interconnected institutions — systemic regulation. Finally, the financial network should be structured so as to reduce the chances of future systemic collapse. Central counterparties, netting-off gross claims within the financial system, and public authority intervention against undesirable structural developments are possible solutions.

Containing system-wide liquidity risks: some issues and challenges.

Nigel Jenkinson, Adviser to the Governor, May 2009.

www.bankofengland.co.uk/publications/speeches/2009/speech388.pdf

In his speech, Nigel Jenkinson set out a number of high-level objectives that should help guide future research and analysis on the development and design of a framework to strengthen the regulation of system-wide liquidity risks. He reviewed the origins of the present financial crisis, noting that defences against a rise in system-wide liquidity pressure were clearly inadequate and that attempts by banks to use defences designed to address idiosyncratic liquidity problems severely compounded system-wide stress. He noted that reducing the likelihood and impact of future episodes of system-wide liquidity risk was high on the policy agenda. He welcomed the initiatives being taken by the Basel Committee and the Committee of European Banking Supervisors to strengthen the management and supervision of liquidity risk by individual firms, but believes future financial regulation needs to take stronger account of system-wide implications. He gave a preliminary assessment of some of the issues and challenges in meeting five high-level objectives that should influence the future design of a new framework. He thought good progress had already been made in some of the areas but in others, research is only just beginning. He concluded that any new framework must balance the containment of system-wide liquidity risks against the benefits the financial system provides through maturity transformation and the taking of liquidity risk.

The repertoire of official sector interventions in the financial system: last resort lending, market-making, and capital.

Paul Tucker, Deputy Governor, May 2009.

www.bankofengland.co.uk/publications/speeches/2009/speech390.pdf

In this speech, Paul Tucker discussed the role the authorities can play in providing crisis support to the financial system. The

current crisis has underlined how problems of funding liquidity, asset-market liquidity and solvency are intertwined. And those dimensions of a systemic crisis map into the authorities' capability, in principle, to be a lender of last resort, a market maker of last resort (MMLR), and a provider of capital of last resort. In relation to central bank liquidity insurance to banks, he explains the thinking behind the Bank of England's new permanent facilities: the Discount Window Facility and wider-collateral long-term repos. Their design reflects the Bank's objective in this area: to reduce the cost of disruptions to the liquidity and payments services supplied by commercial banks by balancing the provision of liquidity insurance against the costs of creating incentives for banks to take greater risks, and subject to the need to avoid taking risk onto its balance sheet. The authorities also need to set the right regulatory framework for banks' management of their liquidity. He argued that regulators should define the 'liquidity buffer' to comprise high-quality securities that can reliably be traded or exchanged in liquid markets, including in stressed circumstances. In practice, that would mean focusing on government bonds in many economies.

In relation to the debate about MMLR operations, he outlined for debate six possible principles, stressing the need for a central bank to perform a catalytic role, helping ideally to kick-start markets rather than replace them. He argued that there was also a need for principles and policies for what might be called 'capital of last resort' given the recurrence through history of episodes when governments have ended up bailing out banks. In that connection, he also suggested for debate that one possible approach would in future be to build on the example of deposit insurance schemes by putting more of the cost of banking system failures on shareholders in the banking system generally rather than the general taxpayer.

The state of the markets: four issues.

Paul Tucker, Deputy Governor, June 2009.

www.bankofengland.co.uk/publications/speeches/2009/speech391.pdf

In this speech, Paul Tucker remarked on four broadly linked issues.

On the macroeconomic outlook and bank lending he said the medium-term outlook remains 'highly uncertain'. He noted that for the moment it is unclear as to whether the financial system can generate the expansion of credit that will most likely be necessary to support recovery. He warned against the risks of banks simultaneously deleveraging by cutting back on the availability of credit, pointing out that this would be a 'counter productive business and financial strategy'.

On the Bank's policy response to the crisis, he discussed quantitative easing and its interaction with the insurance

industry and other long-term investment institutions. On trade and working capital finance, he welcomed the recent initiative by the insurance industry to release a code of conduct for trade-credit insurance.

On developing more resilient capital markets he noted that entrepreneurial innovation in capital markets may have outstripped the supporting market infrastructure. In particular he said that the Bank of England agreed that more of the vanilla OTC markets should be cleared via central counterparty clearing houses. He went on to say that the financial community must also be open to more trading in core vanilla markets going via exchanges or other well-designed and open trading platforms, to help preserve liquidity when times are tough. Indeed serious consideration is needed of whether the corporate bond markets could benefit from exchange trading.

Finally, on bank capital instruments, he argued that only equity should count as regulatory capital for banks in the medium term; and called for investors to consider exchanging subordinated debt for equity or senior unsecured debt, as has already occurred in some cases.

The Governor's speech at the Mansion House.

Mervyn King, Governor, June 2009.

www.bankofengland.co.uk/publications/speeches/2009/speech394.pdf

In this speech, the Governor noted that the macroeconomic outlook is particularly uncertain. There were reasons to be optimistic about the outlook but the continued weakness of bank lending suggested a need for caution. He also noted that although it is too soon to reverse the extraordinary policy stimulus that has taken place over recent months, it is not too early to prepare for such exit strategies and explain how they would work.

He argued that we must learn lessons from the events of the past two years. One key lesson is that price stability does not guarantee stability of the economy as a whole. But this does not mean that monetary policy should be diverted from its goal of price stability. That would risk making the economy less stable and the financial system no more so.

Instead new instruments to pursue financial stability are required: a 'macroprudential' toolkit to reduce risk across the financial system. But the 'macroprudential' toolkit should not be put together in a hurry. And, more generally, we will need to reflect more deeply on the lessons from the crisis before designing a regulatory response.

Finally, the Governor noted that the Bank needs suitable powers if it is to be able to meet its new statutory responsibility for financial stability.

Working papers

Estimating the determinants of capital flows to emerging market economies: a maximum likelihood disequilibrium approach.

Guillermo Felices and Bjorn-Erik Orskaug, November 2008.

[www.bankofengland.co.uk/publications/workingpapers/
wp354.pdf](http://www.bankofengland.co.uk/publications/workingpapers/wp354.pdf)

The network topology of CHAPS Sterling.

Christopher Becher, Stephen Millard and Kimmo Soramäki, November 2008.

[www.bankofengland.co.uk/publications/workingpapers/
wp355.pdf](http://www.bankofengland.co.uk/publications/workingpapers/wp355.pdf)

Output costs of sovereign crises: some empirical estimates.

Bianca De Paoli, Glenn Hoggarth and Victoria Saporta, February 2009.

[www.bankofengland.co.uk/publications/workingpapers/
wp362.pdf](http://www.bankofengland.co.uk/publications/workingpapers/wp362.pdf)

Common determinants of currency crises: role of external balance sheet variables.

Mirko Licchetta, April 2009.

[www.bankofengland.co.uk/publications/workingpapers/
wp366.pdf](http://www.bankofengland.co.uk/publications/workingpapers/wp366.pdf)

Banks' intraday liquidity management during operational outages: theory and evidence from the UK payment system.

Ouarda Merrouche and Jochen Schanz, June 2009.

[www.bankofengland.co.uk/publications/workingpapers/
wp370.pdf](http://www.bankofengland.co.uk/publications/workingpapers/wp370.pdf)

Payment systems, inside money and financial intermediation.

Ouarda Merrouche and Erlend Nier, June 2009.

[www.bankofengland.co.uk/publications/workingpapers/
wp371.pdf](http://www.bankofengland.co.uk/publications/workingpapers/wp371.pdf)

Funding liquidity risk in a quantitative model of systemic stability.

David Aikman, Piergiorgio Alessandri, Bruno Eklund, Prasanna Gai, Sujit Kapadia, Elizabeth Martin, Nada Mora, Gabriel Sterne and Matthew Willison, June 2009.

[www.bankofengland.co.uk/publications/workingpapers/
wp372.pdf](http://www.bankofengland.co.uk/publications/workingpapers/wp372.pdf)

Glossary and other information

Glossary of selected data and instruments

ABCP – asset-backed commercial paper.

ABS – asset-backed security.

Alt-A – a classification of mortgages where the risk profile falls between prime and sub-prime.

CDO – collateralised debt obligation.

CDS – credit default swap.

CLO – collateralised loan obligation.

CMBS – commercial mortgage-backed security.

GDP – gross domestic product.

Libor – London interbank offered rate.

M4 – UK non-bank, non-building society private sector's holdings of sterling notes and coin, and their sterling deposits (including certificates of deposit, holdings of commercial paper and other short-term instruments and claims arising from repos) held at UK banks and building societies.

MBS – mortgage-backed security.

RMBS – residential mortgage-backed security.

SIV – structured investment vehicle.

SONIA – sterling overnight index average.

SPV – special purpose vehicle.

G7 – Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.

G10 – Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom and the United States.

G20 – The Group of Twenty Finance Ministers and Central Bank Governors.

GAAP – generally accepted accounting principles.

HMT – Her Majesty's Treasury.

IFRS – International Financial Reporting Standard.

IMF – International Monetary Fund.

IPD – Investment Property Databank.

IRB – internal ratings based.

ISA – individual savings account.

LBG – Lloyds Banking Group.

LCFI – large complex financial institution.

LCH – London Clearing House.

MCN – Mandatory Convertible Note.

MMLR – market maker of last resort.

MMMF – money market mutual funds.

MoU – Memorandum of Understanding.

MPC – Monetary Policy Committee.

NICs – newly industrialised countries.

OECD – Organisation for Economic Co-operation and Development.

OIS – overnight index swap.

ONS – Office for National Statistics.

OTC – over the counter.

PNFC – private non-financial corporation.

PPIF – Public-Private Investment Fund.

PPIP – Public-Private Investment Program for Legacy Assets.

RWA – risk-weighted asset.

SBA – Stand-By Arrangement.

SEC – Securities and Exchange Commission.

SLS – Special Liquidity Scheme.

SNB – Swiss National Bank.

SRR – Special Resolution Regime.

S&P – Standard & Poor's.

TAF – Term Auction Facility.

TALF – Term Asset-Backed Securities Loan Facility.

TARP – Troubled Asset Relief Program.

Topix – Tokyo stock price index.

TSLF – Term Securities Lending Facility.

UNCTAD – United Nations Conference on Trade and Development.

VaR – Value-at-Risk.

VAT – Value Added Tax.

Abbreviations

AIG – American International Group.

APF – Asset Purchase Facility.

APS – Asset Protection Scheme.

BCBS – Basel Committee on Banking Supervision.

BIS – Bank for International Settlements.

CCP – central counterparty.

CEE – Central and Eastern Europe.

CGS – Credit Guarantee Scheme.

CIS – Commonwealth of Independent States.

COLR – capital provider of last resort.

CPP – Capital Purchase Program.

CRA – credit rating agency.

CRI – countercyclical regulatory instrument.

DJ Euro Stoxx – Dow Jones Euro Stoxx.

DWF – Discount Window Facility.

ECB – European Central Bank.

ECU – European Currency Unit.

EME – emerging market economy.

FCL – Flexible Credit Line.

FDIC – Federal Deposit Insurance Corporation.

FSA – Financial Services Authority.

FSB – Financial Stability Board.

FSF – Financial Stability Forum.

FTSE – Financial Times Stock Exchange.

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