

# Financial Stability Report

December 2009 | Issue No. 26



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.<sup>(1)</sup> 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).<sup>(2)</sup>

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, including through the Council for Financial Stability. The *Report* is produced half-yearly by Bank staff under the guidance of the Bank's Financial Stability Executive Board, whose best collective judgement it represents, and following review by the Financial Stability Committee of the Court of Directors of the Bank of England.

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This document was delivered to the printers on 16 December 2009 and, unless otherwise stated, uses data available as at 4 December 2009.

The *Financial Stability Report* is available in PDF at [www.bankofengland.co.uk](http://www.bankofengland.co.uk).

(1) The Banking Act 2009 is available at [www.opsi.gov.uk/acts/acts2009/pdf/ukpga\\_20090001\\_en.pdf](http://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](http://www.bankofengland.co.uk/financialstability/mou.pdf).



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# Overview

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The financial system has been significantly more stable over the past six months, underpinned by the authorities' sustained support for the banking system and monetary policy measures. Low risk-free interest rates and reduced uncertainty among investors have led to a rebound in a range of asset prices. Activity in many capital markets has resumed, reducing financing risks for some borrowers. The market rally has boosted bank profits and lowered concerns about potential future losses, and banks have raised further external capital. As solvency concerns have eased, banks have been able to issue unguaranteed term debt, helping them to reduce their reliance on short-term funding.

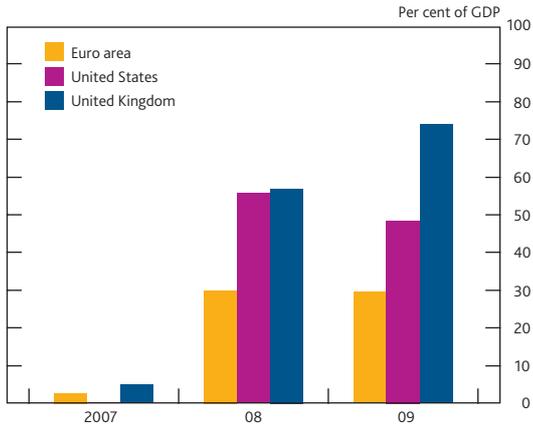
But overstretched balance sheets will take time to adjust fully. Around the world, a number of borrowers, including in the commercial property sector, have large refinancing needs in the coming years. And while funding costs remain low, there is a risk of market participants building excessively risky positions, which could unwind abruptly when yield curves eventually rise. Banks need to reduce leverage further, extend the maturity of their funding and refinance substantial sums as official sector support is withdrawn. While their profitability is relatively buoyant and market conditions are broadly favourable, banks should take the opportunity to do so. That will reduce the risk of disruption to the flow of credit in the future.

In the medium term, the root causes of this and previous systemic crises must be tackled — excessive risk-taking in the upswing of the credit cycle and insufficient resilience in the subsequent downturn. An expectation that 'too important to fail' firms will receive public assistance, and that unsecured wholesale creditors will not share losses, has exacerbated both the boom and the bust. That calls for a robust multi-faceted policy response. Regulatory policies should give greater emphasis to systemic risks over the cycle and across institutions, as set out in a recent Bank discussion paper. They should be complemented by structural measures to contain the spread of risk across the system. And because failures of financial institutions cannot and should not be prevented, the resolution framework will need to be improved to limit the impact on the wider economy.

## Greater financial system stability

A stable financial system is able to sustain critical services to the wider economy — payments, credit provision and insurance against risk — even when it is hit by unanticipated events. In the past few years, credit has been severely impaired and payments were sustained only by public interventions. Over the past six months, there have been signs that the system has become better able to provide these critical services.

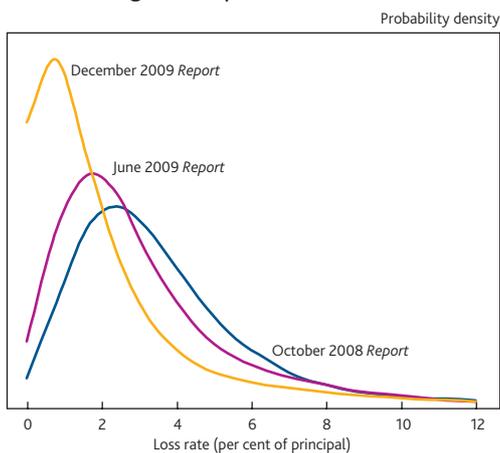
**Chart 1** Public sector interventions during the financial crisis<sup>(a)</sup>



Sources: Bank of England, BIS, Board of Governors of the Federal Reserve System, ECB, FDIC, HM Treasury, IMF *World Economic Outlook* (October 2009), US Treasury and Bank calculations.

(a) End-year. 2009 figures are for November. See also footnotes to **Chart 1.1**.

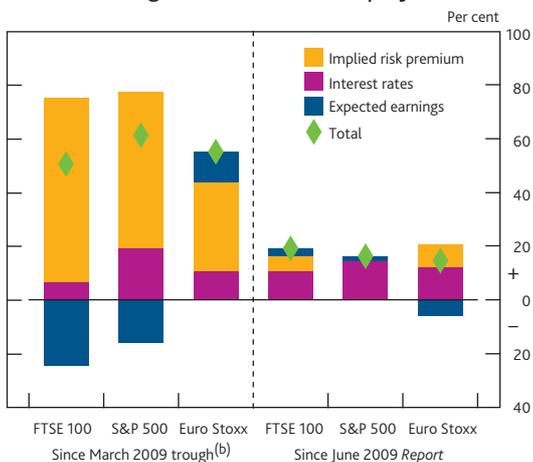
**Chart 2** Implied loss rates on European investment-grade corporate bonds<sup>(a)</sup>



Sources: JPMorgan Chase & Co. and Bank calculations.

(a) Estimated from five-year iTraxx Europe Main CDS indices. As perceived by a 'risk-neutral' investor that is indifferent between a pay-off with certainty and a gamble with the same expected pay-off.

**Chart 3** Changes in international equity indices<sup>(a)</sup>



Sources: Bloomberg, IBES, Thomson Datastream and Bank calculations.

(a) Contributions to changes in indices, based on a three-stage dividend discount model. See Panigirtzoglou, N and Scammell, R (2002), 'Analysts' earnings forecasts and equity valuations', *Bank of England Quarterly Bulletin*, Spring, pages 59–66.

(b) Taken as 9 March 2009.

*Asset market conditions have improved...*

Since the previous *Report*, there has been a strong, synchronised rise in asset prices internationally, underpinned by substantial interventions to support banking systems (**Chart 1**) and monetary policy measures that have lowered risk-free interest rates. By reducing concerns about severe losses (**Chart 2**), these measures have boosted investor appetite for holding corporate securities, including equities (**Chart 3**). In the United Kingdom, the rally in equity prices has been one of the strongest on record (**Chart 4**).

Capital market functioning has also improved (**Chart 5**), with a compression of illiquidity premia across financial markets. Although securitisation markets remain impaired, conditions have recovered in some other primary markets. That has made it easier for large, highly rated firms to raise finance and substitute for subdued domestic and foreign bank lending (**Chart 6**). Indeed, issuance of corporate bonds by investment-grade non-financial companies around the world has been around 50% higher this year than in 2008.

*...and banking sector resilience has increased.*

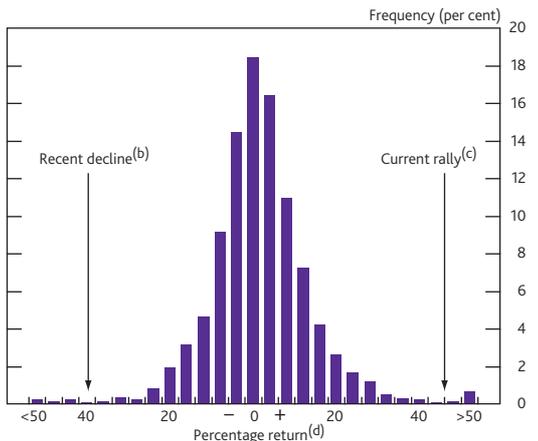
Improved market conditions have boosted bank profitability. Over half of global banks' revenues related to non-interest income in 2009 H1, of which an important component was investment banking activities (**Chart 7** and **Box 4**). The rise in asset prices has reduced losses of financial wealth since the start of the crisis to US\$6.3 trillion (**Table A**) — less than half the level at the time of the June 2009 *Report* — reducing banks' write-downs and in some cases leading to write-backs of earlier losses. And while UK banks' provisions have picked up, implied mark-to-market losses in their banking books (an indicator of future provisions) have more than halved since March.

Banks have taken advantage of strong profitability and improved investor risk appetite to strengthen their capital positions. The major UK banks have raised more than £50 billion in additional core Tier 1 capital in the past six months, taking the total to £127 billion since the start of the crisis. Core Tier 1 capital ratios, at 9.6%, now exceed pre-crisis levels, although they remain relatively low historically.

Improved perceptions of banking sector resilience are reflected in market indicators. UK bank equity prices have risen by almost 40% since their March trough, recouping all of the decline over the previous nine months. There have also been sharp falls in the cost of insuring bank debt. UK banks' credit default swap (CDS) premia are 40% lower than six months earlier, though they remain fifteen times higher than the level at the onset of the crisis. Falls in subordinated debt spreads have been even more marked (**Chart 8**).

As concerns about solvency have eased, banks' access to funding has improved. Spreads of unsecured interbank

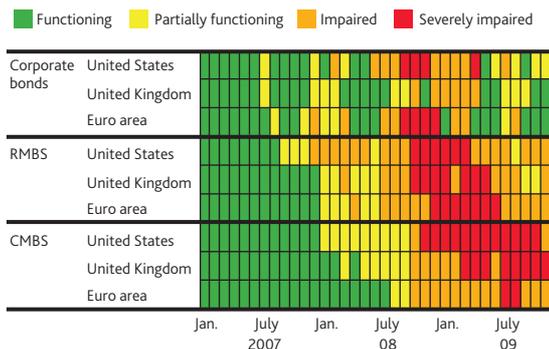
**Chart 4 Declines and rallies in equity prices since 1693<sup>(a)</sup>**



Sources: Bloomberg, Global Financial Data Inc. and Bank calculations.

- (a) The chart shows returns on the FTSE All-Share index in the rally in the nine months to 4 December and in the decline over the preceding nine months, compared with the relative frequency of returns over other nine-month periods since 1693 (partly estimated).
- (b) 4 June 2008 to 4 March 2009.
- (c) 4 March 2009 to 4 December 2009.
- (d) Axis labels reference the mid-point of categories that are 4 percentage points wide.

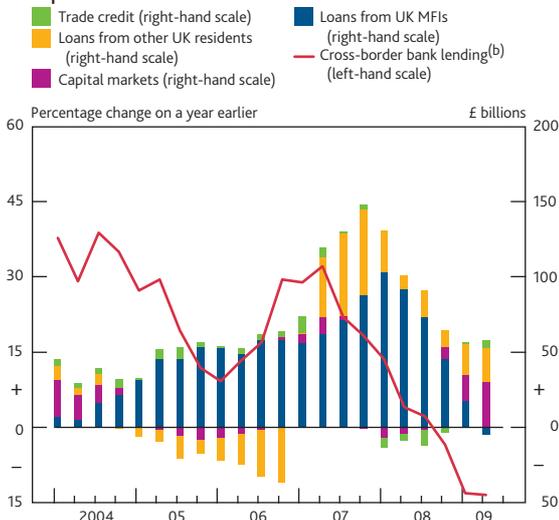
**Chart 5 Primary market functioning<sup>(a)</sup>**



Sources: Bank of America Merrill Lynch, Dealogic, JPMorgan Chase & Co. and Bank calculations.

- (a) Shading is based on a score that reflects issuance (relative to GDP) and spreads at issue, both expressed as a number of standard deviations from average. Standard deviations and averages were calculated using available data from January 1998.

**Chart 6 Sources of finance raised by UK non-financial companies<sup>(a)</sup>**



Sources: Bank of England, BIS, ONS and Bank calculations.

- (a) Four-quarter flow, excluding retained earnings and direct investment loans.
- (b) Includes lending to financial companies. Data shown are BIS-reporting banks' claims on a locational, exchange rate adjusted basis.

borrowing rates over expected policy rates have fallen internationally to near pre-crisis levels. Longer-term debt markets have reopened for UK banks, with issuance of around £32 billion of unguaranteed senior debt in 2009 (Chart 9), helping to reduce reliance on very short-term wholesale funding. UK banks have also increased insurance against a loss of such funding by holding more liquid assets.

### A challenging transition

*Adjustment from the global credit cycle will be prolonged for borrowers internationally...*

Recent improved conditions need to be set against the backdrop of overextended balance sheets across a wide range of countries and sectors. The global boom in loan issuance has left a legacy of significant refinancing challenges for some companies, including in the United Kingdom. Household default rates continue to rise sharply in the United States. There are also pockets of vulnerability in certain emerging economies within Central and Eastern Europe, where private sector credit has grown rapidly over the past few years, partly financed by foreign bank lending (Chart 10). These problems can have unanticipated spillovers, particularly if there is a lack of clarity about sovereigns' support for quasi-government entities — as seen in Dubai and, earlier in the crisis, at US mortgage finance agencies Fannie Mae and Freddie Mac.

*...including in the United Kingdom...*

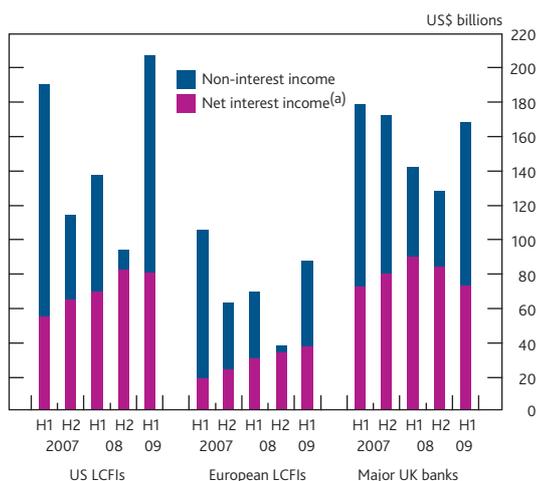
In the United Kingdom, past falls in commercial property prices have raised average loan to value (LTV) ratios above 100%, according to industry estimates (Box 3). Around £160 billion of loans are scheduled to be refinanced between 2009 and 2013.

UK household borrowing also rose rapidly during the upswing. Exceptionally low policy rates have reduced the burden of debt servicing, but rises in interest rates would increase pressures on some households. Household income gearing in the United Kingdom would be around three quarters higher if Bank Rate were 5%, its level prior to the financial market turmoil in October 2008 (Chart 11).

*...and for financial institutions.*

Banks' balance sheets also need to adjust. Banks will face higher capital requirements on trading assets and securitisations from 2011 — of around £33 billion for financial institutions in the United Kingdom, based on FSA estimates — as well as from changes to the definition of core capital. Over the medium term, banks will need to lower their leverage from current high levels (Chart 12) to reduce the likelihood of future systemic stress.

Higher levels of capital would also facilitate improvements to banks' funding. Banks need to reduce the mismatch between long-term assets and risky, uninsured short-term wholesale

**Chart 7** Financial institutions' income

Sources: Published accounts and Bank calculations.

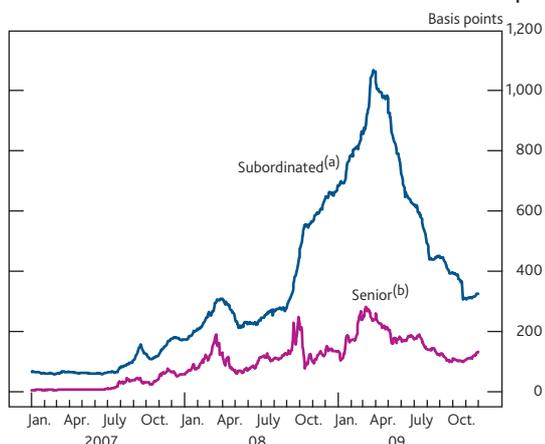
(a) Net interest income pre-provisions.

**Table A** Mark-to-market losses on selected financial assets<sup>(a)</sup>

US\$ trillions	Outstanding amounts <sup>(b)</sup>	Mid-March 2009 <sup>(c)</sup>	June 2009 Report <sup>(c)</sup>	Dec. 2009 Report
Equities	37.1	20.2	12.3	5.9
Corporate bonds	16.4	2.0	0.7	-0.7
RMBS <sup>(d)</sup>	3.4	1.4	1.1	0.7
CDOs <sup>(e)</sup> and CLOs	0.8	0.5	0.4	0.3
CMBS	0.8	0.3	0.2	0.2
Memo: debt securities	21.4	4.1	2.4	0.4
<b>Total losses</b>	–	<b>24.3</b>	<b>14.7</b>	<b>6.3</b>

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, United States and euro area, except for equities, which are global.
- (b) Outstanding face values, except for equities, which are market values.
- (c) Updated to reflect new estimates of outstanding amounts in mid-March and June 2009.
- (d) Includes prime, non-conforming and buy-to-let mortgages for the United Kingdom; residential mortgages for the euro area; prime, Alt-A and sub-prime mortgages for the United States.
- (e) US high-grade and mezzanine home equity loan ABS CDOs.

**Chart 8** Senior and subordinated financial credit spreads

Sources: Thomson Datastream and UBS Delta.

- (a) iBoxx index of sterling financial subordinated debt spreads.
- (b) Asset-weighted average of major UK banks' five-year senior credit default swap premia.

debt. Over the next five years, UK banks also need to refinance over £1 trillion of wholesale funding (**Chart 13**), including funding that has been supported by the public sector. In the absence of stronger capital positions, that would require a dramatic revival in risk appetite from investors in bank debt. A recovery in residential mortgage-backed securities (RMBS) markets would ease the transition. But that may require greater transparency and clearer incentives for issuers to maintain the quality of asset pools (**Box 1**).

Improving balance sheet structures may be costly. In retail markets, competition for funding has raised retail bond rates to around 200 basis points above risk-free rates, compared with a spread below zero in 2005. And, in wholesale markets, longer-term interest rates are well above short-term rates. Based on those rates, the cost to the industry of increasing the maturity of funding, while replacing Special Liquidity Scheme (SLS) and Credit Guarantee Scheme (CGS) support and acquiring low-yielding assets to meet regulatory requirements, could be significant.

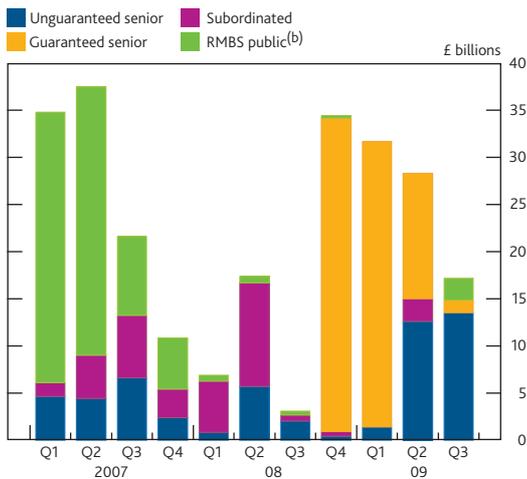
#### *Banks should take advantage of favourable market conditions.*

Despite inevitable short-term costs, there is a strong case for banks acting now to improve balance sheet positions while conditions are favourable. Retaining a higher share of current buoyant earnings could significantly increase banks' resilience and ability to lend. If discretionary distributions had been 20% lower per year between 2000 and 2008, banks would have generated around £75 billion of additional capital — more than provided by the public sector during the crisis. It is also an opportune time for banks to raise capital externally, extend the maturity of their funding, and develop and implement plans for refinancing substantial sums as official sector support is withdrawn.

Taking advantage of current favourable conditions would help to repair balance sheets and thereby insure banks against future adverse developments. Given their balance sheet vulnerabilities, banks remain exposed to any future deterioration in macroeconomic and market conditions, which could substantially raise the cost of funding and capital raising in the future. Specific risks include:

- **Impact of the exit from policy support.** This is hard to gauge, but could lead to heightened volatility in safe and risky asset prices and abrupt portfolio adjustments — for example, as positions funded in low-yielding currencies, such as the US dollar, unwind. Previous episodes, such as the sharp rise in US policy and market interest rates during 1994, highlight that risk.
- **Sovereign risk.** Concerns about sovereign risk have increased recently internationally, after ebbing for most of the period since the previous *Report* (**Table B**). Some sovereigns, including Ireland and Greece, have been

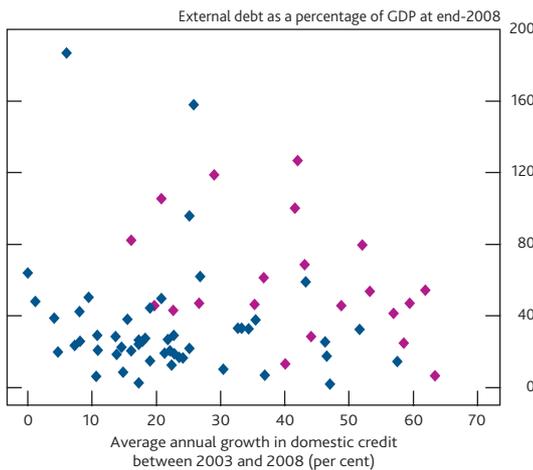
**Chart 9 Debt issuance by UK banks<sup>(a)</sup>**



Source: Dealogic.

(a) Issuance with a value greater than US\$500 million equivalent and original maturity greater than one year.  
 (b) Classified as residential mortgage-backed securities (RMBS) where more than 50% of the underlying assets are residential mortgages. Excludes issues that are not sold to the market by the originator, issuer or bookrunner.

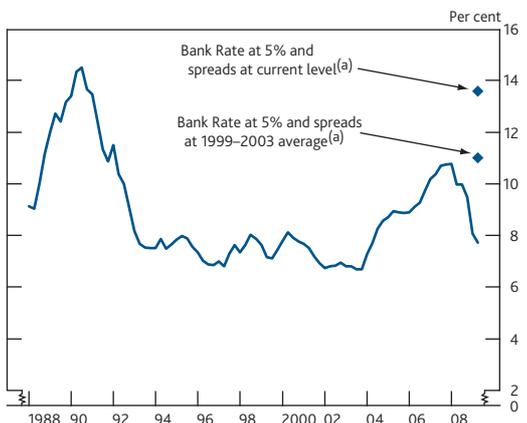
**Chart 10 Private credit<sup>(a)</sup> and external debt in selected emerging market economies<sup>(b)</sup>**



Sources: IMF International Financial Statistics and World Economic Outlook.

(a) Excludes credit to the government, public non-financial corporations and other financial institutions, except where countries do not report using the standardised IFS template.  
 (b) Emerging Europe and Commonwealth of Independent States shown as magenta diamonds.

**Chart 11 UK household income gearing**



Sources: Bank of England and Bank calculations.

(a) Bank Rate was most recently 5% on 7 October 2008.

downgraded. Further downgrades internationally could result from prolonged economic weakness or the absence of credible fiscal consolidation plans. That could prompt capital flight, potentially raising the cost and availability of bank funding.

- **A slower-than-anticipated recovery.** Economic uncertainty remains high (Chart 14) and is a key risk noted by respondents to the Bank's *Systemic Risk Survey* (Table C). A sluggish recovery could lead to financing difficulties among overstretched borrowers and larger-than-expected bank loan impairments.
- **A setback in the asset price rally.** Higher risk-free rates or heightened economic uncertainty could lower asset prices, reducing banks' ability to sustain strong trading revenues. Problems could develop in specific markets — such as high-risk corporate bonds and leveraged loans — where contacts have reported concerns that speculative activity may have begun to emerge. There has also been a re-emergence of so-called covenant-lite loans that provide limited protection to lenders.

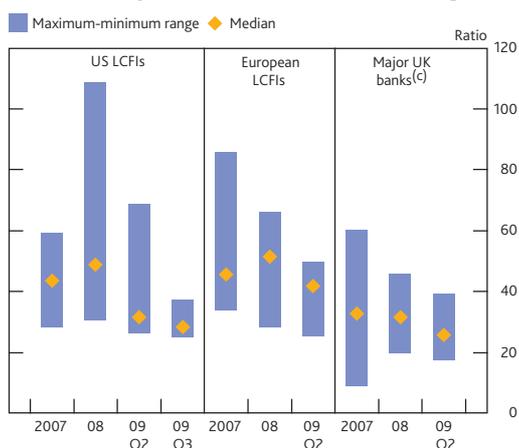
### Safeguarding financial stability

A large number of policy initiatives are under active discussion, by the UK tripartite authorities and internationally, to deal with problems highlighted by the crisis. The range of work has raised concerns among some market participants – including respondents to the Bank's *Systemic Risk Survey* — that measures will either be disproportionate or inadequately co-ordinated. So it is crucial that these policies complement one another and form an integrated and robust package for tackling the root causes of the crisis.

The crisis has highlighted two key sources of systemic risk. First, a tendency for financial systems to become excessively exuberant in upswings and then overly conservative in downturns (Chart 15). Second, financial firms may fail to take account of the spillover effects of their actions on the financial system and the wider economy. A manifestation is the tendency for some institutions to become too important to fail — a problem exacerbated by the lack of market discipline associated with unsecured wholesale creditors not facing losses.

A multi-faceted approach is needed to mitigate these problems. Having a range of safeguards increases the robustness of the policy framework to future changes in private sector behaviour and future pressures on policymakers to dilute protection in more tranquil times. This framework should comprise complementary initiatives in three areas: regulatory policies; the structure of the financial system; and resolution arrangements.

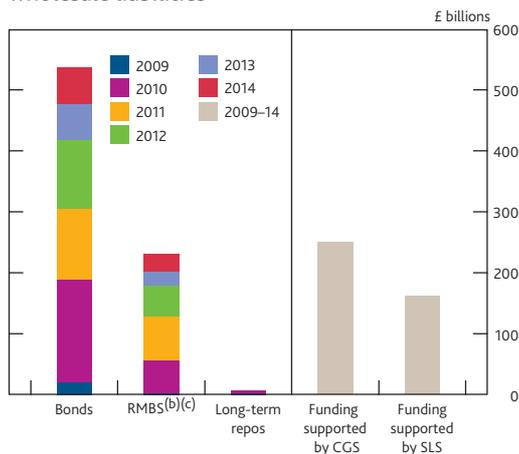
**Chart 12 Major UK banks' and LCFIs' leverage ratios<sup>(a)(b)</sup>**



Sources: Published accounts and Bank calculations.

- (a) Assets adjusted on a best-efforts basis to achieve comparability between institutions reporting under US GAAP and IFRS. Derivatives netted in line with US GAAP rules. Off balance sheet vehicles included in line with IFRS rules.
- (b) Assets adjusted for cash items, deferred tax assets and goodwill and intangibles. For some firms, changes in exchange rates have impacted foreign currency assets, but this cannot be adjusted for. Capital excludes Tier 2 instruments, preference shares, hybrids and goodwill and intangibles.
- (c) Excludes Northern Rock.

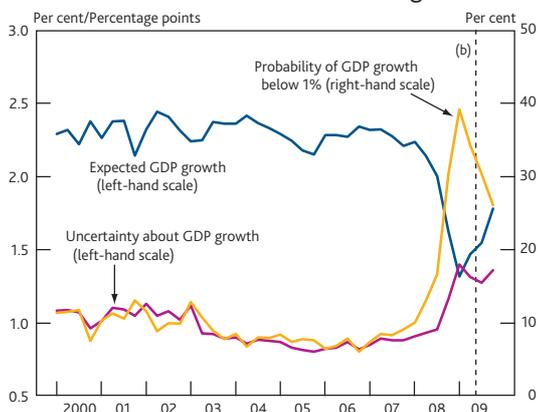
**Chart 13 Major UK banks' maturing funding: selected wholesale liabilities<sup>(a)</sup>**



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

- (a) Shows the full limit for the Credit Guarantee Scheme.
- (b) Shows the date at which markets expect the residential mortgage-backed securities to be called.
- (c) Excludes Britannia, Co-operative Financial Services and HSBC.

**Chart 14 External forecasts of UK GDP growth<sup>(a)</sup>**



Sources: Bank of England and Bank calculations.

- (a) Calculated from the distributions of external forecasters' predictions of UK GDP growth two years ahead, sampled by the Bank and as reported in the *Inflation Report* each quarter.
- (b) June 2009 Report.

**Strengthened regulatory policies**

Prudential regulation can play a key role in limiting cyclical overexuberance and reducing risks across the financial network. To do so, it must give greater emphasis to the build-up of risk across the system as a whole. The Basel Committee is at present considering ways to mitigate such risks. A recent Bank discussion paper<sup>(1)</sup> set out how macroprudential instruments — such as capital surcharges gauged to the credit cycle and to banks' individual contributions to systemic risk — might help to achieve these objectives.

A macroprudential framework would need to be founded on effective microprudential regulation. That requires a reassessment of the appropriate capital structure of banks. In the current crisis, banks' equity buffers were too small, hybrid capital instruments were not always able to absorb losses while banks were a going concern, and short-term wholesale debt was too large relative to more stable sources of funding. That is why the international regulatory community has embarked on a wide-ranging agenda for reform of prudential standards.

Capital buffers will need to rise, possibly substantially, over the coming years. The quality of banks' capital also needs to improve. To absorb losses, capital should comprise equity or instruments that convert to equity automatically under pre-defined conditions. To avoid excessive reliance on refined regulatory risk weights, risk-based capital requirements should be accompanied by a mandatory maximum leverage ratio (Box 6). Reliance on external credit ratings for assessing risks should also be reduced, potentially through regulatory incentives.

Liquidity regulation is being strengthened, with a new regime for the United Kingdom published by the FSA in October. A key aspect of the regime is that banks should hold larger amounts of genuinely liquid assets. As discussed by the Basel Committee on Banking Supervision (BCBS), there may also be a role for a structural funding ratio. This ensures that a significant proportion of a bank's loan book is financed through stable sources of funding, such as retail deposits and long-term wholesale liabilities. The ratio might be supported by measures requiring unsecured creditors to bear losses in the resolution of failing firms, as proposed by some in the United States.

**Changes to the structure of the system**

While regulatory measures may be necessary to reduce the likelihood of financial instability, calibration challenges and the risk of erosion in standards over time mean they may not be sufficient. Changes to market structure can buttress regulatory measures, reducing the risk of stress spilling over

(1) 'The role of macroprudential policy', *Bank of England Discussion Paper*, November 2009.

**Table B** Selected sovereign credit default swap premia<sup>(a)</sup>

	January 2008	October 2008 Report	February 2009	June 2009 Report	December 2009 Report
United Kingdom	9	43	175	87	70
United States	8	28	94	45	32
France	10	31	85	38	24
Germany	7	22	78	34	23
Greece	22	87	285	155	182
Ireland	13	67	396	220	150
Spain	18	66	170	98	86
Japan	9	33	121	44	67
Dubai	n.a.	470	977	505	486

Source: Thomson Datastream.

(a) Senior five-year credit default swap premia in basis points.

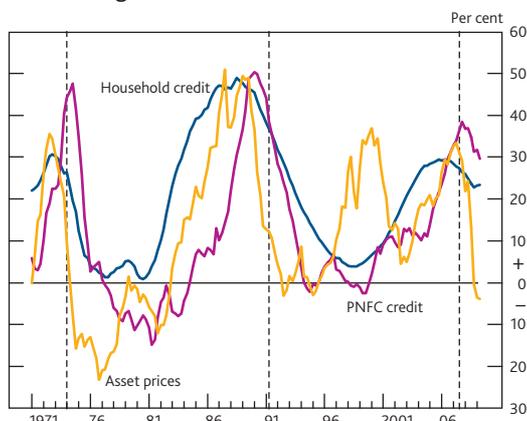
**Table C** Systemic Risk Survey results: key risks to the UK financial system<sup>(a)(b)</sup>

	Key risks		Risks most challenging to manage	
	Nov. 2009	May 2009	Nov. 2009	May 2009
Economic downturn	68	58	41	30
Borrower defaults	49	45	22	21
Regulatory and accounting changes	49	24	35	24
Funding and liquidity problems	35	30	30	12
Property price falls	27	18	5	3
Disruption in securities, insurance, and/or derivatives markets	24	15	16	3
Sovereign risk	24	24	3	6
Tight credit conditions	24	24	11	3
Timing of fiscal and/or monetary policy tightening	22	3	5	3
Inflation	14	9	5	0
Financial institution failure/distress	11	24	14	15

Sources: Bank of England Systemic Risk Survey (May 2009 and November 2009) and Bank calculations.

(a) Per cent of respondents citing each risk. Market participants were asked to list (in free format) the five risks they believed would have the greatest impact on the UK financial system if they were to materialise, as well as the three risks they would find most challenging to manage as a firm.  
 (b) Risks cited in the May 2009 survey have been regrouped into the categories used to describe the November 2009 data, so results differ slightly from those published in the June 2009 Report.

**Chart 15** Asset prices and credit cycles in the United Kingdom<sup>(a)(b)(c)</sup>



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 credit to GDP, relative to their ten-year moving averages.  
 (b) The dashed lines show start dates for banking crises. The chart shows the secondary banking crisis, small banks crisis and the current crisis.  
 (c) Asset price index is a weighted average of real equity prices, real house prices and real commercial property prices, weighted according to national accounts data for holdings of assets.

across the system. For example, authorities internationally have encouraged the extension of central clearing and improved counterparty risk management. There are benefits in extending such clearing to other markets — such as currency swaps and long-dated foreign exchange forwards — backed by improved risk management standards at central counterparties.

The recent revival in capital market finance highlights the potential benefits of lowering the economy’s reliance on bank finance. At present, a small number of UK banks account for over 80% of finance to households and corporates, higher than in many other economies. Measures to develop capital markets and to encourage entry to the UK banking system could leave the wider economy less exposed to distress at individual banks.<sup>(1)</sup>

There is also a case for complementing changes to market structure with arrangements that insulate banking services core to the functioning of the real economy — such as payments and credit provision — from disruption in other, higher-risk banking activities. Such functional separation is common in utilities industries (Box 7). And this need not necessarily require strict institutional separation. But it would present significant implementation challenges to guard against financial institutions beyond the boundary becoming too important to fail — for example, as has been the case for some US money market mutual funds.

**Better crisis resolution arrangements**

Structural reform and changes to regulation will not, and should not, prevent bank failures. Well-designed resolution arrangements are required to ensure that economic disruption is limited and that unsecured wholesale creditors share losses in times of stress. A credible threat of loss would sharpen market discipline, limiting excess risk-taking and the tendency for some institutions to become too important to fail.

Deposit insurance regimes can facilitate orderly resolution by reducing incentives for retail depositors to run. As set out in the June 2009 Report, the Bank believes that deposit insurance should be pre-funded through risk-based levies. That would avoid some of the incentives associated with the current flat-rated scheme in the United Kingdom, which encourages risk-taking (Box 8), and would reduce pressures on banks and taxpayers at times of stress by levying banks when their profitability is strong. Strengthening deposit insurance is one of a number of financial sector issues addressed in a recent HMT discussion paper.

Arrangements for resolution have been strengthened materially in the United Kingdom with the introduction of the

(1) As announced in the Pre-Budget Report, the Government intends to launch a consultation paper on developing non-bank lending channels, advised by the FSA and the Bank.

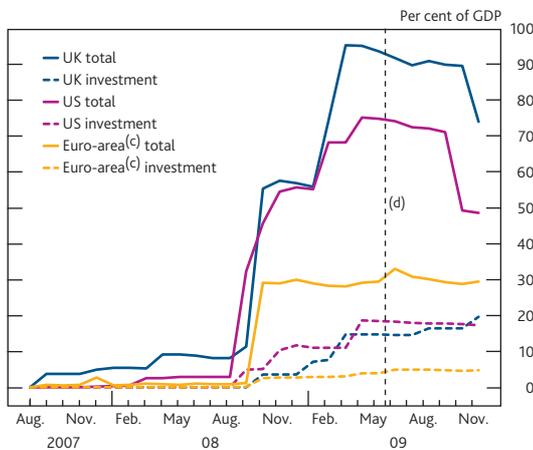
Special Resolution Regime (SRR). The proposed development of recovery and resolution plans (RRPs), at both the national and international level, should help to identify potential difficulties in implementing SRR tools. Effectively enforced, such plans might lead to some institutions changing the structure and legal complexity of their businesses. Alongside the development of RRP, consideration should be given to strengthening resolution arrangements for non-deposit taking institutions whose failure could undermine financial stability under some circumstances. HM Treasury has recently published a consultation document outlining a package of policy initiatives to improve resolution arrangements for investment firms.

# 1 The macrofinancial environment

Exceptional policy measures in the United Kingdom and overseas have reduced concerns among investors about the severity and persistence of the global downturn. Risky asset prices have risen sharply and activity has increased in many financial markets, improving access to finance for large corporate borrowers. But globally some household, corporate and national balance sheets remain stretched. And with access to bank lending still impaired, some borrowers face significant refinancing challenges.

The financial system remains vulnerable to setbacks in both the global economic recovery and activity in financial markets. Prolonged policy support could lead to a dislocation between some asset prices and fundamental economic conditions, raising the possibility of a disorderly unwind when risk-free yield curves eventually rise. Increased concern among market participants about sovereign risk in some countries may further disrupt the transition path.

**Chart 1.1** Public sector interventions in selected countries during the financial crisis<sup>(a)(b)</sup>



Sources: Bank of England, BIS, Board of Governors of the Federal Reserve System, ECB, FDIC, HM Treasury, IMF *World Economic Outlook* (October 2009), US Treasury and Bank calculations.

- (a) End-of-month data expressed as percentages of 2007 nominal GDP.  
 (b) Scale of interventions recorded as potential size of packages when announced, rather than as drawn. Total interventions include insurance, investments and lending by central banks and governments to financial institutions under measures introduced after the crisis began. Investments are composed of capital injections to banks and special purpose vehicles, guarantees of first loss tranches and direct holdings of assets (for example, purchases under the Asset Purchase Facility). Guarantees that are unlimited in size, or where insufficient data are available to estimate the scale of potential liabilities, have not been included.  
 (c) Original euro-area 11 countries plus ECB interventions.  
 (d) June 2009 Report, since when the US Guarantee Program for Money Market Funds expired on 18 September 2009 and the size of the UK Asset Protection Scheme was reduced on 3 November 2009.

## *Policy measures have supported prospects for growth internationally...*

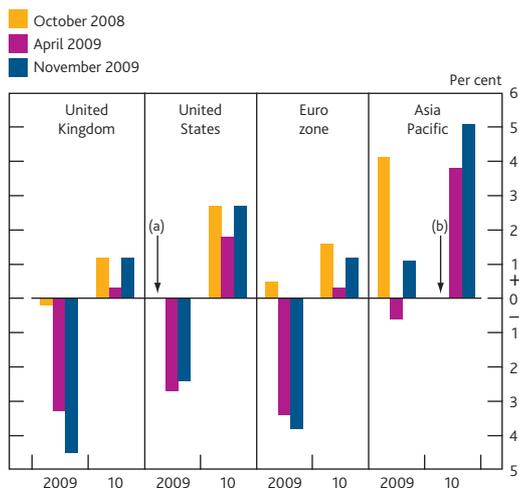
Policy interest rates in the United Kingdom and in some countries overseas have remained at historic lows since the previous Report. Unconventional monetary policy measures have been expanded in some countries, including in the United Kingdom, alongside continued extraordinary levels of actual and contingent support for banking systems (Chart 1.1).

Growth has resumed in some countries. Prospects for 2010 have improved internationally, albeit from a low base (Chart 1.2). The International Monetary Fund (IMF) forecasts that emerging market economies will grow on average by 5.1% in 2010 compared to 1.7% in 2009. Output in the United Kingdom is also expected to expand in 2010. While the perceived risk of severe weakness in output growth has receded, uncertainty around the outlook remains high (Chart 1.3).

## *...as risky asset prices have risen sharply...*

Unconventional policy measures have continued to put downward pressure on long-term nominal interest rates internationally, while market-implied inflation expectations have increased slightly. Real interest rates have therefore fallen — by around 50 basis points in the United Kingdom to 0.7%, below the previous trough of 0.9% reached in March 2008 (Chart 1.4). Real interest rates have fallen by more in the United States and euro area over the past six months, but remain higher than in the United Kingdom.

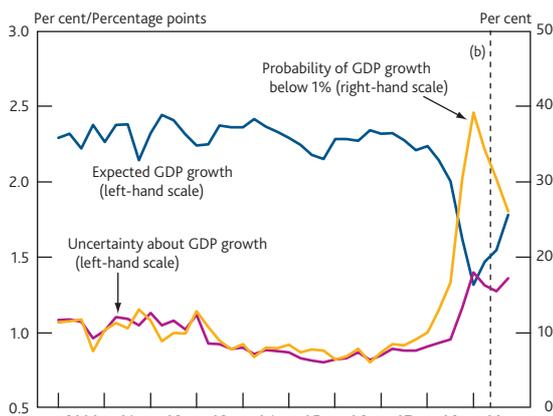
**Chart 1.2 International GDP growth forecasts**



Source: Consensus Economics Inc.

(a) October 2008 forecast for US GDP growth in 2009 was zero.  
 (b) Forecast for 2010 unavailable for Asia Pacific as of October 2008.

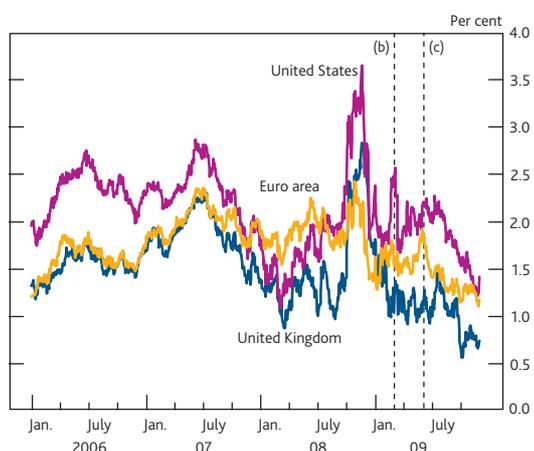
**Chart 1.3 External forecasters' perceptions of prospects for UK GDP growth<sup>(a)</sup>**



Sources: Bank of England and Bank calculations.

(a) Calculated from the distributions of external forecasters' predictions for UK GDP growth two years ahead, sampled by the Bank and as reported in the *Inflation Report* each quarter.  
 (b) June 2009 Report.

**Chart 1.4 International real interest rates<sup>(a)</sup>**



Sources: Bank of England and Bank calculations.

(a) Ten-year real spot interest rates.  
 (b) Trough in financial markets (taken as 9 March 2009).  
 (c) June 2009 Report.

Supported by the continuation of exceptional policy measures and their impact on real interest rates internationally, there has been a sustained, synchronised rise in global risky asset prices. Since the June 2009 Report, major international equity indices have risen by around 15%–20%, with at least half of the rises accounted for by falls in long-term real interest rates according to a standard valuation model (Chart 1.5). International equity prices now stand around 50%–60% higher than the trough reached in March 2009, driven largely by falls in risk premia, but with higher expected corporate earnings also supporting price rises in the euro area.

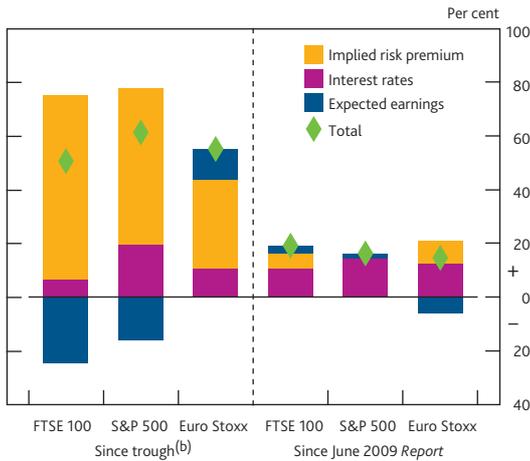
Global equity prices are now around one quarter below the peak reached in October 2007, following one of the strongest rallies on record (Chart 4 in the Overview). Despite continued uncertainty around the growth outlook (Chart 1.3), uncertainty among investors about equity returns, as measured by option prices, has fallen and remains well below the peak reached in October 2008. This is consistent with survey evidence that market participants' uncertainty around near-term corporate earnings prospects has fallen in the United Kingdom and abroad.<sup>(1)</sup>

The perceived likelihood of large and widespread losses on corporate debt securities has continued to fall (Chart 1.6). Globally, yields on investment-grade corporate debt have fallen since the June 2009 Report to their lowest levels since 2005, as falls in risk-free interest rates have reinforced a narrowing in spreads. Yields on sub-investment grade corporate debt have also fallen, but remain higher than before the start of the crisis. In March, spreads on European corporate bonds were at levels consistent with default rates in the Great Depression, particularly at higher credit ratings (Chart 1.7). The subsequent fall in spreads is in line with the improved macroeconomic outlook. But spreads remain significantly higher than those implied by some external forecasters' projections of likely corporate default rates, particularly for highly rated companies.

The rise in risky asset prices has substantially reduced mark-to-market losses on a range of securities (Table 1.A). That has improved the solvency positions of holders of these assets, including banks and other financial institutions (Section 2). Losses of financial wealth since the start of the crisis have fallen to US\$6.3 trillion, less than half the level at the time of the June 2009 Report and around one quarter of the peak reached in March 2009. Some assets have now risen in value since the start of the crisis, including many investment-grade corporate bonds. But total losses remain substantial, at around 10% of world GDP in 2008.<sup>(2)</sup>

(1) According to twelve-month earnings per share forecasts published by IBES International Inc.  
 (2) World GDP was US\$60.6 trillion in 2008 according to the World Bank.

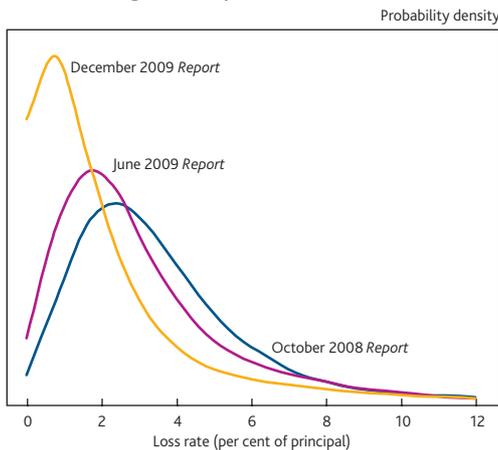
**Chart 1.5** Changes in international equity indices<sup>(a)</sup>



Sources: Bloomberg, IBES, Thomson Datastream and Bank calculations.

(a) Based on a three-stage dividend discount model. See Panigirtzoglou, N and Scammell, R (2002), 'Analysts' earnings forecasts and equity valuations', *Bank of England Quarterly Bulletin*, Spring, pages 59–66.  
(b) Taken as 9 March 2009.

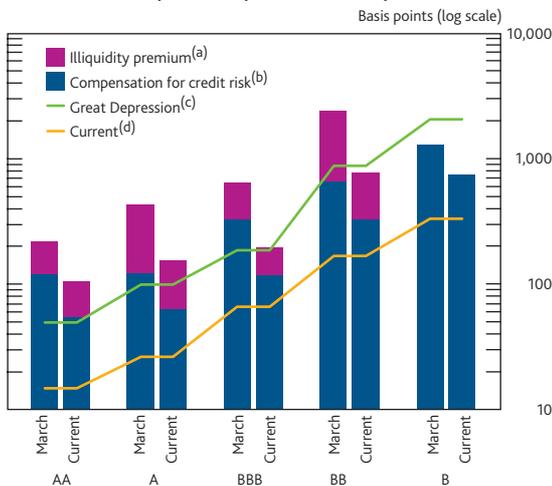
**Chart 1.6** Implied loss rates on European investment-grade corporate bonds<sup>(a)</sup>



Sources: JPMorgan Chase & Co. and Bank calculations.

(a) Estimated from five-year iTraxx Europe Main CDS indices. As perceived by a 'risk-neutral' investor that is indifferent between a pay-off with certainty and a gamble with the same expected pay-off.

**Chart 1.7** European corporate bond spreads



Sources: Citigroup, Moody's Investors Service, UBS Delta and Bank calculations.

(a) Spread of iBoxx € corporate bond index over iTraxx Europe credit default swap index.  
(b) iTraxx Europe five-year credit default swap index.  
(c) Credit risk premium for realised default rates on US corporate bonds issued in 1931.  
(d) Credit risk premium for Moody's current default probability forecast for European corporates.

*...and the functioning of secondary markets has improved...*

Liquidity has improved across a range of financial markets, reinforced by increased market-making by some dealers, as reflected in declining bid-ask spreads (Chart 1.8). Portfolio flows into some risky asset classes have been strong as investors have sought to pick up yield. For example, there has been a marked increase in net inflows into high-yielding emerging market debt funds (Chart 1.9). And the ability of hedge funds to fund risky asset positions has improved as the amount of collateral they are required to post to trade through prime brokers has fallen (Chart 1.10). Some investors are reported to be funding risky asset positions by borrowing in currencies such as the US dollar, where official and market interest rates are low. The attractiveness of this strategy to some investors has increased over the past six months, but remains lower than before the start of the crisis (Chart 1.11).

*...though a number of primary markets remain impaired.*

The recovery in capital market functioning has made it easier for many large, highly rated firms to raise finance than over the recent past. Globally, annual issuance of corporate bonds by investment-grade non-financial companies has risen by around a half during 2009 to almost US\$1 trillion. Issuance of high-yield corporate bonds has also increased during 2009, to US\$188 billion, but remains below the peak of US\$215 billion in 2006 (Chart 1.12).

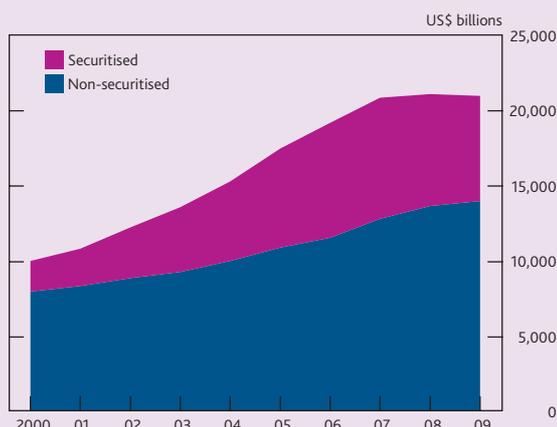
Primary issuance remains impaired in several key financial markets, however (Chart 5 in the Overview). For example, issuance of structured credit instruments picked up slightly in 2009 Q3, but remains well below the levels seen pre-crisis (Chart 1.13). Some new residential mortgage-backed securities (RMBS) have been issued in the United Kingdom since the previous Report. These deals have included contractual features specifically designed to attract investors — the option to return the securities to the issuer on a specified date, offsetting the risk that the issuer could choose not to redeem the RMBS as investors may expect. It is not yet clear whether this issuance represents a genuine reopening of the UK RMBS market, raising a question about the appropriate future structure of securitisation in the United Kingdom (Box 1).

The global market for commercial mortgage-backed securities (CMBS) also remains impaired, following abrupt rises in delinquency rates and substantial downgrades to the ratings of existing securities. Some CMBS deals have been issued in the United Kingdom over the past six months, which have had much simpler structures than were typical in the run-up to the crisis. In the United States, resecuritisations (so-called 're-REMICs') of existing RMBS and CMBS have been issued to create new structured AAA-rated instruments. In part, such deals may help to meet investor demand for genuinely low-risk assets. But these deals may also be motivated by

## Box 1 Where next for UK securitisation?

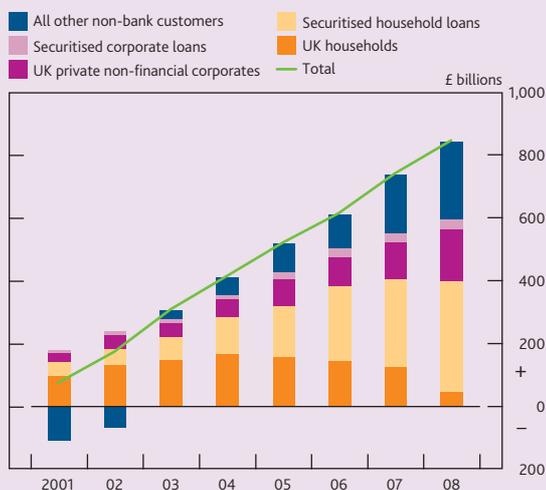
Securitisation<sup>(1)</sup> is a source of funding and a potential tool for banks to transfer risk off their balance sheets. Over the past decade, it has supported an increasing share of lending to households globally (Chart A) in the form of residential mortgage-backed securities (RMBS) and covered bonds. This trend was closely correlated with a widening of the major UK banks' customer funding gap (Chart B). But the market for UK RMBS essentially closed in the third quarter of 2007, and has only tentatively reopened recently with issuance by Lloyds Banking Group (LBG) and Nationwide.<sup>(2)</sup> Issuance of European covered bonds and US RMBS has recovered sooner and more strongly, although this is partly due to central bank purchases and liquidity support operations. A key difference between the UK and other RMBS markets is the use of

**Chart A** The stock of securitised and non-securitised lending to UK, US and euro-area households



Sources: Dealogic, European Central Bank, European Securitisation Forum, Federal Reserve Board and Bank calculations.

**Chart B** Major UK banks' customer funding gap<sup>(a)</sup>



Sources: Dealogic, published accounts and Bank calculations.

(a) Data exclude Britannia and Nationwide.

Master Trusts — a special purpose vehicle for issuing multiple securitisations over time. This box compares different structures in the context of supporting a robust and reliable RMBS market for UK issuers.<sup>(3)</sup>

### International comparison of securitisation markets

There are important differences across countries in securitisation structures (Table 1). Relevant criteria for assessing the suitability of these structures include:

- **Robustness:** are structures tractable and transparent so that investors can understand and model the risks to which they are exposed over time?
- **Incentive alignment:** are the incentives of issuers aligned with investor interests and macroprudential policy objectives?

**Table 1** International comparison of selected securitisation structures

	United Kingdom	United States	Denmark	France and Germany
Predominant form	RMBS: revolving pool Master Trust	RMBS: static-pool pass-through	Covered bonds: revolving pool, callable	Covered bonds: revolving pool, non-callable
Investor base by currency	Approx. 60% non-sterling	US dollar only	Approx. 90% Danish krona	Euro investors only
Underlying mortgages	Floating or short-term fixed-rate, flexible mortgages	Long-term fixed-rate, no pre-payment penalties	Long-term fixed-rate, no pre-payment penalties	Depends on the country, pre-payment penalties
Recourse to issuing banks' balance sheet	In theory, issuing vehicles are arms-length from the issuer. In practice, issuers may provide liquidity support to vehicles.		If asset quality deteriorates additional bank assets may be encumbered. Banks may provide liquidity support.	

Source: HM Treasury Housing Finance Review.

Master Trusts are similar to covered bonds with both maintaining a revolving pool of loans and relying on either the issuer or the structured vehicle to manage cash flows to investors, including through notes being callable by the issuer. This contrasts with the United States where RMBS are mostly backed by static pools of loans and interest and redemption payments are simply passed through to investors. This exposes investors to a type of duration risk — specifically, the risk that interest and redemption payments may be made earlier (pre-payment risk) or later (extension risk) than expected. Investors in the United States have built up experience managing duration risk, aided by the fact that many pools are relatively homogeneous, comprising predominantly fixed-rate mortgages.<sup>(4)</sup> In contrast, UK mortgages have mostly floating rates (or short-term fixed rates) and it is more difficult for investors to manage the duration risk associated with such loans.<sup>(5)</sup> Master Trust structures attempt to remove the need to manage duration risk by actively managing the pool of assets and structuring notes in order to deliver predictable cash flows to investors.

Additions to the pool are typically governed by eligibility criteria, but the fact that investors' exposure to credit risk may vary over time creates a clear *tractability* problem.

This is compounded by a lack of *transparency* in loan pool data and, according to market contacts, a lack of simplicity in RMBS documentation. For investors to monitor the credit risk exposure in a revolving pool, frequent, accurate and granular data on the performance of the underlying loans are required. But these data are typically made available only for select sub-prime and non-conforming UK loan pools. Even for prime mortgages, lack of information about the risks to which investors are directly exposed can create uncertainty and undermine investor confidence in a downturn. A similar challenge arises with covered bonds, but in that case credit risk is mitigated because the investor has recourse to the issuing bank's balance sheet: investors are exposed only to the underlying loan pool if the issuer defaults.<sup>(6)</sup> Similarly, over 75% of US RMBS benefit from a federal agency guarantee. The main focus of credit risk for those investors is therefore the likelihood of agency default.

The UK RMBS market is the largest securitisation market in Europe.<sup>(7)</sup> Prior to the crisis, Master Trusts facilitated a diverse investor base through variation in payment currencies, coupon types and payment schedules. But less than a third of investors were long-term asset managers; in the European covered bond market, the share is almost half.<sup>(8)</sup> The decline in the UK RMBS investor base during the financial crisis raises questions about the *robustness* of a market in which leveraged investors play such an important role. Investors may also have been deterred from returning to the market owing to fears that issuers may fail to call UK RMBS securities, exposing them to extension risk. This risk was crystallised when notes issued from the Granite Master Trust were not called upon the failure of Northern Rock. Fears that other notes may expose investors to extension risk have been exacerbated by sharp rises during the crisis in the cost of term wholesale funding, which meant that in many cases it was economically suboptimal for issuers to call RMBS notes on their call dates.

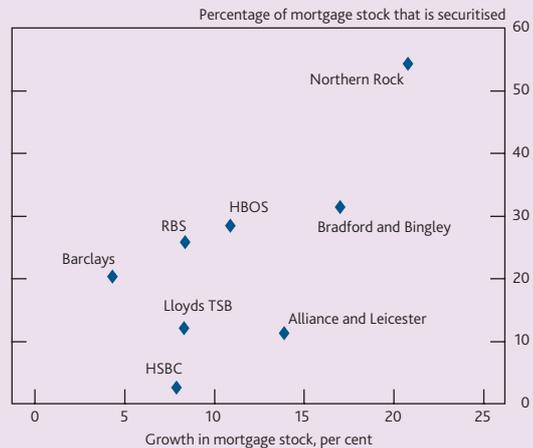
As with other forms of securitisation, there are also concerns that *issuer incentives may not be aligned* with those of investors. But almost all UK issuers retain economic exposure to their Master Trust vehicles and so should be deterred from making bad loans.<sup>(9)</sup>

At the macroeconomic level, however, there is a concern that the need to replenish revolving loan pools could exacerbate the credit cycle. This is more likely to be the case the more reliant a lender is on securitisation for funding its mortgage portfolio. As loans are repaid on a revolving pool, these may need to be replaced to avoid early payment to RMBS holders.

If the issuer has a shortage of replacement assets, it may be incentivised to issue new loans. In other words, revolving loan pool Master Trusts may encourage procyclicality in loan supply.

Such a dynamic seems to have been at play in the United Kingdom in the run-up to the financial crisis. During this period, mortgage spreads contracted despite lending being focused towards the higher end of the risk spectrum.<sup>(10)</sup> It is well documented that Northern Rock played a particularly prominent role in driving this activity. During the period from end-2004 to end-2007, Northern Rock's mortgage book grew by an average annual rate of over 20% (**Chart C**). And as at end-2007, over 50% of its mortgage loan book was funded through its Granite Master Trust. This dynamic was also evident, though to a lesser extent, among other UK banks.

**Chart C** Share of UK mortgages securitised by UK banks versus growth in stock of mortgages<sup>(a)(b)</sup>



Sources: Dealogic, published accounts and Bank calculations.

(a) Data predate the merger of Lloyds TSB and HBOS, which was completed on 19 January 2009.  
 (b) Percentage of mortgage book securitised as at end-2007. Average annual growth in mortgage stock from end-2004 to end-2007.

### Options going forward

Prior to the financial crisis, RMBS internationally appeared to satisfy the needs of issuers and investors. The collapse in primary issuance during the financial crisis exposed weaknesses in this form of securitisation. Attempts in the UK RMBS market to allay investor concerns unearthed by the crisis may substitute one source of concern for another. For example, the recent issues by LBG and Nationwide<sup>(11)</sup> gives investors the right to sell the notes to the issuer after five years,<sup>(12)</sup> alleviating the risk that bonds will not be called. In some respects, these new notes have more in common with covered bonds than RMBS.

In order for securitisation to be robust to economic and financial shocks, duration and credit risk needs to be more tractable to manage and transparent to monitor for those investors with the capability. From a macroprudential

viewpoint, securitisation should not incentivise lenders to act imprudently. To meet these objectives, it is worth considering structures that have:

- fewer tranches;
- higher-quality loans;
- a static homogeneous loan pool;
- regular disclosure of individual loan data; and
- clearly identified issuer stakes.

As outlined in the 2009 Pre-Budget Report, HMT, the FSA and the Bank will explore these and other options, in discussion with issuers and investors, during 2010.

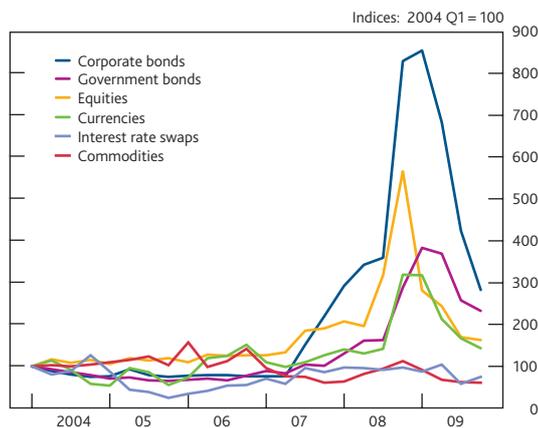
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- (1) Defined here as asset-backed securities and covered bonds.
  - (2) There was a small amount of non-retained issuance during the financial crisis, for example, by HBOS (Permanent 2008-02).
  - (3) Table 2.1 of the IMF *GFSR* (October 2009) summarises a range of potential initiatives which include the role of rating agencies, the need for greater disclosure and tighter regulation.
  - (4) As much of this risk is due to mortgagees' incentives to refinance long-term fixed-rate mortgages as interest rates fall, it is easier to hedge than RMBS with an underlying pool comprising of a diverse range of mortgage products.
  - (5) The Miles Review highlighted the lack of publicly available granular borrower data that would facilitate the modelling and risk management of pre-payment risk.
  - (6) Market contacts have pointed out that, were a bank to default on a covered bond, the collateral would be sold off quickly and potential fire-sale losses incurred. This contrasts with RMBS where the loan pool amortises as a static pool.
  - (7) See Table 1.A in the Crosby Review: *Mortgage finance: final report and recommendations*, HM Treasury, November 2008.
  - (8) See 1st Annual European Covered Bond Investors' Survey, May 2009, European Covered Bond Dealers Association.
  - (9) Nevertheless, concerns in this area are also being addressed by the recent amendment of Article 122a of the EU Capital Requirements Directive which proposes that issuers retain 5% of their securitisations, which may be applied vertically or horizontally to exposures in a collateral pool.
  - (10) See Charts 1.21 and 2.10 in the October 2007 *Financial Stability Report*.
  - (11) LBG and Nationwide issued notes from their Permanent and Silverstone Master Trusts, respectively.
  - (12) In return they will receive the principal less any credit losses realised during that period.

**Table 1.A** Mark-to-market losses on selected financial assets<sup>(a)</sup>

US\$ trillions	Outstanding amounts <sup>(b)</sup>	Mid-March 2009 <sup>(c)</sup>	June 2009 Report <sup>(c)</sup>	Dec. 2009 Report
Equities	371	20.2	12.3	5.9
Corporate bonds	16.4	2.0	0.7	-0.7
RMBS <sup>(d)</sup>	3.4	1.4	1.1	0.7
CDOs <sup>(e)</sup> and CLOs	0.8	0.5	0.4	0.3
CMBS	0.8	0.3	0.2	0.2
Memo: debt securities	21.4	4.1	2.4	0.4
<b>Total losses</b>	–	<b>24.3</b>	<b>14.7</b>	<b>6.3</b>

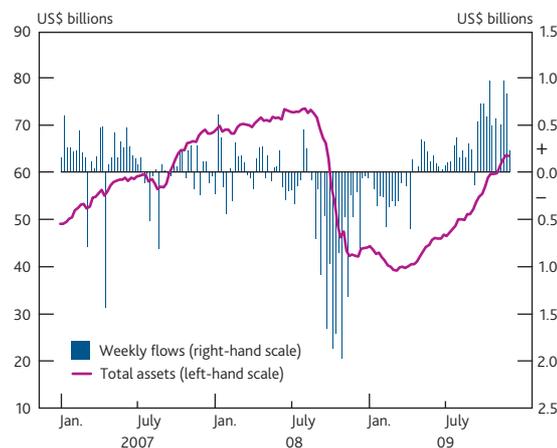
Source: Bank calculations.

- (a) Estimated loss of market value since January 2007, except for US CLOs, which are losses since May 2007. Assets cover the United Kingdom, United States and euro area, except for equities, which are global.  
 (b) Outstanding face values, except for equities, which are market values.  
 (c) Updated to reflect new estimates of outstanding amounts in mid-March and at the time of the June 2009 Report.  
 (d) Includes prime, non-conforming and buy-to-let mortgages for the United Kingdom; residential mortgages for the euro area; prime, Alt-A and sub-prime mortgages for the United States.  
 (e) US high-grade and mezzanine home equity loan ABS CDOs.

**Chart 1.8** Bid-ask spreads on selected assets<sup>(a)(b)</sup>

Sources: Bloomberg, UBS Delta and Bank calculations.

- (a) Quarterly averages of daily bid-ask spreads. 2009 Q4 based on quarterly average to date.  
 (b) iBoxx € Corporates for corporate bonds; iBoxx € Sovereigns for government bonds; S&P 500 for equities; euro/dollar exchange rate for currencies; euro five-year swaps for interest rate swaps; and gold price for commodities.

**Chart 1.9** Net inflows into emerging market debt mutual funds<sup>(a)</sup>

Source: Emerging Portfolio Fund Research.

- (a) Flows into dedicated emerging market funds.

regulatory arbitrage on the part of issuers to lower their capital requirements.

### *Lending by banks to corporate borrowers remains weak...*

Whether and in what form securitisation markets reopen will have implications for the scale and composition of credit supply to borrowers in the real economy, given their past importance to the banking system as a source of funding. Bank lending to the corporate sector remains weak. Syndicated loan issuance during 2009 has been around one third of its peak in 2007 (Chart 1.12). This may in part reflect some firms — particularly investment-grade companies — using funds raised in capital markets to repay bank debt, as well as to substitute for expiring bank loan facilities. In the United Kingdom, this greater use of capital market funding is in marked contrast to the corporate sector's past reliance on bank credit, including from overseas. Cross-border lending to the UK corporate sector contracted sharply during 2008 and 2009, including foreign currency lending by branches of foreign-owned banks (Box 2).<sup>(1)</sup>

Within the UK corporate sector, there are pockets of ongoing pressure. The total number of company liquidations in England and Wales fell by 4.7% on the previous quarter in 2009 Q3. But many small and medium-sized enterprises (SMEs) in the United Kingdom remain dependent on bank finance. Continued weakness in bank lending remains a challenge for those borrowers, though according to British Bankers' Association statistics, net lending by banks to UK small businesses has been positive during 2009 despite weakening in recent months.<sup>(2)(3)</sup> Globally, parts of the corporate sector also remain exposed to larger-than-usual refinancing risks given the historically high volume of loan issuance in the period prior to the crisis. Around €180 billion of European leveraged loans, including those extended to companies purchased through leveraged buyouts, are scheduled to be refinanced between 2013 and 2016 (Chart 1.14).

UK commercial property companies also face significant refinancing challenges. There are some signs that commercial property prices may have stabilised in the United Kingdom, rising in August for the first time in over two years. But prices remain around 45% below their peak, leaving loan to value (LTV) ratios well above pre-crisis levels. Derivatives markets suggest that market participants expect muted price rises looking ahead (Chart 1.15). But the willingness of banks to continue to forbear on breaches of covenants, and the ability of UK real estate companies to service existing debt and refinance expiring loans, are key risks going forward. Sustained

(1) See Box 2 of the June 2009 Report.

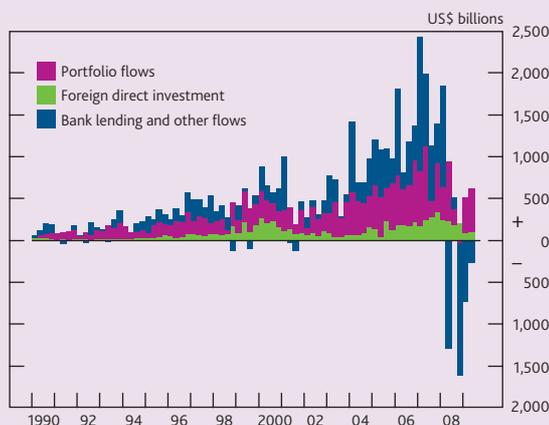
(2) Lending by banks to UK businesses is described in further detail in *Trends in Lending*, November 2009.

(3) Measures to ease financing pressures for SMEs were announced in the Pre-Budget Report 2009.

## Box 2 Cross-border capital flows and bank lending

The June 2009 *Report* highlighted a sharp slowdown in cross-border capital flows in the wake of the failure of Lehman Brothers.<sup>(1)</sup> This followed a prolonged period of expansion, owing largely to growth in interbank activity as the global banking system became more interconnected (Chart A). Over the past year, portfolio inflows — the purchase of financial securities — have recovered. But banking outflows have continued, consistent with a reduction in international bank credit supply. This box examines recent trends in international banking flows and their likely impact on credit to the UK corporate sector.

**Chart A** Purchases of domestic assets of G20 countries by non-residents<sup>(a)</sup>



Sources: Thomson Datastream and Bank calculations.

(a) Excludes China and Saudi Arabia due to lack of data.

### Cross-border versus branch and subsidiary lending

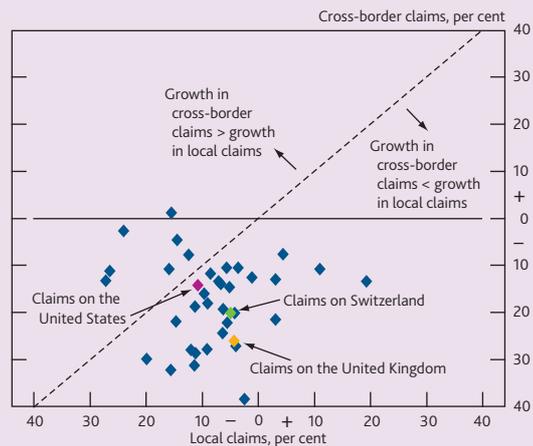
A striking feature of recent international banking flows is that cross-border lending to most countries has fallen by more than lending through foreign-owned subsidiaries and branches (Chart B). Market contacts attribute this pattern to banks focusing on core markets and cutting back lending in markets considered to be peripheral. This could be because of informational advantages in core markets relative to non-core markets.

Evidence on lending to the UK corporate sector also appears to be consistent with a focus on core markets. Lending by foreign branches has fallen faster than lending by foreign subsidiaries and UK-owned banks (Chart C). Branches tend to have less well-established local lending relationships and are more likely to participate in arms-length financing, such as syndicated lending.

An alternative explanation for the sharper slowdown in cross-border lending is that it tends either to be easier to

withdraw, or riskier, than foreign-owned lending undertaken through subsidiaries or branches. For example, interbank lending accounts for a much larger share of cross-border lending. This tends to be at shorter maturities than lending to households and companies and can therefore be more readily withdrawn, for example, in response to heightened counterparty credit risk concerns.

**Chart B** Annual growth in international banks' cross-border versus local claims on individual countries, 2009 Q2<sup>(a)(b)</sup>

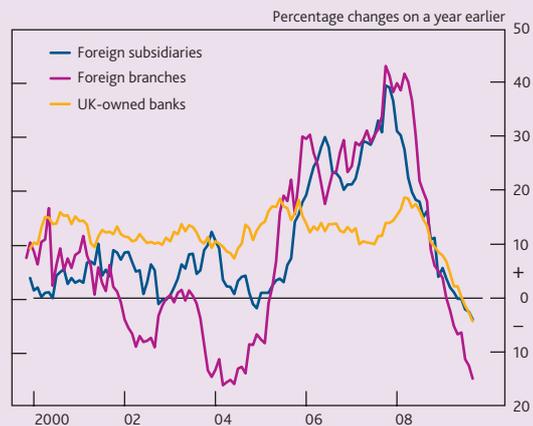


Sources: BIS and Bank calculations.

(a) Consolidated, not exchange rate adjusted. Local claims comprise claims by foreign-owned branches and subsidiaries.

(b) Minimum threshold of US\$100 billion of consolidated claims.

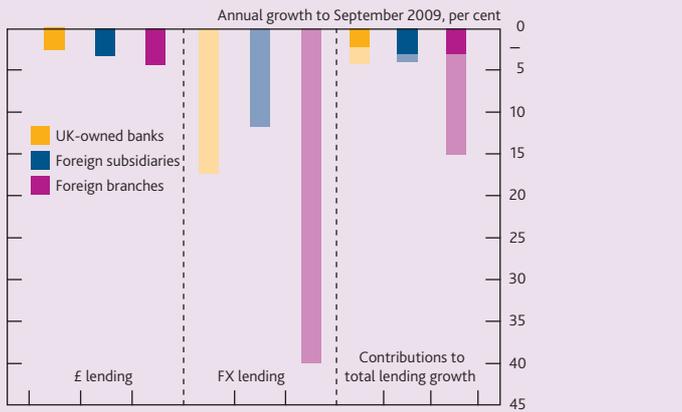
**Chart C** Lending to corporates by ownership of UK-resident banks



Sources: Bank of England and Bank calculations.

Cross-border lending is also often undertaken in foreign currency terms. Banks' ability to fund such lending may have been reduced by pressures in cross-currency swap markets (especially US dollars), as risk aversion became acute in the aftermath of the failure of Lehman Brothers.<sup>(2)</sup> Evidence from the United Kingdom would also appear to support this possibility — the pull-back in lending by foreign-owned branches has been concentrated in foreign currency lending (Chart D).

**Chart D** Currency breakdown of lending to corporates

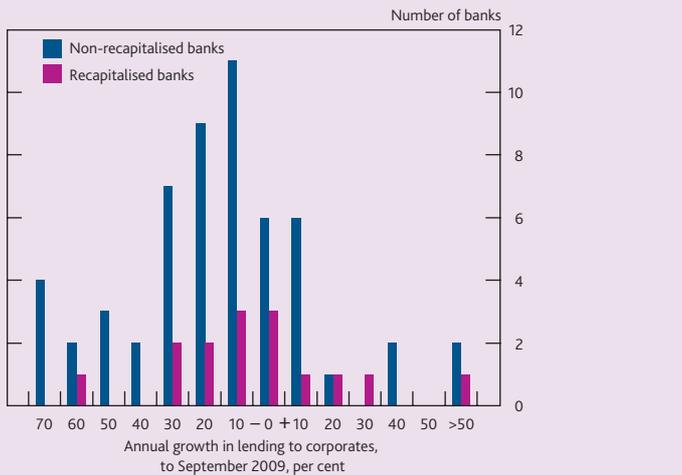


Sources: Bank of England and Bank calculations.

**Foreign-owned bank lending to the UK corporate sector**

In the United Kingdom, foreign-owned banks account for over a third of lending to the corporate sector. Some commentators had feared that government support for banks would lead to forced retrenchment from foreign markets, including the United Kingdom, in order to concentrate on domestic lending. But the evidence does not support this; there has been wide dispersion in the growth of foreign banks' lending since the failure of Lehman Brothers, and lending by those banks that were recapitalised does not appear to be systematically lower than lending by non-recapitalised banks (Chart E).

**Chart E** Impact of foreign government recapitalisation on foreign banks' UK lending<sup>(a)</sup>



Sources: Bank of England and Bank calculations.

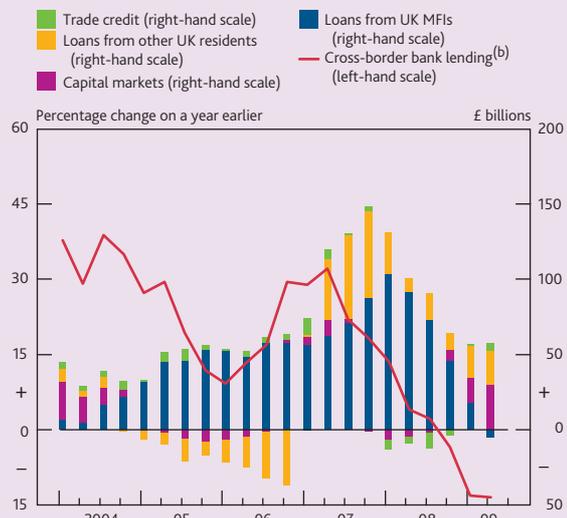
(a) Chart shows lending of UK-resident, foreign-owned banks to UK corporates.

Instead, the evidence points to a reduction in lending arising primarily through two channels: directly, through a reduction in foreign currency lending, particularly by foreign-owned branches; and cross-border, where much of the effect may

come indirectly, through a reduction in interbank lending to UK-owned banks.

Foreign currency lending accounts for only 14% of domestic lending to the UK corporate sector and has fallen by 28% since the failure of Lehman Brothers. To the extent that this lending was primarily to large companies — and it seems plausible that branches' lending was disproportionately concentrated in syndicated lending to large corporates — it may have already been replaced by capital market issuance, accounting for some of the recovery in portfolio flows (Chart F). Any further falls in foreign currency lending may have only a modest impact on corporate sector balance sheets if companies can substitute into capital market issuance.

**Chart F** Sources of finance raised by UK non-financial companies<sup>(a)</sup>



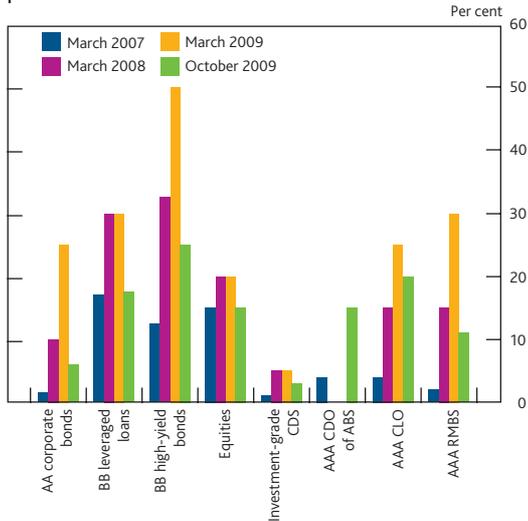
Sources: Bank of England, BIS, ONS and Bank calculations.

(a) Four-quarter flow, excluding retained earnings and direct investment loans.  
 (b) Includes lending to financial companies. Data shown are BIS-reporting banks' claims on a locational, exchange rate adjusted basis.

The indirect channel through interbank lending to UK-owned banks is harder to measure. As previous Reports describe, funding pressures on UK-owned banks are likely to have played a significant role in constraining credit conditions in the United Kingdom and challenges remain in adjusting banks' funding structures (Section 2).

(1) See June 2009 Report Box 2 'Recent cross-border flows', pages 18–19.  
 (2) McGuire, P and von Peter, G (2009), 'The US dollar shortage in global banking and the international policy response', BIS Working Paper no. 291, October.

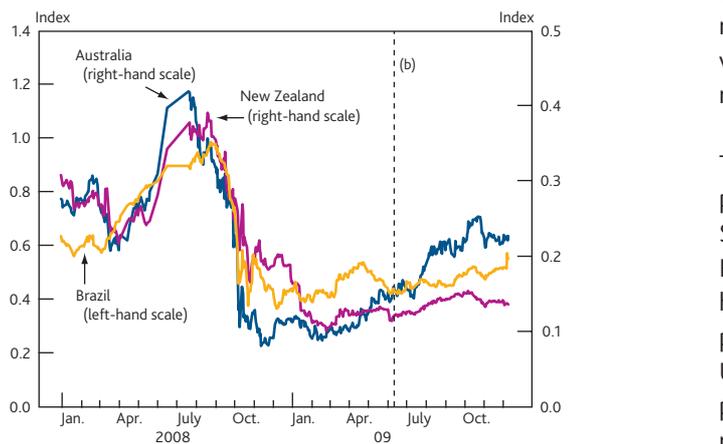
**Chart 1.10** Collateral hedge funds required to post with prime brokers<sup>(a)</sup>



Source: Citi Investment Research and Analysis.

(a) Estimated initial margin as a fraction of principal.

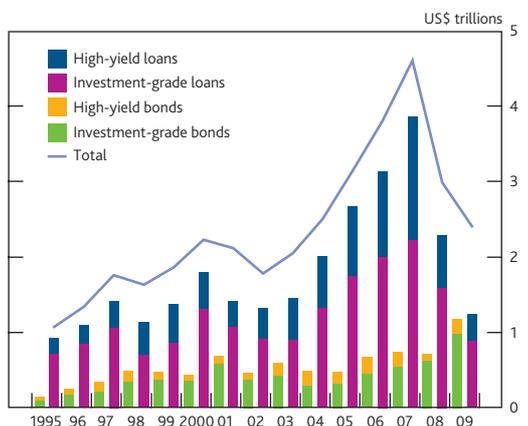
**Chart 1.11** US dollar-funded carry trade attractiveness<sup>(a)</sup>



Sources: Bloomberg and Bank calculations.

(a) Spreads of one-year government bond yields in named countries over one-year US government bond yield per unit of one-year implied volatility of relevant exchange rate.  
 (b) June 2009 Report.

**Chart 1.12** Global issuance of corporate bonds and loans<sup>(a)</sup>



Source: Dealogic.

(a) Issuance by PNFCs only. Partial data for 2009.

impaired access to financing may present a renewed threat to UK banks' domestic corporate exposures (Box 3).

*...while UK households remain stretched...*

Among households, arrears on unsecured debt remain high. The twelve-month growth rate in the stock of unsecured lending turned negative in October for the first time on record. Consistent with these developments, personal insolvencies reached record levels in 2009 Q3. Residential mortgage arrears rose to their highest level since 1999 in 2009 Q2, but have subsequently fallen back slightly.

Residential property prices affect the level of undrawn housing equity, which may partly influence the willingness of households to keep up with loan repayments. Following earlier sharp falls, UK house prices have risen by almost 6% over the past six months (Chart 1.15). But there has been an unusually low volume of properties on the market relative to prospective buyers and transactions have remained subdued, at around one third below their average over the past decade. While mortgage approvals have risen modestly, they remain historically low. Absent a marked pickup in activity and further rises in property prices, a tail of UK households remains vulnerable to a slower-than-expected macroeconomic recovery.<sup>(1)</sup>

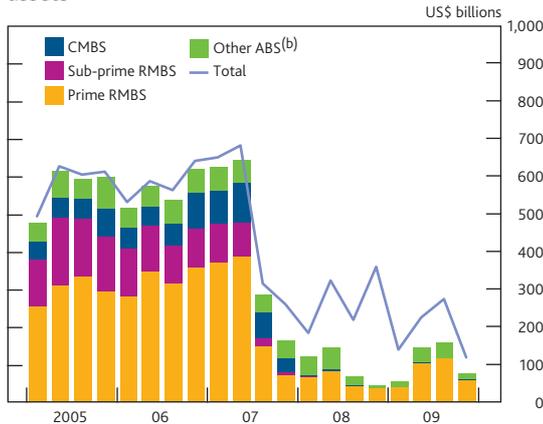
The ability of UK households to service their mortgage payments is influenced by unemployment and income gearing. Since the previous Report, unemployment in the United Kingdom has remained broadly unchanged at 7.8%. But, historically, unemployment has continued to pick up after periods of recession have ended. And while income gearing for UK households has continued to fall below its average over the past two decades (Chart 1.16), this largely reflects unusual monetary conditions. Low official interest rates are more than offsetting wider spreads on residential mortgage lending. Household income gearing in the United Kingdom would be around three quarters higher at 13.6% if Bank Rate were 5%, its level prior to the financial market turmoil in October 2008. Aggregate capital gearing among UK households is high and remains well above its previous peak in the early 1990s (Chart 1.16). Although the ratio of house prices to whole-economy earnings in the United Kingdom has fallen to around 5.4, from its peak of 7.0 in April 2007, this remains above the average over the past two decades of 4.7.

*...and households' access to finance is fragile.*

Households in the United Kingdom are also exposed to significant refinancing risks. Borrowers continue to report that credit availability remains constrained, particularly to prospective borrowers who are currently renting or who have high LTV ratios (Chart 1.17). Respondents to the Bank's Credit

(1) The distribution of household debt and repayment difficulties are described on pages 22–23 of the November 2009 Inflation Report.

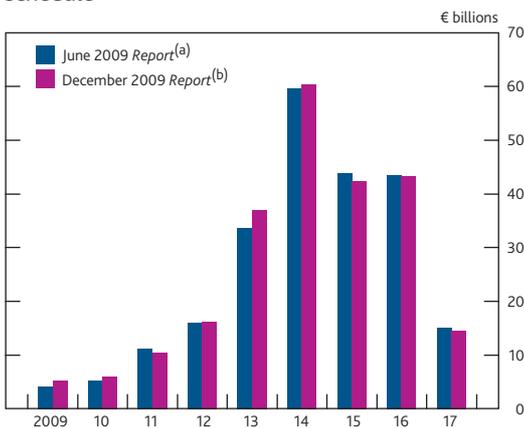
**Chart 1.13** Global issuance of structured financial assets<sup>(a)</sup>



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. Partial data for 2009 Q4.  
 (b) Other asset-backed securities. Includes auto, credit card and student loan ABS.

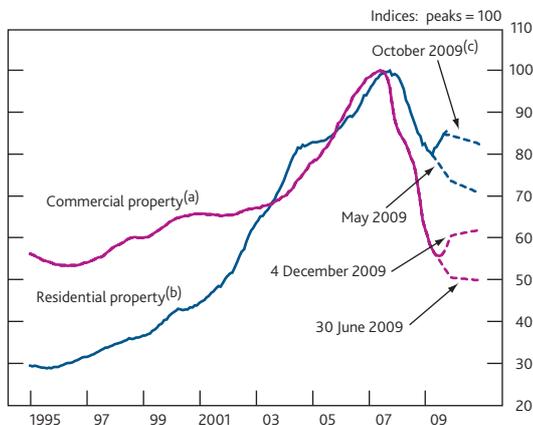
**Chart 1.14** European leveraged-loan refinancing schedule



Source: Fitch Ratings Ltd.

- (a) Refinancing schedule as of April 2009.  
 (b) Refinancing schedule as of October 2009. Excludes C and CC-rated credits.

**Chart 1.15** UK property prices



Sources: Halifax, HM Treasury, IPD, Morgan Stanley, Nationwide, Thomson Datastream and Bank calculations.

- (a) Commercial property price projections are calculated by adjusting total returns derivatives for income returns, which are assumed to revert to their long-run average by end-2010.  
 (b) Projections based on a range of external forecasts from *Forecasts for the UK economy: a comparison of independent forecasts*, May 2009 and October 2009, as compiled by HM Treasury.  
 (c) Sample of external forecasts too small in November for the results to be representative.

*Conditions Survey* in 2009 Q3 reported that the availability of secured credit to households was reduced in both 2009 Q1 and Q3. Those borrowers that are unable to refinance expiring loan deals are vulnerable to payment shocks as they move onto variable interest rate products. Financing concerns among households are consistent with the rise in the household saving ratio to almost 6%, its highest level since 2003, as households seek to deleverage.

Looking ahead, the availability of credit to households will be an important determinant of the pace of economic recovery and a driver of prospective losses for banks. By some measures, households' access to finance is improving. The number of mortgage products available to UK households has increased by around 40% over the past six months to its highest level since September 2008. And as of mid-September, lenders reported that they intended to improve credit availability to households in 2009 Q4.<sup>(1)</sup>

#### *Risks persist in other developed economies...*

Private and public sector balance sheets also remain stretched in several key economies overseas. This can be a source of risk for the UK financial system, either through direct balance sheet exposures to foreign borrowers or from the indirect effects that distress in foreign banking systems may have on financial market conditions and investor confidence.

In the United States, residential and commercial property lending accounts for approximately two thirds of FDIC-regulated commercial banks' loan books. Loan default rates have continued to rise sharply, particularly on residential and commercial real estate lending (**Chart 1.18**), though market contacts expect the pace of deterioration to moderate. Foreclosures in the residential property market have continued to rise, but the number of bank-owned properties on the market has remained broadly unchanged. An abrupt increase in sales of foreclosed properties could put renewed downward pressure on US property prices, which have risen by 3% since the previous *Report*, potentially increasing bank losses. Market contacts estimate that 300–500 US regional banks may be resolved by the FDIC in the medium term as they incur losses on past residential and commercial property lending.

Relative to US banks, major European banks are more exposed to the corporate sector; the IMF estimates that corporate loans account for around one third of their loan books. Corporate default rates in the euro area have risen and some firms face significant refinancing risks (**Chart 1.14**). However, market contacts suggest that some European companies have been able to secure extensions to existing bank loans on modified terms when debt covenants have been breached. This has eased financing pressures for those firms. But to the

(1) Household credit conditions are also described in the November 2009 *Inflation Report*.

### Box 3

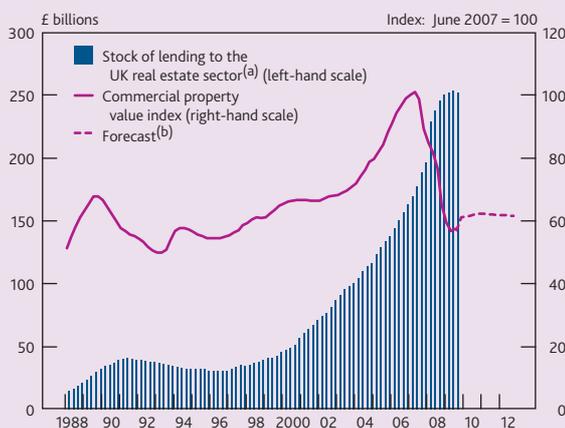
## Risks to UK banks from the commercial property sector

Previous *Reports* have flagged exposure to the commercial property sector as a potential risk for UK banks.<sup>(1)</sup> Large falls in capital values over the past couple of years, alongside the recent severe deterioration in economic conditions, have materially increased prospective credit losses from this source. This box provides an update on developments in the sector and the risks posed to UK banks.

### Exposures

Loans by UK-resident lenders<sup>(2)</sup> to the UK real estate sector account for almost half of the stock of all bank lending to UK non-financial corporates. Outstanding loans to the commercial property sector were over £250 billion at end-September 2009, nearly six times their level a decade earlier (**Chart A**).<sup>(3)</sup> The major UK banks have lent around £200 billion to the sector and have additional contingent exposures of over £30 billion in the form of undrawn credit facilities. In addition, the largest UK banks have gross exposures of over £18 billion to securities backed by domestic and foreign commercial real estate loans.

**Chart A** Stock of lending by UK-resident banks and building societies to the UK real estate sector and UK commercial property capital values



Sources: Bank of England, IPD, Morgan Stanley, Thomson Datastream and Bank calculations.

- (a) Data cover lending in both sterling and foreign currency, expressed in sterling terms.  
 (b) Dashed line is implied property price forecast calculated by adjusting the value of total-return derivatives contracts on 4 December for income returns, which are assumed to revert to their long-run average by end-2010.

### Capital values

Recent developments in the UK commercial property market can be divided into two overlapping phases. In the first phase capital values fell rapidly. By July 2009, the IPD all-property capital value index had declined by nearly 45% from its June 2007 peak — substantially more than the cumulative declines in the early 1990s that occurred over a longer period.

Over the past six months the decline has abated, with the IPD index rising since August. Derivatives prices imply that market participants believe that capital values have reached their trough, but that recovery in the next few years will be muted (**Chart A**). But there is likely to be significant variation in value changes across property types: while investor appetite for UK prime properties has picked up since the start of 2009, appetite for non-prime properties has remained limited. So, while prime property values have started to increase, contacts have indicated that non-prime capital values may have further to fall.

The sharp declines in capital values have triggered breaches of loan to value (LTV) covenants, with some loans in negative equity. Estimates from the Property Industry Alliance (PIA)<sup>(4)</sup> suggest that average LTVs could reach 114% by end-2010.<sup>(5)</sup> As well as causing covenant breaches, declines in values (and rises in LTVs) will also have reduced firms' access to credit by reducing the value of the commercial property that they might use as collateral for secured borrowing.

Market contacts suggest that banks have been willing, to date, to show forbearance in respect of breaches of LTV covenants. In addition, research by De Montfort University suggests that, while loans are still performing, some lenders have not sought to revalue underlying properties. As a result, the sharp declines in capital values alone had a fairly limited impact on banks.

### Triggers for default

Over the past year, deteriorating macroeconomic conditions appear to have prompted a second phase in which the probability of default by UK real estate companies has increased significantly. There are two potential triggers for default:

#### (i) Income risk

Vacancy rates rose from 9.0% to 12.6% between October 2008 and October 2009, as the recession reduced demand for property. Rental values have also fallen, with the IPD all-property rental index recording declines for 18 consecutive months. As a result, annual gross income growth has fallen sharply (**Chart B**). Investment Property Forum Consensus Forecasts suggest further significant declines in rental values are expected in the next year. This is likely to compromise borrowers' ability to service their debts and could lead to rising defaults and increases in impairment charges for banks.

#### (ii) Scheduled refinancing

Another potential trigger for defaults is scheduled refinancing. Data from end-2008 research by De Montfort University suggest that over the next five years (2009–13) scheduled loan refinancing could total around £160 billion. Since many

Chart B Annual gross income growth



Source: IPD.

commercial property loans are non-amortising, when a loan matures the borrower is likely to need to repay an outstanding principal amount (similar to the value of the original loan) either by refinancing or by selling the property.

Given current constraints on their balance sheets, banks may be reluctant to refinance loans as they mature. According to research by De Montfort University, average maximum LTV ratios that banks are willing to offer on investment property have fallen to around 60%–65%. These falls, coupled with the sharp decline in capital values discussed above, imply a substantial equity injection may be required over the next five years in order to reconcile current and desired LTVs. Some large property companies have raised equity through rights issues. However, smaller companies, who are typically more dependent on bank finance, may be less able to find alternative sources of finance.

### Implications for UK banks and financial stability

In the 18 months to end-June 2009, the major UK banks recorded over £10 billion of impairment charges on their banking book exposures to commercial property.<sup>(6)</sup> In 2009 H1, this reflected an annualised impairment rate of nearly 7% — more than double the rate in 2008.

There is a possibility of substantial further impairments if the risks outlined above materialise. For example, Standard & Poor's (S&P) estimates in July 2009 of impairment rates on property and construction would imply central case impairments on the commercial property exposures of UK-resident lenders of around £23 billion over the period 2009–11, while losses in a stress scenario might exceed £37 billion (Table 1).<sup>(7)</sup> Annualised impairment rates in the major UK banks' mid-2009 interim statements lie above both S&P's base case and stress scenario estimates for 2009 but there is a significant amount of uncertainty surrounding their future path and significant variation between banks.

Table 1 Impairment rates

	Data <sup>(a)</sup>		Scenario			
	2008	2009 H1 <sup>(b)</sup>	2009	2010	2011	2009–11
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent £ billions <sup>(c)</sup>
Bank of England estimates	2.6	6.6				
Standard & Poor's (base)			3.3	3.3	2.4	9.0
Standard & Poor's (stress)			5.3	6.3	3.4	15.0

Sources: Standard &amp; Poor's Rating Services, published accounts and interim statements and Bank calculations.

(a) Bank estimates based on published accounts and interim statements of major UK banks.

(b) Annualised.

(c) Estimates based on exposures of UK-resident lenders which total over £250 billion.

Banks holding commercial mortgage-backed securities (CMBS) are also likely to be affected by deterioration in the income streams servicing the underlying loans. Specifically, increasing defaults on the underlying loans will increase the probability of rating downgrades across the capital structure. As downgrades are triggered, the risk weights attached to these securities will rise, increasing associated capital requirements. If downgrades also lead to increases in CMBS spreads and declines in CMBS values, banks will face mark-to-market trading book losses. Although credit spreads have fallen back in the past six months — in some countries by more than others — they remain well above pre-crisis levels, reflecting elevated credit and illiquidity premia.

So far, when lenders have decided to foreclose on borrowers, they have typically held onto repossessed properties. There is a risk that, faced with a growing stock of repossessed properties and/or a reappraisal of their fundamental value, lenders could sell some of these assets, placing significant downward pressure on values. That would reduce banks' recovery rates and could potentially prompt other banks to sell their assets, leading to further falls in property values. This would exacerbate problems for commercial property companies and firms in other sectors that have used property as collateral. If this risk was to materialise, it could leave banks less able to supply credit to the wider economy.

(1) See, for example, Box 2 of the April 2008 Report, page 31.

(2) UK-owned banks and building societies and UK branches and subsidiaries of foreign-owned banks.

(3) And a near fivefold increase in real terms (deflated using CPI inflation).

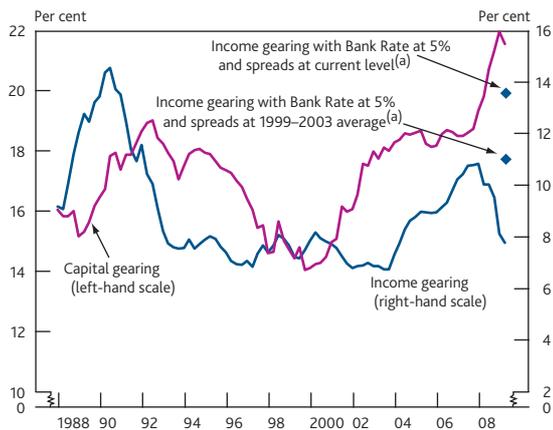
(4) The PIA is an alliance of five property bodies — the British Council for Offices, British Council of Shopping Centres, British Property Federation, Investment Property Forum and Royal Institution of Chartered Surveyors.

(5) This estimate assumed value falls from peak of around 50%.

(6) Bank estimates based on published accounts and interim statements.

(7) S&amp;P's base case assumes a peak-to-trough decline in GDP of about 5.5%, followed by a recovery from late 2009. The downside scenario, to which S&amp;P assign a probability of 20%–30%, involves a fall in GDP of almost twice the base case. S&amp;P apply a loss rate which is 50% higher for property and construction loans than for other corporate loans.

Chart 1.16 UK household gearing

Income gearing under different interest rates (per cent)<sup>(b)</sup>

Spreads	Bank Rate (per cent)					
	0.5	2	3	4	5	6
2009 Q2	7.7 <sup>(c)</sup>	9.1	10.6	12.1	13.6	15.1
1999–2003 average	4.2	6.5	8.0	9.5	11.0	12.5

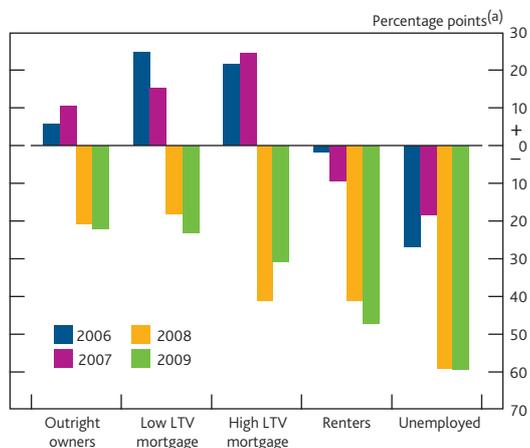
Sources: Bank of England, ONS and Bank calculations.

(a) Bank Rate was most recently 5% on 7 October 2008.

(b) Mechanical impact of changing interest rates while holding household debt and income constant.

(c) Actual data in 2009 Q2.

Chart 1.17 Credit availability by borrower type



Source: September 2009 NMG Financial Services Consulting survey.

(a) Net percentage of households reporting that credit has become easier to access.

extent that their balance sheets deteriorate further, it could expose lenders to a greater risk of future losses.

#### ...in some emerging markets...

There are pockets of vulnerability in certain Central and Eastern European economies, including the Baltic countries and the Ukraine, where there has been substantial growth in private sector credit over the recent past and some of which have large external financing requirements (Chart 1.19). Direct exposures of UK banks to the region appear modest. But a number of continental European banking systems are more heavily exposed (Chart 1.20), creating an indirect balance sheet channel back to the UK financial system, in addition to the possibility of confidence contagion.

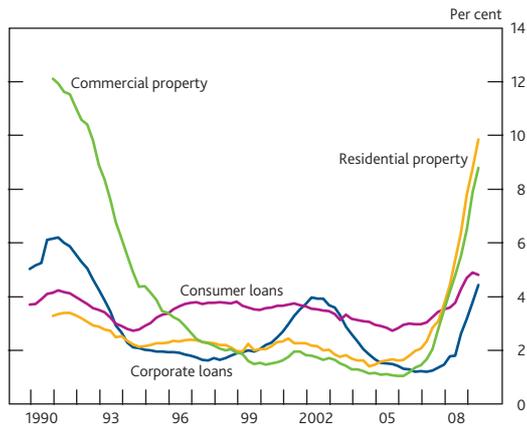
#### ...and from the scale of public support measures.

Continued exceptional levels of public sector support have been necessary to stabilise the global financial system. In the United Kingdom, the perceived likelihood of a high-impact event affecting the financial system in the short term has moderated according to the Bank's *Systemic Risk Survey*. Respondents nevertheless identify the possibility of a renewed economic downturn and a rise in borrower defaults among the main threats to UK financial stability (Table C in the Overview). Continuing international policy support carries the risk that it may raise concerns among investors about the financial health of some governments, increasing their cost of finance. Indicators of sovereign risk, including from credit default swap contracts remain high historically, though they are significantly below the levels reached in February for most countries (Table 1.B). The proportion of respondents to the Bank's latest *Systemic Risk Survey* citing concern about sovereign risk remains unchanged (Table C in the Overview).

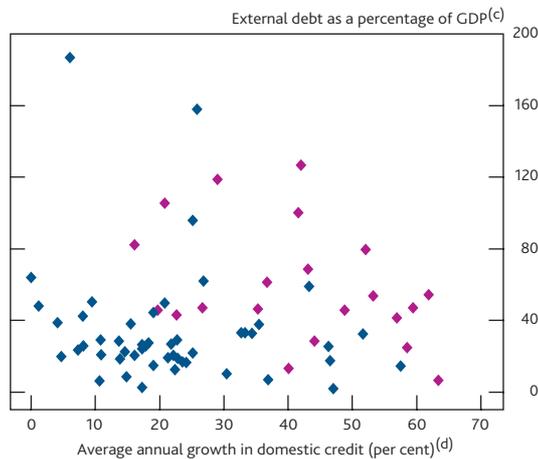
The crisis has put pressure on national balance sheets in a number of countries. Some sovereign credit ratings have been downgraded since the previous *Report*, including for Ireland and Greece. And pressures on companies that investors may have perceived as near-public entities have further raised concerns about sovereign risk in some countries, following the recent repayment difficulties experienced by Dubai World. In the United States, municipal bond yields have fallen to historically low rates and spreads over comparable Treasury bonds narrowed further in 2009 Q3, consistent with signs of economic recovery and easing balance sheet pressures. Market contacts nevertheless report concern that some US regional authorities continue to face financing challenges — raising the risk of losses for monoline insurers that have underwritten their debt.

#### Policy support will eventually be withdrawn...

The policy support measures implemented internationally will eventually need to be unwound once the financial system and economy have stabilised. The enormous scale of public sector

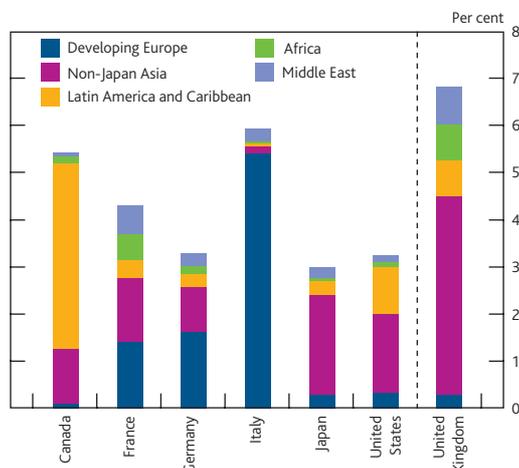
**Chart 1.18** Default rates on loans in the United States

Source: Board of Governors of the Federal Reserve System.

**Chart 1.19** Growth in private credit<sup>(a)</sup> and the level of external debt in selected emerging market economies<sup>(b)</sup>

Sources: IMF *International Financial Statistics* and *World Economic Outlook*.

- (a) Excludes credit to the government, public non-financial corporations and other financial institutions, except where countries do not report using the standardised IFS template.  
 (b) Emerging Europe and Commonwealth of Independent States shown as magenta diamonds.  
 (c) As at end-2008.  
 (d) Between 2003 and 2008.

**Chart 1.20** Foreign-owned banks' consolidated claims on emerging markets<sup>(a)</sup>

Sources: Bank of Canada, Bank of Japan, BIS, ECB, FDIC and Bank calculations.

- (a) Relative to total assets, as at end-2008.

intervention means that any withdrawal of policy support could have a significant impact on investors' portfolio choices and relative asset prices, including government securities. The impact would further depend on market participants' perceptions of the strength of the banks, financial markets and the economy at the point at which policy measures were unwound.

Valuations in some financial markets are vulnerable to such a reappraisal. This could be triggered, for example, by market interest rates rising unexpectedly or investors' risk appetite falling abruptly. For example, an increase of 1 percentage point in long-term real interest rates or UK equity risk premia would be consistent with a fall in equity prices in the United Kingdom of around 16% (Chart 1.21). Risk appetite among investors remains significantly higher than in early 2009, but may have fallen recently as year end has approached and some investors have sought to reduce their exposures to risky assets (Chart 1.22). International equity risk premia have fallen substantially from the peaks reached in late 2008 and early 2009, but remain above their levels going into the crisis.

*...depending in part on risk-taking among investors...*

Continued public sector support measures have been a major factor in the compression of previously large illiquidity premia across financial markets (Chart 1.8). Many market prices do not appear out of line with the economic outlook (Chart 1.7). But there are early signs that pockets of activity may have begun to emerge where some investors could be imperfectly managing risks. The increase in some asset prices may have been reinforced by benchmarking among investors seeking to match performance indices, further reducing illiquidity premia for a relatively narrow set of unstructured assets. There have also been tentative signs of a re-emergence of so-called covenant-lite loans to companies in the United States that provide limited protection to lenders in the event of borrower distress. Market contacts report concern that some asset prices could become artificially inflated, including for certain high-risk corporate bonds and leveraged loans.

There may be a renewed search for yield emerging among certain market participants. Some investors are choosing their asset allocation according to relative expected yields, reportedly with limited consideration of relative risk. Other investors are seeking to boost returns by increasing leverage, albeit from a lower base than was typical before the crisis, including some hedge funds which have increased leverage modestly during 2009 to its level in the autumn of 2008. And some investors are choosing to follow both of these strategies, including those holding positions in unhedged carry trades (Chart 1.11).

There may be misallocation when risks are collectively underestimated by market participants and when broadly

**Table 1.B** Selected sovereign credit default swap premia<sup>(a)</sup>

	January 2008	October 2008 Report	February 2009	June 2009 Report	December 2009 Report
United Kingdom	9	43	175	87	70
United States	8	28	94	45	32
France	10	31	85	38	24
Germany	7	22	78	34	23
Greece	22	87	285	155	182
Ireland	13	67	396	220	150
Spain	18	66	170	98	86
Japan	9	33	121	44	67
Dubai	n.a.	470	977	505	486

Source: Thomson Datastream.

(a) Senior five-year credit default swap premia in basis points.

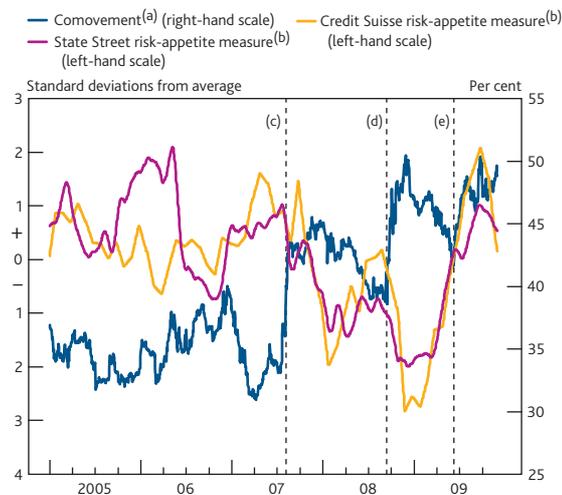
**Chart 1.21** Sensitivity of equity prices to corporate earnings prospects and market interest rates<sup>(a)(b)</sup>



Sources: Bloomberg, IBES, Thomson Datastream and Bank calculations.

(a) Based on a three-stage dividend discount model. See Panigirtzoglou, N and Scammell, R (2002), 'Analysts' earnings forecasts and equity valuations', *Bank of England Quarterly Bulletin*, Spring, pages 59–66.  
 (b) Diamonds denote valuations if expected earnings growth were 1 percentage point weaker. Triangles denote effect of 1 percentage point higher real interest rates or equity risk premia.

**Chart 1.22** Investors' risk appetite and comovement between financial assets



Sources: Bloomberg, Credit Suisse, Thomson Datastream and Bank calculations.

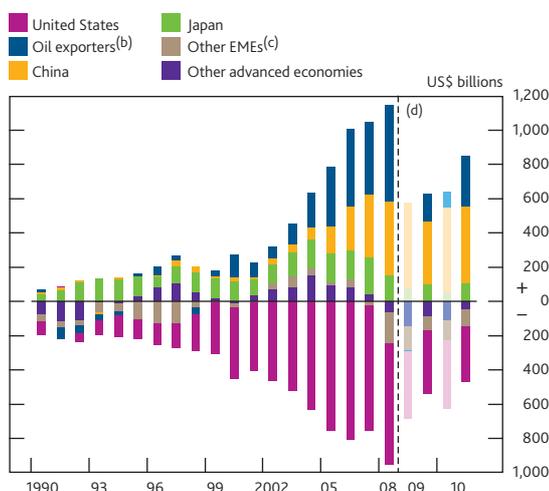
(a) Proportion of variation in changes in daily returns for UK, US and euro-area equities (US\$-terms); UK, US and euro-area nominal interest rates; £ per US\$ and € per US\$ exchange rates; and commodities (US\$-terms) explained by the first principal component over a six-month rolling window.  
 (b) Adjusted so that positive (negative) numbers indicate higher (lower) risk appetite.  
 (c) BNP Paribas suspends funds exposed to US sub-prime mortgages.  
 (d) Lehman Brothers Holdings files for Chapter 11.  
 (e) June 2009 Report.

similar strategies are pursued. Market participants with near-term performance objectives are reported by market contacts to be adopting similar positions across risky financial assets, with returns moving in tandem (Chart 1.22). To the extent that this is the case and some positions are imperfectly hedged, a co-ordinated unwinding of speculative activity could have a potentially destabilising impact on global financial markets. For example, the unanticipated sharp rise in interest rates in the United States during 1994 led to substantial losses for some investors, including debt mutual funds and hedge funds exposed to collateralised mortgage obligations.

*... though significant global imbalances are projected to remain.*

As discussed in the previous Report, the build-up of risk in the financial system prior to the crisis was closely linked to the accumulation of foreign exchange reserves by some countries running persistent current account surpluses against those running deficits. Emerging market countries' foreign exchange reserves increased by around US\$700 billion between March and September 2009, compared to a decrease of around US\$300 billion in the previous six months. The IMF projects that large global imbalances will persist during 2010 (Chart 1.23). This could again result in some asset risk premia becoming artificially depressed and prices inflated, beyond levels that are justified by the fundamental macroeconomic outlook. Persistent global imbalances require a more resilient financial system than would otherwise be the case to ensure continuity of financial services to the real economy (Sections 2 and 3).

**Chart 1.23** Global current account balances<sup>(a)</sup>



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

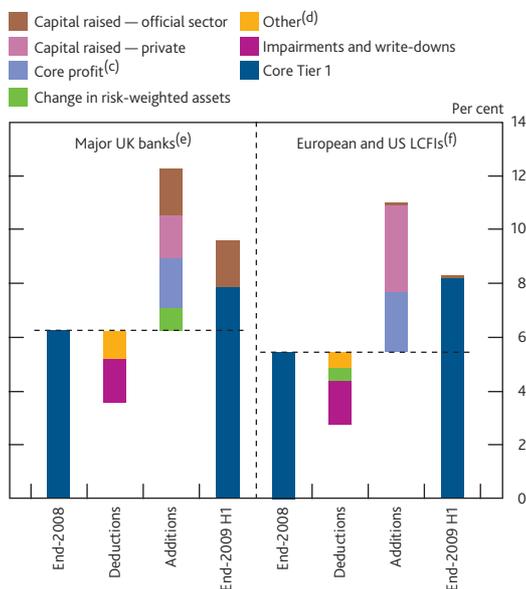
(a) May not sum to zero due to errors and omissions.  
 (b) The sum of the ten largest oil exporters in 2004: Algeria, Iran, Kuwait, Mexico, Nigeria, Norway, Russia, Saudi Arabia, United Arab Emirates and Venezuela.  
 (c) Other EMEs include the newly industrialised Asian economies.  
 (d) IMF World Economic Outlook forecasts for 2009 and 2010. Lighter and darker bars show forecasts as of April 2009 and October 2009 respectively.

## 2 Financial system stability

The global financial system is more stable than six months ago. Improvements in financial markets and the economic outlook have boosted trading profits and contained loan losses at financial institutions. Banks have raised further capital, both privately and through additional public sector support. And as concerns over solvency have eased, banks have been able to access longer-term funding markets, reducing their reliance on short-term wholesale funding.

Notwithstanding recent progress, many banks internationally still have high levels of leverage and unbalanced funding structures. In the United Kingdom, banks need to extend the term of their funding, while also repaying public sector support over the next three years. They are also likely to need to raise core equity levels further to meet eventual new regulatory rules. To meet these challenges, while providing adequate finance to support the recovery from recession, banks could usefully take advantage of currently favourable conditions through issuance in private markets and retention of profits to build capital.

**Chart 2.1** Core Tier 1 capital ratios in 2009 H1<sup>(a)(b)</sup>



Sources: Published accounts and Bank calculations.

- (a) Includes significant completed or announced capital raising, asset disposals and buybacks/exchanges since 2009 H1.  
 (b) Average core Tier 1 capital, defined as common shareholders' equity adjusted for goodwill and intangibles and regulatory deductions. Excludes contingent capital. For UK banks, includes B shares.  
 (c) Based on pre-provision profit adjusted for one-off items, including write-downs and credit valuation adjustments on own debt.  
 (d) Includes foreign exchange translation impact and tax.  
 (e) Excludes Northern Rock.  
 (f) Excludes Goldman Sachs and Morgan Stanley.

### *The resilience of the global banking system has improved.*

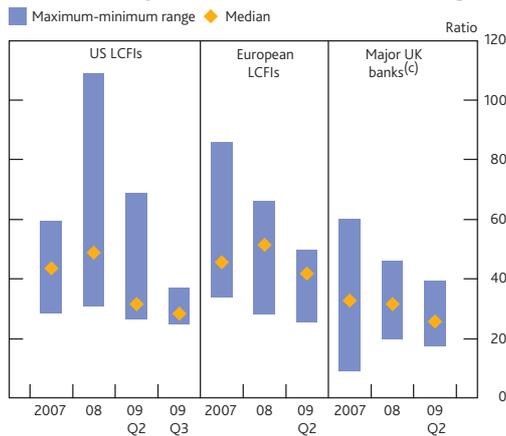
Globally, the banking system is more stable than six months ago. Concerns over banks' solvency have fallen. The rally in financial markets has boosted banks' profitability significantly, while the improved economic outlook has reduced concerns about potential future losses. Banks have also raised further capital through equity issuance. As confidence in banks and financial markets has returned, funding conditions have also improved.

### *Capital in the banking system has increased...*

Large global banks<sup>(1)</sup> have raised their core Tier 1 capital ratios by around 2.7 percentage points in aggregate over 2009 to date, despite further write-downs and loan impairments (Chart 2.1). Banks' capital raising has improved their ability to weather stress from higher future impairments.

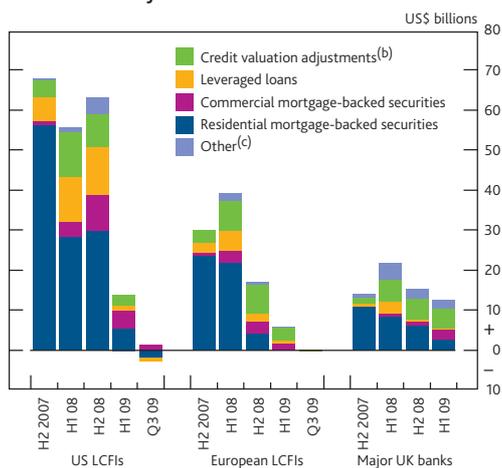
In total, banks internationally have raised nearly US\$1.5 trillion of new capital since the start of the crisis, over a third of which has been temporary capital provided by governments. That compares with US\$1.7 trillion of reported write-downs and

(1) The term large global banks here comprises two peer groups: the major UK banks group and the LCFIs group. 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 Financial Services, HSBC, Lloyds Banking Group, National Australia Bank, Nationwide, Northern Rock and RBS. The LCFIs include the world's largest banks 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, Citigroup, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan Chase & Co., Morgan Stanley, RBS, Société Générale and UBS.

**Chart 2.2 Major UK banks' and LCFIs' leverage ratios<sup>(a)(b)</sup>**

Sources: Published accounts and Bank calculations.

- (a) Assets adjusted on a best-efforts basis to achieve comparability between institutions reporting under US GAAP and IFRS. Derivatives netted in line with US GAAP rules. Off balance sheet vehicles included in line with IFRS rules.  
 (b) Assets adjusted for cash items, deferred tax assets and goodwill and intangibles. For some firms, changes in exchange rates have impacted foreign currency assets, but this cannot be adjusted for. Capital excludes Tier 2 instruments, preference shares, hybrids and goodwill and intangibles.  
 (c) Excludes Northern Rock.

**Chart 2.3 Major UK banks' and LCFIs' write-downs<sup>(a)</sup>**

Sources: Published accounts and Bank calculations.

- (a) Includes write-downs due to mark-to-market adjustments on trading book positions where details disclosed by firms.  
 (b) On exposures to monolines and others.  
 (c) Other includes SIVs and other ABS write-downs.

**Chart 2.4 Major UK banks' and LCFIs' credit default swap premia<sup>(a)</sup>**

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

- (a) Asset-weighted average five-year premia.  
 (b) Excludes Co-operative Financial Services.

credit losses to date. A number of major institutions in the United States and continental Europe have begun to repay public sector capital.

Bank leverage has fallen across the large global banks (**Chart 2.2**). Median leverage across the banks is now around 32 times capital, having fallen from around 37 times at the start of the crisis. Improvements primarily reflect capital raising. But all banking sectors have also reduced assets, including lending to customers: US LCFIs have reduced lending by 6%, and European LCFIs by 2%.

*...as banks globally have improved profitability.*

Strong profitability has been a key contributor to banks' capital raising. Pre-tax net income for the large global banks for 2009 H1 amounted to US\$200 billion, compared with US\$56 billion for the whole of 2008. As discussed in Box 4, over half of those revenues derived from non-interest income, in particular from activities in fixed income, commodities, currency and equity markets within investment banking. Write-downs have also fallen sharply: the large global banks reported US\$30 billion of write-downs in 2009 H1, compared with US\$210 billion in 2008 (**Chart 2.3**). These revenues have helped offset losses in commercial banking, where provisions on both household and corporate debt have continued to rise.

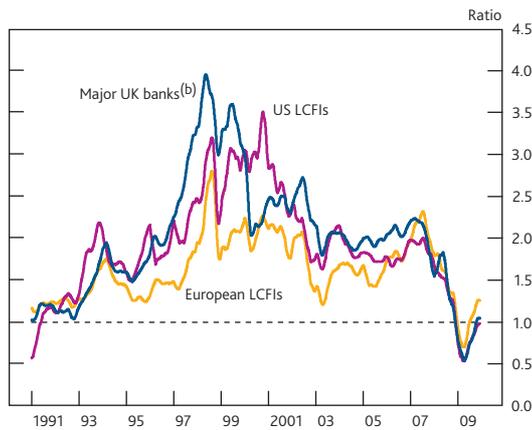
*Sentiment towards global banks has improved...*

As capital levels have increased, sentiment towards banks has improved. Globally, banks' credit default swap (CDS) premia have continued to fall — by 45 basis points on average for large global banks since the June 2009 Report and by 140 basis points since the high in March — consistent with a fall in the perceived probability of default (**Chart 2.4**). Spreads between large global banks' subordinated Tier 2 and senior debt instruments have reduced since the June 2009 Report — by 59% for sterling debt, 43% for euro debt and 13% for dollar debt — indicating greater confidence in the sufficiency of Tier 1 ratios. Price to book ratios have risen back above one as confidence in the quality of assets and the prospects for profitability have improved (**Chart 2.5**). And equity prices have risen, with US and European LCFIs' market values rising by 15% and 9% respectively.

*...as banks have started to address weaknesses in their funding structures.*

Greater confidence in institutions' resilience as capital has been raised has led to a recovery in bank funding markets over the past six months. In money markets, short-term spreads are now close to pre-crisis levels, although significant differences persist across institutions. Unguaranteed senior debt issuance has held up reasonably well, particularly in continental Europe where US\$151 billion has been issued during 2009 so far (80% of issuance in 2008). In the United States, US\$63 billion has been issued in 2009 so far (50% of 2008 issuance) (**Chart 2.6**).

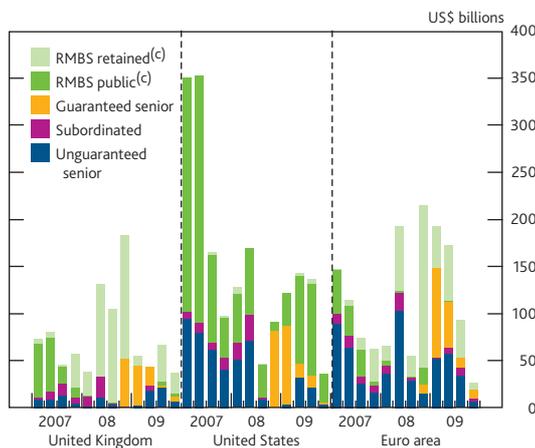
**Chart 2.5** Major UK banks' and LCFIs' price to book ratios<sup>(a)</sup>



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 chart plots the three-month rolling average.  
 (b) Excludes Nationwide and Britannia.

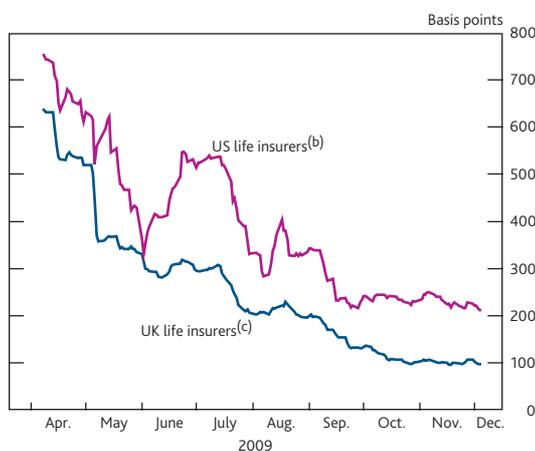
**Chart 2.6** UK, US and euro-area debt issuance<sup>(a)(b)</sup>



Source: Dealogic.

- (a) Issuance with a value greater than US\$500 million equivalent and original maturity greater than one year.  
 (b) Data for 2009 Q4 include October issuance only.  
 (c) Classified as RMBS where more than 50% of the underlying assets are residential mortgages.  
 \*Retained' issues are not sold to the market by the originator, issuer or bookrunner.

**Chart 2.7** UK and US life insurance companies' credit default swap premia<sup>(a)</sup>



Source: Markit Group Limited.

- (a) Weighted by total assets.  
 (b) US life insurers peer group includes Hartford, MetLife, Principle Life and Prudential US.  
 (c) UK life insurers peer group includes Aviva, Legal & General and Prudential.

*Other financial institutions have become more profitable...*

Conditions at other key financial institutions have improved. CDS premia for UK and US life insurance companies have fallen significantly since June (Chart 2.7), reflecting the boost to their solvency from rising asset prices. Hedge fund returns have also picked up, with an average quarterly return of 4.8% in 2009. Many strategies are close to their previously recorded peak values. Capital outflows from hedge funds have virtually ceased (Chart 2.8) and the total level of assets under management increased in 2009 Q3 due to strong investment performance.

*...although some sectors remain under strain.*

Money market mutual funds, which saw a large increase in assets under management up until December 2008, have suffered a withdrawal of deposits. As Chart 2.9 shows, however, these outflows have largely been from government-only funds. Prime funds, which invest in bank debt, asset-backed commercial paper (ABCP) and corporate commercial paper, stabilised quickly after the announcement of the US Government guarantee of these funds in September 2008. They continue to invest in bank liabilities, including through deposits and repos.

Monolines remain under pressure, primarily from ongoing losses in the US housing market. In November, Ambac announced it had come to an agreement with creditors to settle just over US\$5 billion of credit protection contracts. FGIC, a smaller monoline insurer, was forced to stop paying claims after it breached its regulatory capital levels in November 2009.

*Consistent with those global trends, UK banks are better capitalised...*

Mirroring global developments, conditions at UK banks are also much improved. Since the June 2009 Report, core Tier 1 ratios have increased by 2.2 percentage points. The sector's aggregate core Tier 1 capital ratio now stands at 9.6% of risk-weighted assets, well above pre-crisis levels (Chart 2.10), although still below levels seen historically (see Section 3). Median leverage across the UK banking sector fell from around 32 times capital to around 26 times capital between end-2008 and 2009 H1.

This improvement is largely due to £52.2 billion of new capital having been raised since the June 2009 Report. That takes capital raised since the start of the crisis to £127 billion. In addition, contingent capital will prospectively add up to £16.5 billion to the sector's core Tier 1 capital if losses erode core capital levels below 5% for the relevant institutions. UK banks' balance sheets have also reduced, by 16%, including a reduction in lending to customers of 7% (Chart 2.11).

The UK Government has continued to provide capital, where needed, to support financial institutions. Since the start of the

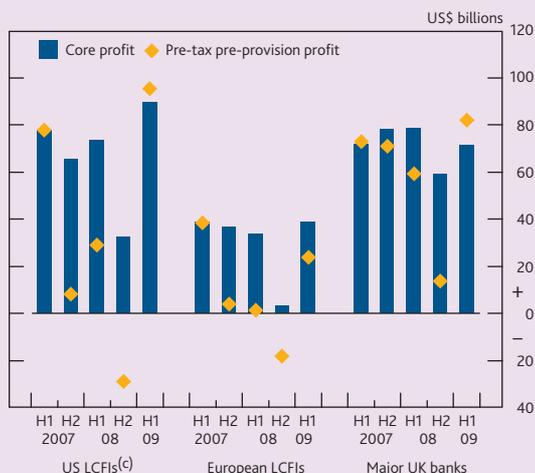
## Box 4 Sources of bank profits

Over 2009 H1, large global banks reported pre-tax pre-provision profits of US\$200 billion, compared with US\$56 billion during 2008. A key factor in this improvement in profitability was the reduced overhang from legacy problem assets. For example, write-downs on trading book assets, which were a significant factor in the losses reported in 2008, have fallen significantly. Large global banks reported write-downs on trading book assets of US\$30 billion over 2009 H1, compared with over US\$210 billion during 2008. In the third quarter, several banks reported write-backs on exposures (Chart 2.3).

At the same time, banks have begun to report losses related to fair-value adjustments on their own liabilities, as credit spreads have narrowed. For example, the large global banks reported US\$57 billion gains as credit spreads widened, of which 50% have since been reversed. While market participants have typically looked through this source of gains and losses, it has still had an impact on the volatility of reported earnings. And banks still have problem loans on their balance sheets. Provisions reduced large global banks' pre-tax profit by US\$135 billion in 2009 H1. Loan coverage ratios have fallen (Chart 2.25), indicating that further provisions are likely in the future.

Adjusting for these factors and for other one-off items including asset disposals, Chart A gives an indication of banks' core earnings. On this measure, aggregate pre-tax, pre-provision profit for large global banks was around

**Chart A** Major UK banks' and LCFIs' pre-tax pre-provision and core profits<sup>(a)(b)</sup>



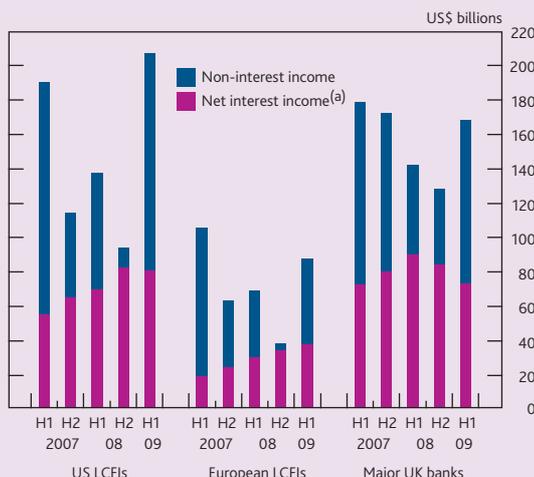
Sources: Published accounts and Bank calculations.

- (a) Pre-tax pre-provision profit (PTPPP) is the sum of net interest income, non-interest income and exceptional items, less operating expenses.
- (b) 'Core profits' are PTPPP adjusted for one-off items, including write-downs and credit valuation adjustments on own debt.
- (c) Excludes Lehman Brothers.

US\$200 billion in 2009 H1 and US\$280 billion over the whole of 2008. The recent return to core profitability is less marked than reported profit would suggest, as indeed was the decline in profits in 2007 and 2008.

The contribution of net interest income to banks' revenues was little changed between 2008 H2 and 2009 H1 (Chart B). Margins on new lending have increased as banks' funding costs have fallen (Chart 2.13), but the impact on revenues has been tempered by weakness in lending volumes.

**Chart B** Major UK banks' and LCFIs' net interest and non-interest income



Sources: Published accounts and Bank calculations.

(a) Net interest income pre-provisions.

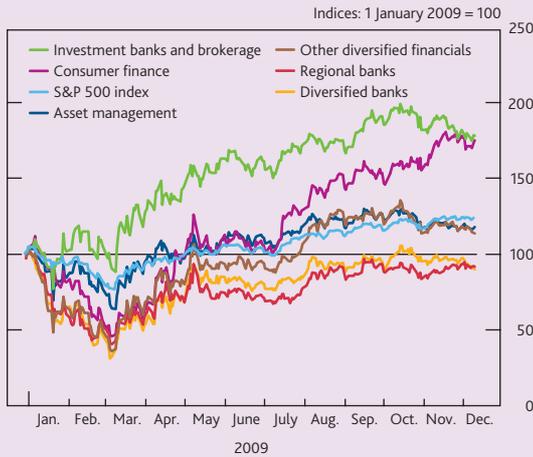
Non-interest income increased markedly over the same period, contributing approximately 60% to global banks' revenues in 2009 H1, compared with 36% in 2008. One component of this was investment banking activity. In the United States, investment banks' equity prices have risen 79% since the start of 2009, compared with 22% for the S&P 500 (Chart C).

Investment banking revenues have been driven by income from activities in fixed income, currency, commodity and equity markets (Chart D). 'Flow-related' income from market-making increased, as bid-ask spreads widened (Chart 1.8) against a backdrop of lower competition, investor risk appetite returning and volatility remaining high (Chart E).

Underwriting revenues also increased, benefiting from the recovery in capital markets, which made it easier for firms to raise long-term finance and which led to strong equity and corporate bond issuance (Chart E). Advisory revenues were the only segment not to increase.

There are questions, however, over the sustainability of these investment banking revenues. Market analysts have suggested that increased bid-ask spreads were at least partly explained

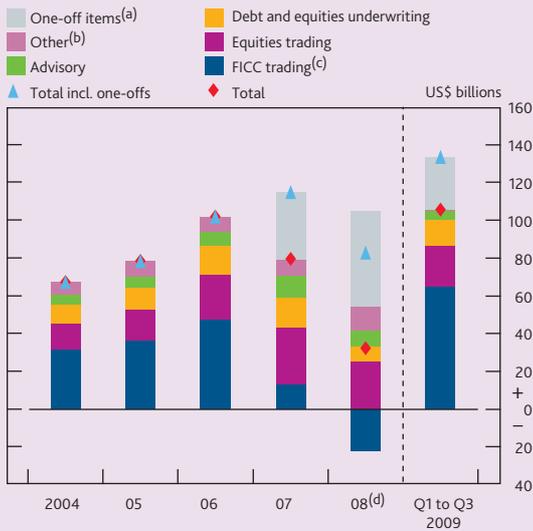
**Chart C S&P 500 financials index<sup>(a)</sup>**



Sources: Bloomberg and Bank calculations.

(a) Sub-indices of the S&P 500 index. Goldman Sachs and Morgan Stanley are constituents of the 'investment banks and brokers' sub-index. Bank of America, Citigroup and JPMorgan are constituents of 'Other diversified financials'.

**Chart D Decomposition of US LCFIs' investment banking revenues**

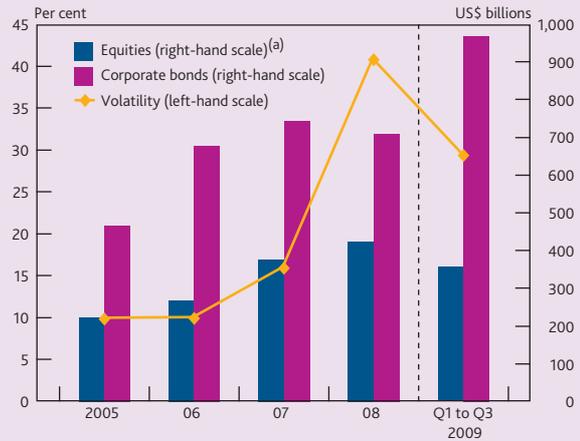


Sources: Published accounts and Bank calculations.

(a) Impact of trading book write-downs.  
 (b) Other includes prime brokerage and securities services.  
 (c) FICC includes fixed income, currency and commodities.  
 (d) Revenues adjusted to reflect change in reporting cycle for US securities houses.

by the reduction in the number of active market makers during the crisis. Spreads have already started to narrow, as competitors increase their activities (Chart 1.8). Additionally, regulatory initiatives, such as moves to transfer clearing to central clearing counterparties, may also lower revenues.

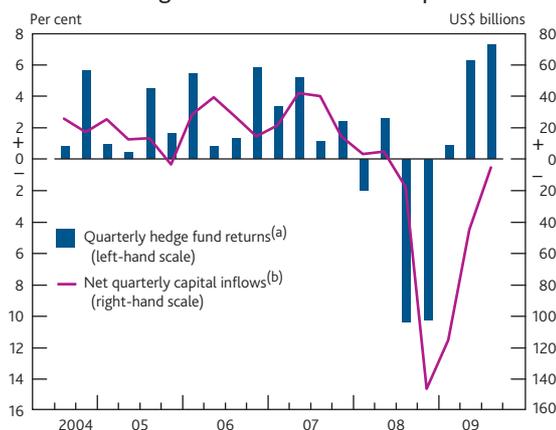
**Chart E Equity and corporate bond issuance and equity market volatility**



Sources: Bank of England, Chicago Board Options Exchange, Dealogic, ECB, Federal Reserve and Bank calculations.

(a) Includes domestic issuance in all currencies.

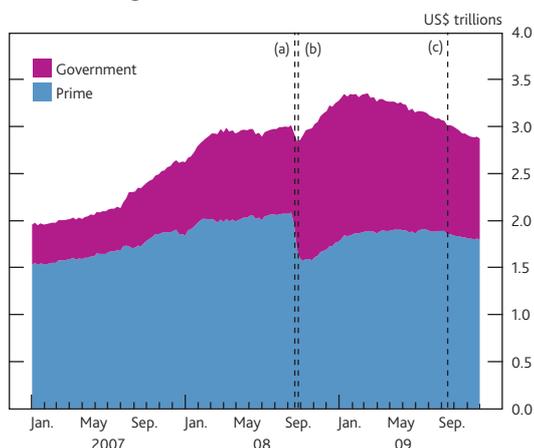
**Chart 2.8 Hedge fund returns and net capital inflows**



Sources: Bloomberg, CSFB/Tremont, Lipper TASS (a Reuters Company) and Bank calculations.

(a) CSFB/Tremont aggregate hedge fund index.  
(b) Lipper TASS total net flows.

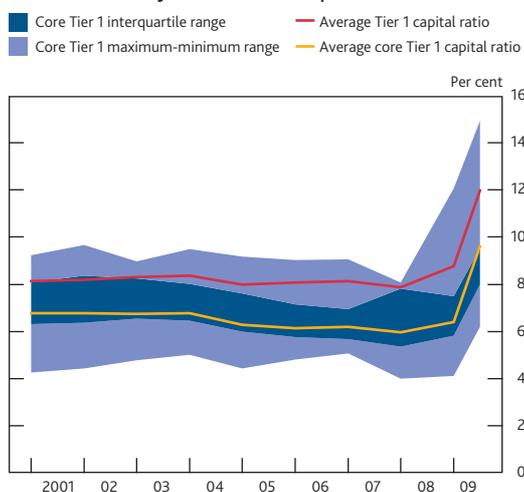
**Chart 2.9 Money market mutual funds' total assets under management**



Source: Moneyfundanalyzer.com.

(a) Lehman Brothers Holdings files for Chapter 11 bankruptcy protection.  
(b) US guarantee scheme begins.  
(c) US guarantee scheme ends.

**Chart 2.10 Major UK banks' capital ratios(a)(b)(c)**



Sources: Dealogic, published accounts and Bank calculations.

(a) Excludes Northern Rock and Britannia.  
(b) Core Tier 1 capital is defined as common shareholders' equity and UK B shares adjusted for goodwill and intangibles and regulatory deductions.  
(c) Based on second-quarter interim management statements, including significant completed or announced capital raising since 2009 H1.

crisis, it has injected £66 billion of capital, around a half of the total raised, nearly all of which has been provided to the Royal Bank of Scotland (RBS) and Lloyds Banking Group (LBG). Around £31 billion of that has been provided since June in the context of the Asset Protection Scheme (APS) and LBG's recent rights issue. The APS protects RBS against losses on £282 billion of assets, particularly loans, consumer finance and commercial real estate. The £40 billion of commercial real estate assets protected represent 20% of the major UK banks' exposures to this sector. Overall, RBS's participation in the APS accounts for £141 billion of the sector-wide reduction in risk-weighted assets of £316 billion since end-2008.

*...partly reflecting a pickup in profitability.*

Profits have contributed to capital raising by UK banks. UK banks' aggregate pre-tax, pre-provision profits were £54 billion in 2009 H1, compared with £38 billion over the whole of 2008. Non-interest income accounted for a significant share of gross income (Chart 2.12), reflecting the profitability of flow trading activities at the largest banks and other fee-earning services. Some banks also benefited from one-off items such as write-backs on trading assets as asset prices have risen. Net interest income was boosted by low interest costs in short-term wholesale funding markets and by increasing spreads on some forms of lending. Chart 2.13 shows one representation of how the price of new lending can be decomposed, although the precise breakdown will vary across banks, particularly in terms of how they choose to fund new loans. But loan losses rose sharply, with household and private non-financial corporation (PNFC) write-offs increasing (Chart 2.14), although market-implied losses on UK banks' banking books — an indicator of future write-offs — have fallen as asset prices have recovered.

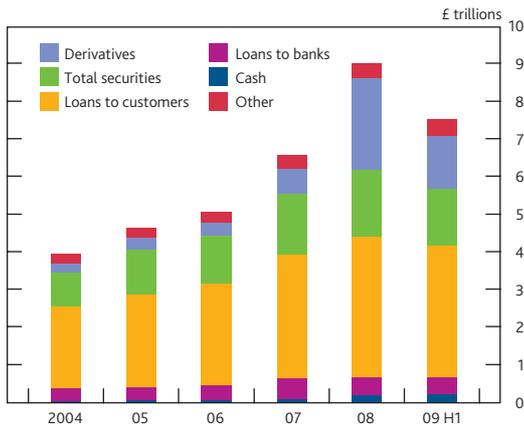
*Market sentiment towards UK banks has improved...*

Market perceptions of UK banks' strength have improved. The perceived risk of holding senior bank debt has fallen, with the major UK banks' CDS premia down by close to 31% since the June 2009 Report. The implied cost of senior bank debt and Tier 1 and Tier 2 capital issuance has declined by around 20% (Chart 2.15). Major UK banks' market capitalisation has risen on average by a third since the June 2009 Report.

*...easing funding concerns.*

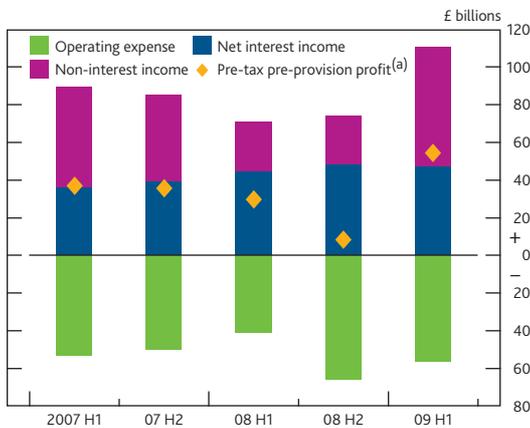
As risk perceptions have fallen, UK banks have been able to access private funding markets to a greater extent and on improved terms (Chart 2.16). Longer-term debt markets have begun to reopen for UK banks, with around £32 billion of unguaranteed senior debt issued to date in 2009 — around three times issuance over the same period in 2008. But primary subordinated debt markets remain closed and RMBS issuance has been limited.

These developments have allowed banks to improve their funding structures. Reliance on funding with a maturity of less

**Chart 2.11** Major UK banks' total assets<sup>(a)</sup>

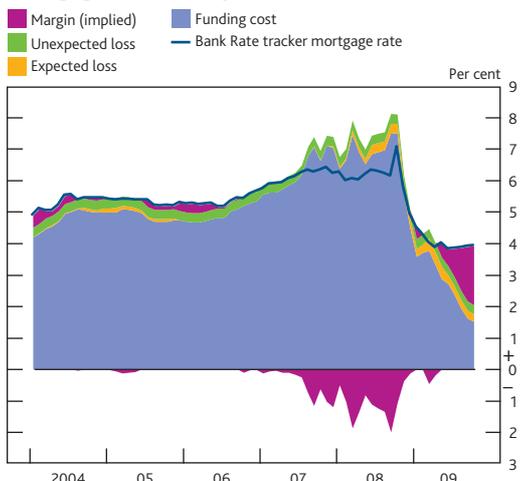
Sources: Published accounts and Bank calculations.

(a) Banco Santander's derivatives are included within total securities.

**Chart 2.12** Major UK banks' pre-tax pre-provision profits

Sources: Published accounts and Bank calculations.

(a) Pre-tax pre-provision profit is the sum of net interest income, non-interest income and exceptional items, less operating expenses. For the purposes of this chart, exceptional items are included within operating expenses or non-interest income.

**Chart 2.13** Decomposition of new Bank Rate tracker mortgage rates of major UK banks<sup>(a)</sup>

Source: Bank of England.

(a) Funding cost calculated as the three-month Libor rate plus an average of the five-year CDS spread of the major UK banks, weighted by the volume of lending for each bank. Expected loss is estimated as the product of the probability of default and the loss given default on 75% LTV mortgages. Unexpected loss is computed as the amount of extra capital set out in Basel regulations (3% for 75% LTV mortgages) multiplied by the average cost of equity over the risk-free rate (assumed to be 10%). Implied margin calculated as the residual between mortgage rate and costs. The decomposition does not take account of operating costs, which may be substantial.

than one week had reduced to 9% of unsecured wholesale funding by October 2009, from 15% at end-2008. UK banks' aggregate customer funding gap (the difference between customer loans and customer deposits — one measure of funding risk) fell to £610 billion, or 18% of loans in 2009 H1, down from £842 billion at end-2008 — the lowest it has been since 2003 (Chart 2.17). And banks are now holding more liquid assets as potential insurance against a loss of short-term wholesale funding.

### *Looking ahead, financial institutions will need to adjust balance sheets further...*

Notwithstanding these positive developments, global financial institutions' balance sheets remain stretched. Banks' leverage ratios remain high by historical standards. And significant funding fragilities persist, with banks still dependent on short-term wholesale funding.

### *...including the funding structures of some UK banks.*

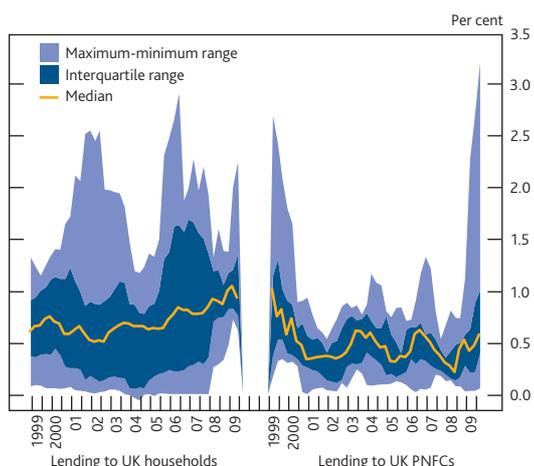
UK banks' funding structures need to adjust further to meet this challenge. The FSA's recent policy statement on liquidity regulation<sup>(1)</sup> suggested that the sector as a whole may need to acquire up to £600 billion of additional high-quality assets, at a potential cost of up to 150 basis points (£9 billion) per annum.

Banks will be able to reduce this cost by taking offsetting action to extend the maturity of the liabilities side of their balance sheets. The UK banking sector's customer funding gap remains high by historical standards and above that of a number of other banking sectors, including those in Canada, Japan and the United States (Chart 2.18). As a consequence, some UK banks continue to rely on wholesale markets to finance a sizable proportion of their illiquid lending activities. Around a half of UK banks' aggregate wholesale funding is of less than six months' maturity.

Over £1 trillion of UK banks' term liabilities mature over the next five years (Chart 2.19). Unguaranteed market funding, including maturing and callable securitisations, accounts for nearly £750 billion. In addition, banks face the withdrawal of extraordinary public sector support. Over £178 billion of high-quality collateral has been provided through the Special Liquidity Scheme (SLS) and £134 billion of guarantees have been issued under the Credit Guarantee Scheme (CGS). SLS lending will mature by end-2012, the same year in which the majority of CGS guarantees expire. The final maturity of the CGS remains 2014, although HM Treasury recently announced that the Scheme would remain open for a further two months.

(1) See FSA (2009), 'Strengthening liquidity standards', *Consultation Paper 09/16*.

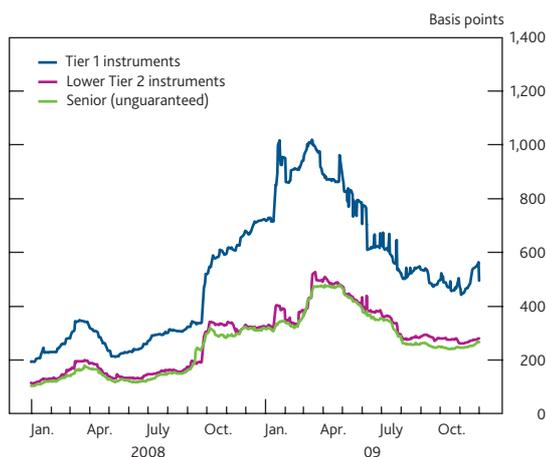
**Chart 2.14** Major UK banks' write-offs<sup>(a)(b)</sup>



Sources: Bank of England and Bank calculations.

- (a) Write-off ratios — all currency, calculated as a trailing four-quarter ratio.
- (b) Major UK banks' exposures to households and corporates comprise 13% and 5% of their aggregate balance sheets respectively (see Chart 2.27).

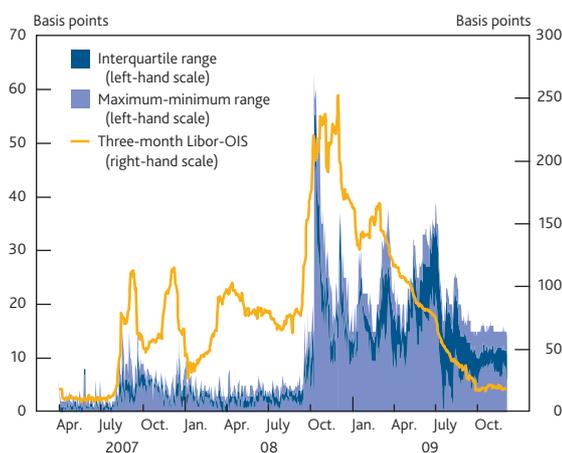
**Chart 2.15** Major UK banks' cost of wholesale funding<sup>(a)</sup>



Source: JPMorgan Chase & Co.

- (a) Calculated using the average of the current spread to asset swaps of instruments issued by Barclays, HSBC, Lloyds Banking Group and RBS.

**Chart 2.16** Major UK banks' Libor spreads



Sources: Bloomberg, British Bankers' Association and Bank calculations.

*Banks recognise the importance of developing various strategies for addressing these challenges...*

Market participants recognise these funding risks.

Respondents to the Bank's latest *Systemic Risk Survey* viewed funding and liquidity as one of the most challenging risks to manage as a firm (see Table 2.A).

*...including attracting more retail funding...*

One way to reduce funding vulnerabilities is increased use of retail funding. If household and corporate customer deposits were to grow at 10% per annum (close to pre-crisis rates) and lending at 4%–5% a year, the major UK banks' customer funding gap would be eliminated over the next four years or so. Banks are seeking to attract retail inflows by increasing deposit rates: retail bonds now pay around 200 basis points above the risk-free rate, compared to a sub-zero spread in 2005 (Chart 2.20). But despite higher household savings ratios, since June household deposit flows to UK banks have increased by only £6 billion. Retail funds have instead tended to flow to alternative retail saving products, such as unit trusts and individual savings accounts, with net monthly inflows to unit trusts rising to nearly £3 billion in November (Chart 2.21).

*...and long-term wholesale funding...*

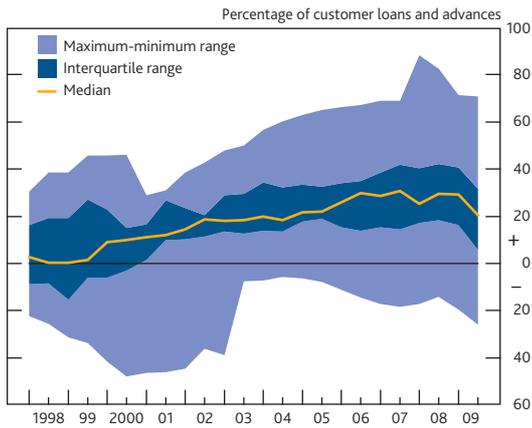
Another element of banks' funding strategy is to improve the maturity profile of their borrowing. On the basis of current yields, the cost to UK banks of transitioning to 2006 maturity profiles would be around £5 billion per annum. To be effective, such a strategy will require a substantial pickup in unguaranteed debt issuance from current levels, and a recovery in securitisation markets. Box 1 discusses developments in securitisation markets. Reopening these markets, using a more robust contractual structure, is a priority.

*...although extending the term of their liabilities will be challenging.*

Impairment of bank funding markets partly reflects continued problems facing some key buyers of bank short and medium-term paper. Prime money market mutual funds have in the past provided significant amounts of dollar funding to UK banks, both directly via the purchase of bank paper and indirectly through their investment in bank-sponsored conduit commercial paper. The Securities and Exchange Commission's (SEC) recently proposed rule changes, which come into effect in the first half of 2010, will require the funds to reduce the weighted average maturity of their portfolios and to maintain a higher proportion of liquid assets. While this will improve the liquidity of funds' assets, it may also reduce still further the maturity of the deposits they provide to banks.

Securities lending programmes were also significant providers of funding to the financial sector pre-crisis. But activity has halved to around US\$2 trillion since May 2008 (Chart 2.22),

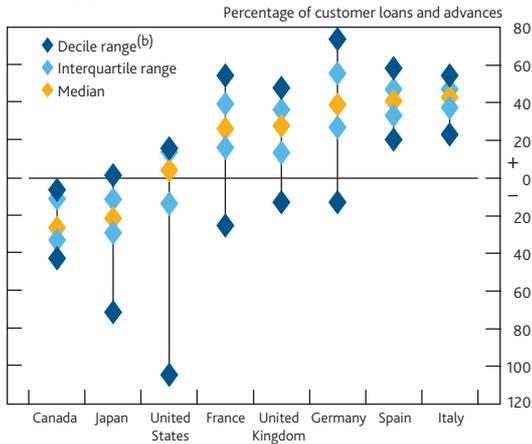
**Chart 2.17 Major UK banks' customer funding gap<sup>(a)(b)</sup>**



Sources: Dealogic, published accounts and Bank calculations.

- (a) Customer funding gap is customer loans less customer deposits, where customer refers to all non-bank borrowers and depositors.
- (b) Chart differs from version published in the October 2008 Report due to the extension of the major UK banks' peer group, effective from end-2004.

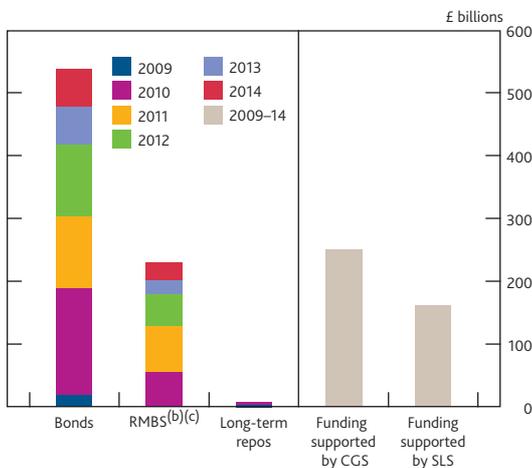
**Chart 2.18 International comparison of customer funding gaps<sup>(a)</sup>**



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

- (a) Shows data at end-2008 for up to 20 banks in each country. Customer funding gap is customer loans less customer deposits, where customer refers to all non-bank borrowers and depositors.
- (b) Shows the range from the first to the ninth decile.

**Chart 2.19 Major UK banks' maturing funding: selected wholesale liabilities<sup>(a)</sup>**



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

- (a) Shows the full limit for the Credit Guarantee Scheme.
- (b) Shows the date at which markets expect the residential mortgage-backed securities to be called.
- (c) Excludes Britannia, Co-operative Financial Services and HSBC.

severely curtailing the availability of liquidity to banks from these programmes. The risk management practices of securities lenders are coming under closer market scrutiny which is likely to shorten the maturity of funding provided to banks.

Some banks plan further asset and business sales, which would generate cash flow. But to be credible, those plans need to take account of similar actions by other banks. In crowded markets, asset disposal plans may not be achievable or only at a significant discount.

Taken together, this suggests a significant challenge for UK banks in transitioning to a robust funding structure. This transition is likely to involve some upfront costs — for example, in holding greater quantities of high-quality, liquid assets; extending the maturity of wholesale funding; and reopening securitisation markets with a sustainable investor base.

Despite these costs, these actions would remove the possibility of much higher funding costs in future if sentiment in funding markets were to worsen again. Addressing funding vulnerabilities should form part of a comprehensive funding plan by UK banks over the next few years, given their known refinancing schedule. Those plans need to be developed and implemented now, durably to remove funding risks among UK banks for the future.

*Banks face higher future capital requirements...*

Section 3 explains how capital ratios will need to rise further in coming years due to higher regulatory requirements. A recent consultation paper<sup>(1)</sup> by the FSA estimated that financial institutions in the United Kingdom will face an additional capital requirement of £33 billion as a consequence of changes planned to the treatment of securitisations and to capital requirements in banks' trading books. The impact would be concentrated on firms with larger trading books. It also represents an upper bound since banks are likely to adjust their balance sheets in advance of the changes.

The same FSA consultation paper also set out proposals for a narrower definition of Tier 1 capital, albeit with significant grandfathering arrangements. Work by the Basel Committee on Banking Supervision (BCBS) will lead to further definitional changes, particularly for core Tier 1 capital. Together these changes will add materially to the amount of core Tier 1 capital which banks will need to hold even to maintain current capital ratios.

While it is not yet clear by how much base capital ratios might need to increase as a consequence of the further regulatory initiatives described in Section 3, it is likely to be significant.

(1) See FSA (2009), 'Strengthening capital standards 3', *Consultation Paper 09/29*.

**Table 2.A Systemic Risk Survey results: key risks to the UK financial system<sup>(a)(b)</sup>**

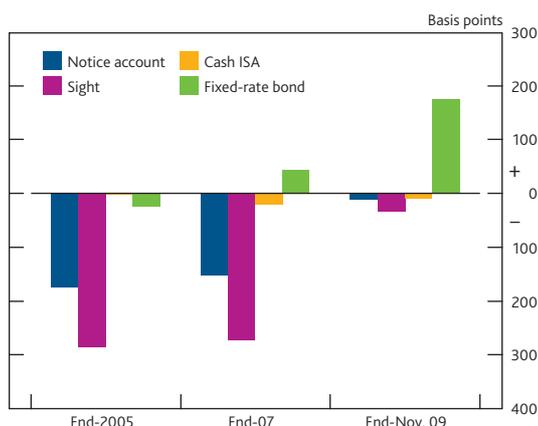
	Key risks		Risks most challenging to manage	
	Nov. 2009	May 2009	Nov. 2009	May 2009
Economic downturn	68	58	41	30
Borrower defaults	49	45	22	21
Regulatory and accounting changes	49	24	35	24
Funding and liquidity problems	35	30	30	12
Property price falls	27	18	5	3
Disruption in securities, insurance, and/or derivatives markets	24	15	16	3
Sovereign risk	24	24	3	6
Tight credit conditions	24	24	11	3
Timing of fiscal and/or monetary policy tightening	22	3	5	3
Inflation	14	9	5	0
Financial institution failure/distress	11	24	14	15

Sources: Bank of England Systemic Risk Survey (May 2009 and November 2009) and Bank calculations.

(a) Per cent of respondents citing each risk. Market participants were asked to list (in free format) the five risks they believed would have the greatest impact on the UK financial system if they were to materialise, as well as the three risks they would find most challenging to manage as a firm.

(b) Risks cited in the May 2009 survey have been regrouped into the categories used to describe the November 2009 data, so results differ slightly from those published in the June 2009 Report.

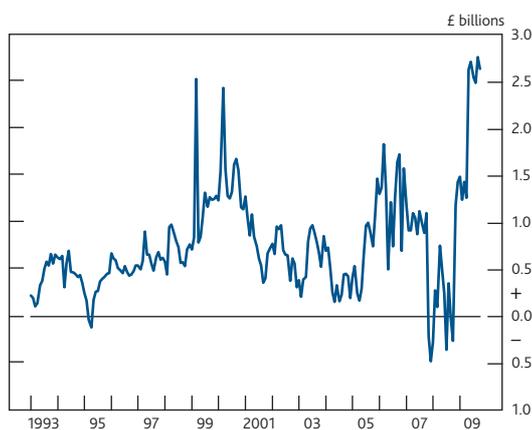
**Chart 2.20 Retail deposit spreads<sup>(a)</sup>**



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.

**Chart 2.21 Net monthly inflows into retail unit trusts**



Source: Investment Management Association.

As discussed in Box 5, in past crises around the world, banks would, on average, have needed Tier 1 ratios of between 8.5% and 13% at the start of the crisis to have maintained ratios of 8% without further capital injections. Any increase will be subject to a lengthy transition period.

Box 6 in Section 3 explains that banks may, in future, face explicit restrictions on leverage. **Chart 2.23** illustrates how a move to alternative leverage ceilings would affect global banks. For example, moving to a ceiling of 20 times capital (the limit used in Canada) would require most UK banks to cut assets or raise capital, in some cases significantly. Meeting a 20 times leverage target solely through assets would require a reduction of almost £1.5 trillion. While some of this could be achieved through a reduction in non-core trading assets, reductions in domestic lending on anything like that scale could have a negative effect on the speed of recovery which would potentially be counterproductive for the banks. This underscores the importance of attempts to build capital as an alternative means of safeguarding banks' balance sheets.

*...which can be met from both external sources and profit retention.*

Given the scale of these challenges, banks should take advantage of currently favourable conditions in private markets to raise fresh external capital. UK banks have raised a total of £58 billion from private markets since the start of the crisis. At £13.5 billion, LBG's recent rights issue was the largest of all time by a bank. Set against the additional capital banks may require, it seems likely that a sizable share of capital raising will need to take place through generation and retention of profits.

*But significant risks to core profits remain...*

There are a number of potential headwinds to building capital organically through core profits, both in the immediate future and over the longer term. Although price to book ratios have risen for banks, they remain close to one, compared with close to 2.5 pre-crisis. Recent profits were driven by investment banking activities, particularly in fixed income, commodities, currency and equity markets, which benefited from the recovery in financial markets and the widening of bid-ask spreads. These are unlikely to be sustained (see Box 4 and Section 1). In particular, bid-ask spreads, which were unusually wide in the early part of the year, are likely to narrow (**Chart 1.8**). More generally, continued reliance on such sources of income is incompatible with a transition away from reliance on volatile trading profits, which were a key source of losses during the crisis.

In addition, the June 2009 Report outlined how, in the past five years, returns on equity for UK banks had been driven more by increases in leverage than by returns on assets (**Chart 2.24**). Bank leverage, like household and corporate leverage, is declining. This will tend to lower banks' profitability. The

## Box 5 Capital losses in past financial crises

Capital held by banks proved inadequate to absorb losses during this crisis. This box considers how much capital a sample of banks in past crises would have needed to withstand stress without external capital support. This exercise should be treated as illustrative and is not a definitive guide to the buffers banks would need to hold to withstand future crises.

### Methodology

Banks from four previous crises are included in the sample: Sweden (1990–93), Finland (1990–94), Norway (1988–92) and Japan (1992–2004).<sup>(1)</sup> For each bank, Tier 1 capital in the pre-crisis year is taken from annual accounts.<sup>(2)</sup> A counterfactual path for Tier 1 capital is then calculated using (realised) retained income, but assuming no private or government capital injection. Levels of pre-crisis capital needed to avoid banks falling below specific Tier 1 capital ratios in-crisis (4%, 8% and 12%) are then calculated.

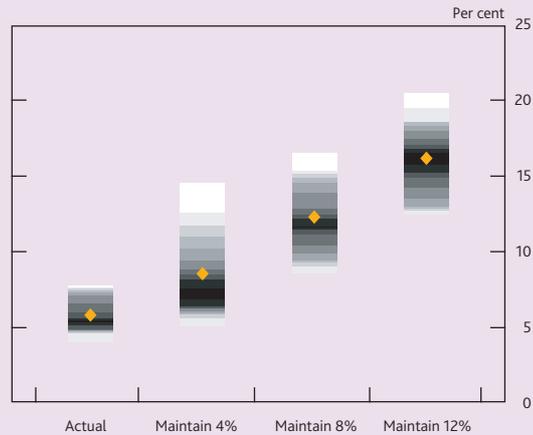
A number of simplifying assumptions are necessary to provide these estimates. For example, dividends, risk-weighted assets and retained income are all assumed to be the same as they actually were. The analysis also assumes that the size of financial shocks were identical. In practice, the scale of the crises may well have been less, and income higher, if banks in the sample had entered the crisis with higher capital ratios.

### Results

On average, a pre-crisis Tier 1 capital ratio of around 8.5% would have been needed by banks in the sample to avoid going below a Tier 1 capital ratio of 4% during the crisis (**Chart A**). Minimum capital requirements are likely to be higher in the future.

A feature of this analysis is the wide variation in results across banks, shown by the distributions in **Chart A**. Banks with similar pre-crisis Tier 1 capital ratios faced different outcomes in some cases. Even if all banks in the sample had a pre-crisis capital ratio of 8.5%, 40% of the banks would still have breached the 4% Tier 1 capital ratio in-crisis. The highest pre-crisis Tier 1 capital ratio that would have been needed across the sample of banks to maintain a 4% Tier 1 capital ratio in-crisis is around 18%. This variation across banks suggests the need for flexibility in their future capital structure and potentially a higher average buffer. In principle, this could be achieved through greater use of contingent capital (see Section 3).

**Chart A** Pre-crisis Tier 1 capital ratios required to withstand past crises<sup>(a)(b)</sup>



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

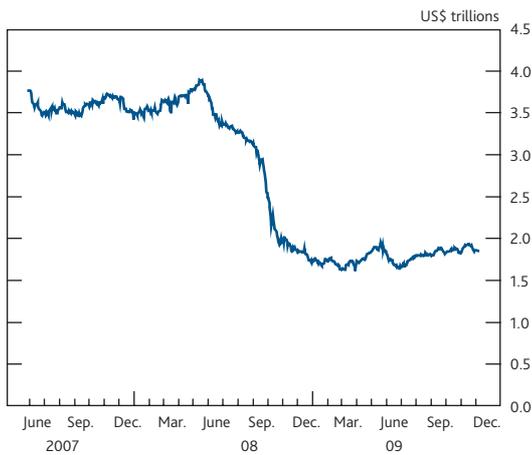
(a) Sample of fifteen banks from Sweden, Finland, Norway and Japan.

(b) Each shaded band shows 5 percentage points of the distribution across banks between the 5th and 95th percentiles. Diamonds show means.

(1) The sample covers a range of banks in terms of size (ranging from 23% of total banking sector assets to 2%), pre-crisis condition (ranging from around 8% Tier 1 capital to 3%), and outcome (ranging from nationalisation to no direct government capital support).

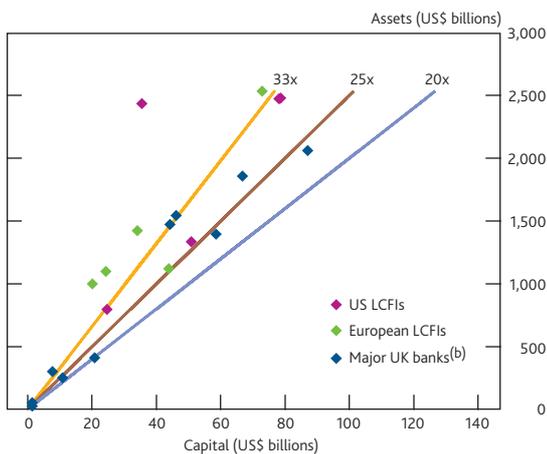
(2) For Nordic countries the pre-crisis year is the same for all banks in each country. Because of the length of the Japanese crisis, the pre-crisis year is defined on a bank-by-bank basis for Japanese banks as the year before a bank discloses material losses.

**Chart 2.22** Global securities lending activity



Source: Data Explorers.

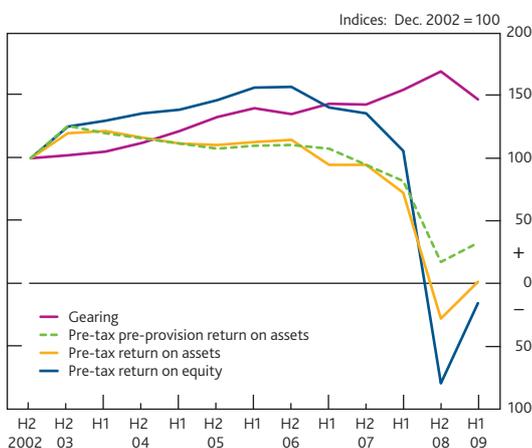
**Chart 2.23** Major UK banks' and LCFIs' balance sheet composition compared to hypothetical leverage ratios<sup>(a)</sup>



Sources: Published accounts and Bank calculations.

(a) Refer to Chart 2.2 footnotes (a) and (b), for description of adjustments to assets and capital.  
 (b) Excludes Northern Rock.

**Chart 2.24** Major UK banks' pre-tax return on equity<sup>(a)(b)</sup>



Sources: Published accounts and Bank calculations.

(a) Based on twelve-month trailing pre-tax revenues and average shareholders' equity.  
 (b) Each series shows an average for major UK banks, weighted by individual banks' average assets in each period.

incremental costs of improving the industry's funding structure could also pose a material headwind to the generation of profits and capital.

*...including from UK domestic household exposures...*

Future loan impairments could also restrict internal capital generation (Chart 2.25). UK banks have written off £14.3 billion of loans to households since mid-2007. There are some signs that mortgage arrears are stabilising, with a fall in the arrears rate to 1.77% in September. And new lending is more conservative, with only 9% of mortgages having LTV ratios of 90% or more, compared with close to 30% in 2008 Q1. This, combined with recent house price increases, should reduce future repossessions and losses. Partly as a consequence, most major UK banks now expect impairments to stabilise at around their current level before falling. But there remains a clear risk that arrears could rise further, either if the recovery is less strong than anticipated or when interest rates rise to more normal levels.

*...exposures to UK corporates...*

There appears to be a marked dispersion in the quality of lending to corporates across UK banks (Chart 2.14). Commercial property, which accounts for almost half of all lending to UK PNFCs, is a particular concern (as discussed in Box 3). During the first half of 2009, annualised commercial real estate impairment rates more than doubled to 6.6%. Companies' ability to sustain debt payments and to refinance existing loans is a key risk going forward.

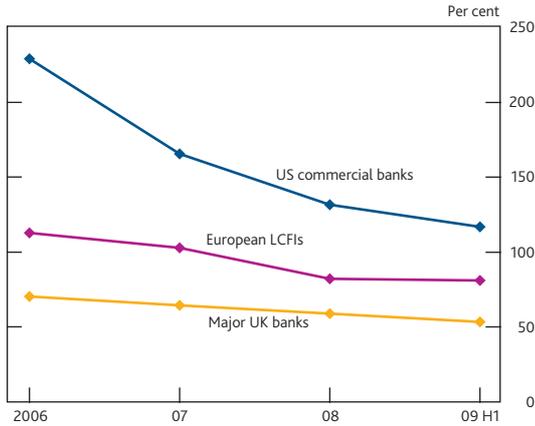
*...and from international exposures.*

As a counterpart to the retrenchment by foreign banks from lending to UK corporates — discussed in Box 2 — UK banks have reduced their international exposures by over £100 billion during 2009 H1. Large exposures to overseas entities have fallen from £190 billion to £110 billion (Chart 2.26). But UK banks remain sensitive to developments in overseas markets, as foreign claims still account for 35% of UK banks' assets (Chart 2.27).

As discussed in Section 1, rising default rates on residential and commercial property loans in a number of developed and emerging market financial systems represent a direct source of credit risk to UK banks. Shocks from abroad are likely to be rapidly transmitted to the United Kingdom where a large number of banks have concentrated exposures in the same markets. The risks emanating from the US private sector are perhaps of greatest concern, because more than 20% of Canadian, German, UK and Japanese banks' claims on non-resident PNFCs are on US companies (Chart 2.28).

UK banks have £600 billion of exposures to emerging market economies (7% of total assets). The largest exposures are to emerging Asia, where the recovery looks advanced. But UK banks also have material exposures to the Middle East.

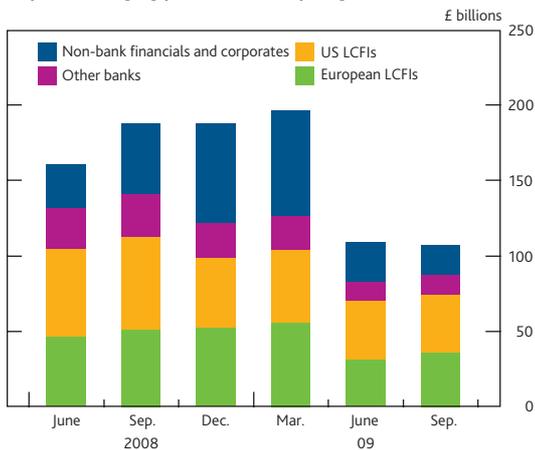
**Chart 2.25** Major UK banks' and LCFIs' impaired loan coverage ratios<sup>(a)(b)</sup>



Sources: Federal Reserve, published accounts and Bank calculations.

- (a) Impaired loans are loans past due and in non-accrual status, restructured loans which are considered impaired and other loans for which an impairment allowance has been raised.
- (b) Coverage ratio is loan loss reserves as a percentage of impaired loans.

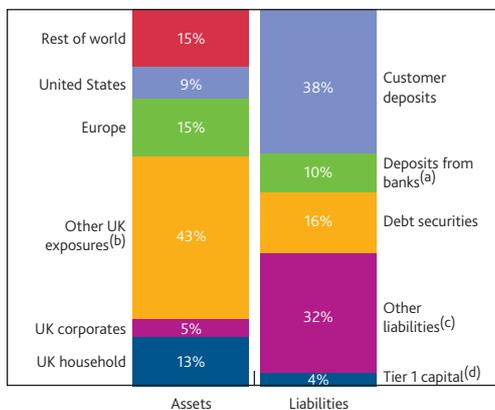
**Chart 2.26** Major UK banks' international large exposures by type of counterparty<sup>(a)(b)</sup>



Source: FSA regulatory returns.

- (a) Based on exposures that exceed 10% of eligible capital at the end of the reporting period.
- (b) Excludes Bank of Ireland.

**Chart 2.27** Major UK banks' aggregate balance sheet at 2009 H1



Sources: Bank of England, FSA regulatory returns, published accounts and Bank calculations.

- (a) Includes borrowing from major UK banks.
- (b) Includes (among other items) loans to UK-resident banks and other financial corporations and holdings of UK government debt.
- (c) Includes Tier 2 capital, short positions, insurance liabilities and derivative contracts with negative marked-to-market value.
- (d) Assets are not risk weighted. As a percentage of risk-weighted assets, Tier 1 capital is 8%.

There are also pockets of exposure in Central and Eastern Europe. While continental European banks are most directly exposed to those economies, a currency or sovereign crisis in the region could have indirect knock-on effects on UK banks.

*Profits alone may not raise capital ratios to where they need to be...*

Chart 2.29 illustrates the possible impact that known changes in capital rules (to risk weights in the trading book and to securitisations) and potential profits net of distributions might be expected to have on UK banks' core Tier 1 capital ratios in coming years. Given the difficulty of predicting future profit streams, estimates are derived by assuming returns on equity of either 10% or 15% — lower than in recent years, but consistent with the derisking needed across the sector. Given these assumptions, the chart suggests that profits, by themselves, are unlikely to lift capital ratios significantly beyond current levels.

*...although lower distributions of reserves will help.*

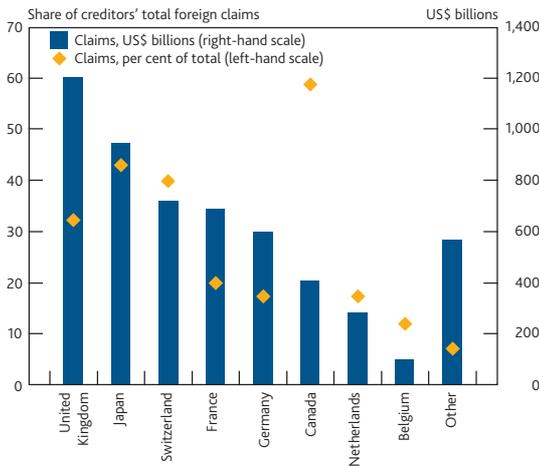
Over the period 2001 to 2006, UK banks' staff costs averaged 31% of total revenues and dividend payout rates averaged 46%. Remuneration and dividend policies are important for recruiting and retaining staff and for compensating shareholders for the risk they incur. But given the scale of the challenge facing banks in rebuilding their balance sheets, they would benefit from distributions from reserves being materially lower than in the past, or paid in a non-cash form (shares) which retains equity within the business.

To illustrate the benefits of reduced distributions from profits, a simple analysis suggests that reducing staff costs by around one tenth and dividend payout rates by around a third would allow UK banks to increase retained reserves by close to £70 billion over the next five years. This would boost core Tier 1 ratios by 100 basis points over the same period (Chart 2.30). In other words, relatively modest limitations in the distribution of profits would help banks to meet their medium-term regulatory capital requirements, without any adjustment in banks' domestic asset base.

*This increases the importance of banks taking advantage of current conditions.*

There is a risk that balance sheet reduction is instead achieved by a reduction in assets. To the extent that this is achieved through sale of trading assets, this is a positive development. But if it is achieved at the expense of domestic lending, it could undermine the recovery from recession and ripple back to banks' balance sheets through higher loan losses. There is a collective interest in maintaining lending at levels consistent with more rapid recovery from recession. It is important that banks take full advantage of favourable market conditions to build capital and liquidity, internally and externally, both to bolster confidence in the sector and enable it to resume its pivotal role in domestic credit intermediation.

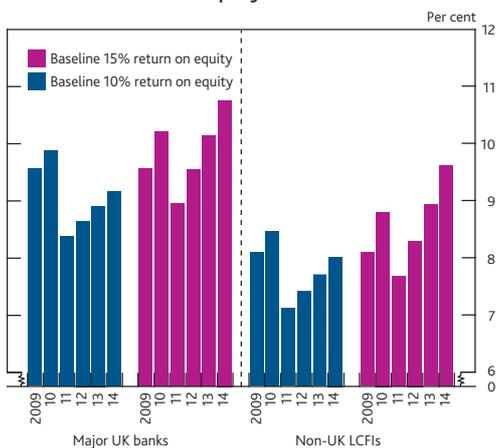
**Chart 2.28 Foreign banking systems' claims on the United States<sup>(a)</sup>**



Sources: BIS, Consolidated banking statistics, ultimate risk basis and Bank calculations.

(a) Other represents all other BIS-reporting countries.

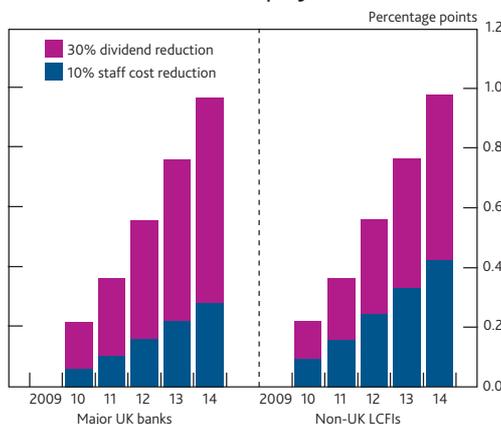
**Chart 2.29 Projected core Tier 1 capital ratios with 10% and 15% return on equity<sup>(a)(b)(c)(d)</sup>**



Sources: BIS, FSA, Thomson Datastream, published accounts and Bank calculations.

- (a) Excludes Britannia, Co-operative Financial Services, Nationwide and Northern Rock.
- (b) Data points show end-H1 positions.
- (c) Includes the estimated impact of increased capital requirements for market risk, securitisation and resecuritisation from 2011 onwards.
- (d) Risk-weighted assets, excluding the impact of higher market risk, securitisation and resecuritisation risk weights, grow at 4% per annum.

**Chart 2.30 Impact on core Tier 1 capital of various actions when return on equity is 10%<sup>(a)(b)(c)</sup>**



Sources: BIS, FSA, Thomson Datastream, published accounts and Bank calculations.

- (a) Excludes Britannia, Co-operative Financial Services, Nationwide and Northern Rock.
- (b) Data points show end-H1 positions.
- (c) Underlying staff costs are assumed to grow in line with revenues.

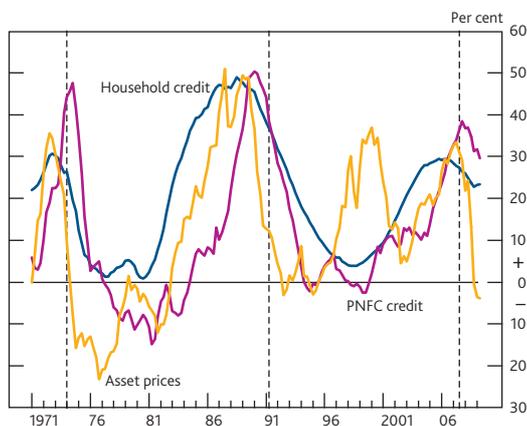
By deferring action because of the short-run costs of raising extra capital and long-term funding, banks would perpetuate balance sheet fragilities. This could increase the long-term costs of repair and risk setting back the recovery in the real economy. As this is in the interests of neither the banks nor the authorities, a front loading of balance sheet repair efforts would be a much more desirable transition path.

# 3 Safeguarding stability

Over the medium term, there needs to be a fundamental overhaul of the ‘rules of the game’ for the financial system, to deal with the root causes of systemic instability — a tendency for excessive risk-taking during the upswing of the credit cycle and insufficient resilience in the subsequent downturn. An expectation that ‘too important to fail’ firms will receive public assistance, or that unsecured wholesale creditors will not bear losses, exacerbates these risks. A policy response is required across three fronts: regulation, structure and resolution. These measures are complementary and pursuing them together would help establish a policy framework that is robust to future changes in behaviour.

Regulatory policies should give greater emphasis to systemic risks, across the cycle and across institutions. They should be complemented by structural measures to contain the spread of risk through the system, whether across firms or business activities. And because institutional failures cannot, and should not, be prevented, stronger resolution tools are required to limit disruption to the wider economy.

**Chart 3.1** Asset prices and credit growth in the United Kingdom<sup>(a)(b)(c)</sup>



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 credit to GDP, relative to their ten-year moving averages.  
 (b) The dashed lines show start dates for banking crises. The chart shows the secondary banking crisis, small banks crisis and the current crisis.  
 (c) Asset price index is a weighted average of real equity prices, real house prices and real commercial property prices, weighted according to national accounts data for holdings of assets.

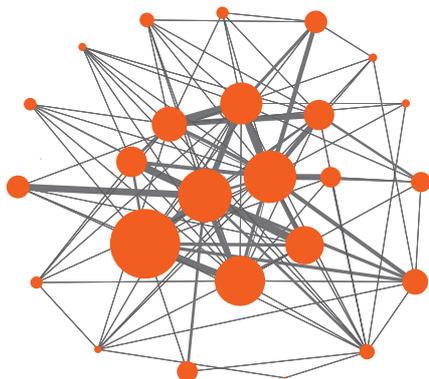
*The recent crisis reveals the need for fundamental reform of the financial system.*

Previous sections of this *Report* have discussed progress in restoring stability of the UK financial system and the near-term measures required to strengthen bank balance sheets. It is also necessary, over the medium term, to strengthen the foundations of the financial system to improve its resilience.

The financial system exists to provide services to the wider economy — payments, credit supply and insurance against risk. A stable financial system should ensure continuity of these services, even when faced with unanticipated shocks. There are two key sources of financial instability, evident in this and previous crises:

- Cyclical overexuberance — or ‘aggregate risk’ — brought about by a collective tendency for lenders and borrowers to take on excessive risk during the upswing of a credit cycle, only to become overly risk-averse during the subsequent downswing (Chart 3.1).
- The failure of individual banks to take account of the spillover effects of their actions on the financial system and wider economy — ‘network risk’ (Chart 3.2). A manifestation of this risk is the tendency for some institutions to become too important to fail.

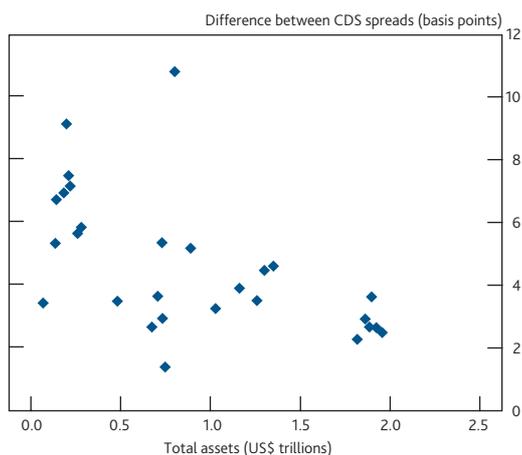
**Chart 3.2** Network of large exposures between UK banks<sup>(a)(b)(c)</sup>



Source: FSA returns.

- (a) A large exposure is one that exceeds 10% of a lending bank's eligible capital at the end of 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 the line is proportional to the value of a single bilateral exposure.  
 (c) Based on 2009 Q2 data.

**Chart 3.3** Difference between senior and subordinated CDS spreads for major banks<sup>(a)(b)</sup>



Sources: Bankscope published by Bureau van Dijk Publishing, UBS Delta (Market Partners) and Bank calculations.

- (a) Sample includes 28 of the world's 100 largest banks by total assets, due to data availability.  
 (b) Data from end-2006 are used here to illustrate the pre-crisis relationship.

These sources of instability interact. In the run-up to the recent crisis, markets anticipated that government intervention might prevent the failure of larger banks and insulate creditors from losses (Chart 3.3). That appears to have weakened market discipline and encouraged risk-taking during the boom. It also weakened the resilience of the system in the subsequent downturn.

*A broad range of policy responses are currently under discussion...*

A large number of policy initiatives are currently under discussion, domestically at the Council for Financial Stability and internationally at the Financial Stability Board (FSB), the Basel Committee on Banking Supervision (BCBS) and the G20. The volume and diversity of the debate has raised concerns, including among some market participants, that policy measures will either be disproportionate or inadequately co-ordinated.<sup>(1)</sup> So it is important to consider how these different policy initiatives complement each other in combating systemic risk.

The current policy agenda can be divided into three areas:

- Regulation: including tighter capital and liquidity requirements to restrain risk-taking activities by increasing their cost.
- Structure: measures to improve the resilience of the financial system to network risk by encouraging greater use of central clearing and through steps to ensure the continuity of key financial services in the event of stress.
- Resolution: improvements to arrangements for dealing with financial problems when they emerge, including to ensure that unsecured wholesale creditors incur losses in the resolution of a distressed institution.

No single set of policy measures is a panacea. Regulatory standards are difficult to calibrate accurately and standards may be eroded over time as markets innovate and memories of past crises fade. Similarly, efforts to draw boundaries around certain banking activities can become ineffective if they lead to the emergence of too important to fail institutions operating outside the boundary. And no set of policy tools could, or should, eliminate the risk of institutional failures, necessitating robust resolution arrangements.

*...and should be pursued in parallel.*

A logical response to these challenges is to adopt a robust approach, with complementary policy measures across all three fronts. There are also important interdependencies

(1) Nearly half of all respondents to the Bank's November 2009 *Systemic Risk Survey* highlighted regulatory and accounting changes as a key risk to the UK financial system (see Table C in the Overview).

between these measures, particularly when aimed at containing network risk. For example:

- Some proposals for structural change are, in effect, stricter forms of regulatory reform — for example, requiring banks to hold only highly liquid, low-risk assets ('narrow banking') is equivalent to a 100% liquidity requirement.
- Regulatory requirements and structural measures would both tend to result in fewer institutions that are 'too important to fail', thereby increasing the effectiveness of resolution arrangements.
- Resolution arrangements that ensured that unsecured wholesale creditors bore losses in the event of a bank failure should reduce risk-taking behaviour by sharpening market discipline, complementing regulatory action.

This section of the *Report* discusses how policy initiatives in each area can contribute to tackling the root causes of this and many previous crises.

### 3.1 Regulatory arrangements

Suitably designed prudential regulation can play a key role in reducing network risk and cyclical overexuberance. A notable missing ingredient in the current policy framework is a set of tools targeted explicitly at systemic risk. That is the role of macroprudential policy. But any macroprudential framework needs, importantly, to build on effective microprudential standards.

*Reforms to microprudential standards should consider banks' entire capital structure...*

The starting point for microprudential reforms should be a broad reassessment of the structure of banks' liabilities. Excessive leverage and maturity transformation in the banking system were key propagation mechanisms during the crisis. Equity buffers were too small, while other liabilities (including lower-quality capital instruments) were not always able to absorb losses. And banks were overreliant on short-term wholesale liabilities to fund illiquid assets, relative to more stable sources of borrowing such as insured deposits.

The Financial Services Authority (FSA) is currently consulting on a range of proposals to strengthen the prudential capital regime in the United Kingdom.<sup>(1)</sup> And the international regulatory community, largely under the auspices of the BCBS, has embarked on a wide-ranging review of prudential capital and liquidity standards (Table 3.A). The BCBS will be undertaking a comprehensive quantitative impact study during 2010 to assess the cumulative effect of these reforms. In

#### Regulation could be strengthened through:

- Higher minimum capital requirements, comprising instruments that can absorb losses such as equity, or contingent capital that converts to equity automatically in a pre-defined way.
- Appropriately defined mandatory maximum leverage ratios to complement risk-weighted capital requirements.
- Requiring banks to hold large buffers of reliably liquid assets, and complementary measures to reduce banks' dependence on short-term wholesale borrowing to fund illiquid assets.
- Reducing overreliance on external credit ratings, potentially through regulatory incentives.
- Better disclosure, for example with regard to liquidity positions and exposures between financial institutions.
- The use of macroprudential tools to combat the build-up of risk over the credit cycle and across firms, as outlined in a recent Bank Discussion Paper.

**Table 3.A** BCBS workstreams on reform of prudential standards

#### Workstream

Raise the quality, consistency and transparency of the Tier 1 capital base.

Introduce a leverage ratio as a supplementary measure to the Basel II risk-based framework.

Introduce a framework for countercyclical capital buffers above the minimum requirement.

Assess the need for a capital surcharge to mitigate the risk of systemic banks.

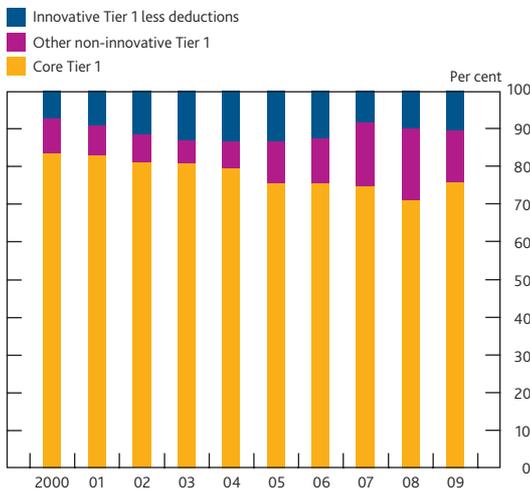
Review minimum levels of capital.

Review the treatment of counterparty credit risk in Basel II.

Introduce a minimum global standard for funding liquidity that includes a stressed liquidity coverage ratio requirement, underpinned by a longer-term structural liquidity ratio.

(1) See FSA (2009), 'Strengthening capital standards 3', *Consultation Paper 09/29*.

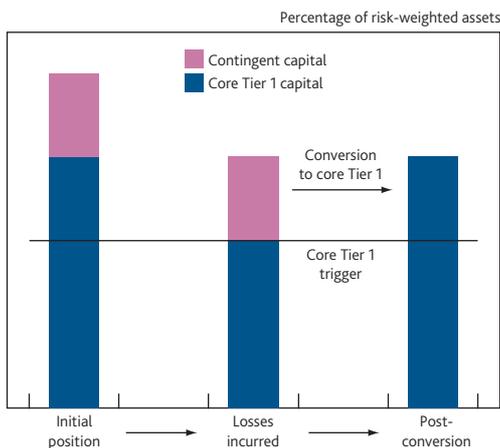
**Chart 3.4** Composition of the major UK banks' Tier 1 capital<sup>(a)(b)(c)(d)</sup>



Sources: Dealogic, published accounts and Bank calculations.

- (a) 2009 data refer to end-H1.  
 (b) Includes Abbey National, Alliance and Leicester and Bradford and Bingley instead of Banco Santander.  
 (c) Due to data availability, Nationwide is included after 2000 and The Co-operative Bank after 2001. Abbey National and Alliance and Leicester are not included in 2009 H1.  
 (d) Northern Rock and Bradford and Bingley are excluded in 2008 and 2009 H1.

**Chart 3.5** Stylised diagram of contingent capital with a core Tier 1 trigger



Source: Bank of England.

calibrating new standards, the higher cost to banks and their customers needs to be weighed against the benefit of reducing the probability of future systemic crises.

*...including improvements in the quality of banks' capital...*

Ahead of the crisis, the composition of banks' capital shifted away from common equity and reserves (core Tier 1 capital) towards lower-quality instruments (Chart 3.4). Experience during the crisis in the United Kingdom and elsewhere has revealed that these instruments were not always able to absorb losses for going-concern banks.

There is now broad agreement internationally that equity and reserves should form a much larger part of banks' capital in the future. The Bank believes that no instrument should be classified as going-concern capital if it does not have the same loss-absorbing characteristics as common equity. In practice, this means either that the principal of the instrument can be written down at the same time and to the same extent as common equity, or that the instrument is convertible into equity — so-called 'contingent capital'.

*...possibly through a bigger role for instruments with mandatory conversion to common equity.*

Contingent capital is any instrument that would convert into common equity upon a pre-defined trigger (Chart 3.5), similar in principle to the recent issuance of Enhanced Capital Notes by Lloyds Banking Group. Contingent capital would, in effect, act as a mechanism for banks to purchase capital insurance from the private sector rather than relying on public sector support. It would also be a way for banks to hold (contingently) higher levels of capital at a lower cost than pure equity.

On what terms private non-bank investors would be willing to provide such insurance remains unclear. For example, investor appetite may initially be restricted if these instruments are excluded from benchmark indices or are not permitted under certain investment mandates. If, over time, an investor base for such instruments did not develop, this would provide a useful signal that debt investors were unwilling to accept losses on their investments in banks.

For contingent capital instruments to be loss-absorbing, their design needs careful consideration. In this respect, the definition of the conversion trigger is crucial. Contingent capital would need to convert automatically, or at the discretion of the regulator, rather than on the initiative of the issuer. Setting the trigger involves balancing the risk of conversion too soon (before capital is needed) and too late (when funding problems may already have emerged). The acceptable level of contingent capital within banks' capital structure also needs to be considered carefully. Too much convertible debt could increase the risk of a bank equity price 'death spiral' — whereby investors may short-sell the stock in

anticipation of dilution as the trigger for conversion comes closer.

This approach would result in a dramatic simplification of banks' capital structures. All capital would in effect be equity, actual or contingent. And the distinction between Tier 1 and Tier 2, as well as upper and lower tiers, would be removed. The Bank believes such a simplification of capital structures would be desirable. It would also be more robust to regulatory arbitrage over time, by reducing the number of arbitrary boundary points.

#### *Minimum capital requirements also need to rise...*

An improvement in the quality of banks' capital needs to be accompanied by a higher aggregate level of capital relative to the size and riskiness of the banking system. The period since the 1960s has seen a trend decline in banks' capital buffers (**Chart 3.6**). That trend now needs to be reversed.

It is impossible to know with any precision how much capital might be needed in the future to maintain confidence in the financial system. This will vary through time and depend on future shocks to the system. But, as discussed in Box 5 in Section 2, past financial crises point to the need for considerably higher capital buffers to ensure banks are resilient to future stress.

#### *... complemented by restrictions on leverage...*

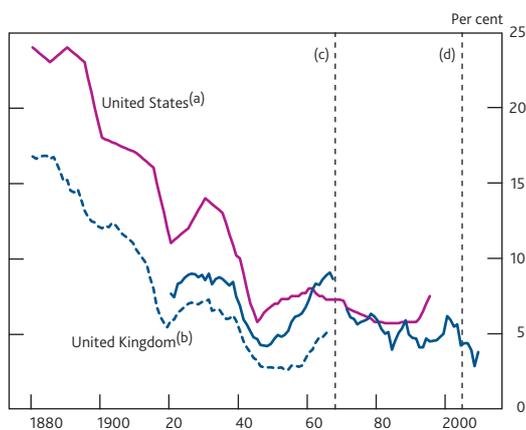
There is a strong case for complementing risk-weighted capital requirements with a maximum leverage ratio to provide a fallback constraint on risk-taking in the banking system. The current Basel II framework seeks to align regulatory capital with economic risk. But it has proven susceptible to measurement error and gaming by banks. Prior to the crisis, banks expanded their balance sheets by increasing their exposures to assets where risk was underestimated to take advantage of lower capital charges. The result was the emergence of a riskier, more highly leveraged banking sector than risk-weighted capital ratios appeared to suggest.

Box 6 explains the importance of applying a maximum leverage ratio alongside risk-based capital requirements. Provided that it can be suitably defined, the Bank supports the introduction of a maximum leverage ratio as a Pillar 1 requirement to ensure consistent implementation of capital standards across jurisdictions. To maximise its effectiveness, the leverage ratio should be simple and transparent so that it is comparable across banks and can be easily understood by stakeholders, thus enhancing market discipline. And it should be comprehensive, by including both on and off balance sheet items.

#### *... and a review of capital held against traded assets.*

Regulators are responding to the inadequacy of capital held against trading book positions in light of subsequent losses

**Chart 3.6** Long-run capital ratios for UK and US banks



Sources: United States: Berger, A, Herring, R and Szegö, G (1995), 'The role of capital in financial institutions', *Journal of Banking and Finance*, Vol. 19(3-4), pages 393-430. United Kingdom: Sheppard, D (1971), *The growth and role of UK financial institutions 1880-1962*, Methuen, London; Billings, M and Capie, F (2007), 'Capital in British banking, 1920-1970', *Business History*, Vol. 49(2), pages 139-62; British Bankers' Association, published accounts and Bank calculations.

- (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).
- (b) UK data on the capital ratio show equity and reserves over total assets on a time-varying sample of banks, representing the majority of the UK banking system, in terms of assets. Prior to 1970 published accounts understated the true level of banks' capital because they did not include hidden reserves. The solid line adjusts for this. 2009 observation is from H1.
- (c) Change in UK accounting standards.
- (d) International Financial Reporting Standards (IFRS) were adopted for the end-2005 accounts. The end-2004 accounts were also restated on an IFRS basis. The switch from UK GAAP to IFRS reduced the capital ratio of the UK banks in the sample by approximately 1 percentage point in 2004.

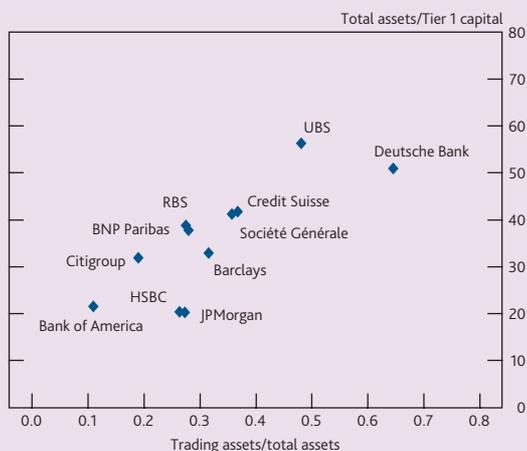
## Box 6 Leverage ratios

A *leverage ratio* is the total value of a bank's assets relative to its capital. The Basel Committee on Banking Supervision has agreed to introduce a leverage ratio to supplement existing risk-based capital requirements. This box considers the arguments in favour of the introduction of a leverage ratio and its possible impact on banks' behaviour.

### Risk-weighted capital ratios

Under existing Basel regulatory *capital rules*, banks must hold a minimum ratio of capital relative to the weighted risks of their portfolio of assets. This ratio does not place a direct constraint on leverage. If regulatory risk weights were perfectly calibrated, a risk-based capital requirement would be sufficient to constrain the riskiness of banks' balance sheets. In practice, regulatory risk weights have been subject to measurement error. During the recent crisis, risk models tended to underestimate the risk of trading portfolios, providing banks with an incentive to expand their trading activities. **Chart A** suggests that efforts to expand balance sheets through higher leverage were focused on trading assets, which were also thought to be very liquid.

**Chart A** LCFIs' ratios of total assets to Tier 1 capital and trading assets to total assets<sup>(a)(b)</sup>



Sources: Published accounts and Bank calculations.

- (a) Assets adjusted for cash and cash items in the course of collection from banks and deferred tax assets. Assets adjusted on 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).  
(b) Data as at end-2007.

### Leverage ratios as backstops

Excess leverage increases the sensitivity of banks' balance sheets to losses. The aim of a leverage ratio is as a 'backstop' to risk-based capital requirements, constraining banks' incentives to overleverage during the upswing of a credit cycle.<sup>(1)</sup> Although a number of countries currently employ leverage ratios as part of their regulatory toolkit, there is a marked divergence in their design and definition (**Table 1**). This

presents challenges in introducing a simple, non risk-based leverage ratio that ensures comparability across business models with inherently different asset exposures and across jurisdictions where the accounting treatment of such exposures varies. At minimum, a common definition of capital and an agreed measure of both on and off balance sheet assets, adjusted fully for accounting differences, are required.

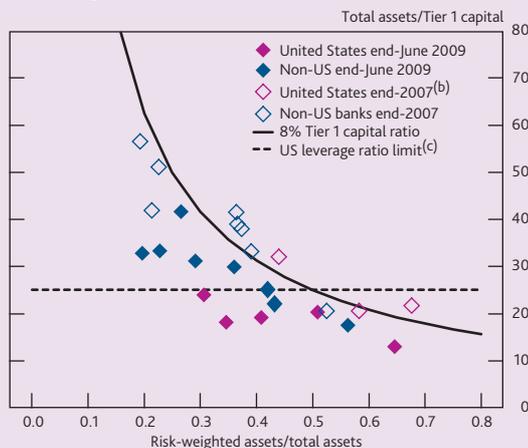
**Table 1** Summary of regulatory leverage ratio limits

United States	Tier 1 capital must be $\geq 3\%$ of <i>on balance</i> sheet assets for 'strong' bank holding companies (BHCs) and $\geq 4\%$ for all other BHCs.
Canada	Tier 1 and Tier 2 capital must be $\geq 5\%$ of <i>on balance</i> sheet plus qualifying <i>off balance</i> sheet assets for BHCs.
Switzerland	Tier 1 capital must be $\geq 3\%$ of <i>on balance</i> sheet assets less Swiss domestic lending for BHCs and $\geq 4\%$ for individual institutions. This is applicable only to Credit Suisse and UBS.

Source: IMF.

To be an effective backstop to a risk-based regime, the leverage ratio should be set at a level that binds only during periods of credit exuberance. Since a leverage ratio increases banks' incentives to invest in higher risk assets, its development must be complemented by a robust risk-based capital framework to ensure capital adequacy relative to risk. **Chart B** suggests that US banks subject to a leverage ratio, while appearing less leveraged in a simple sense than banks operating in other jurisdictions, invested in higher risk assets.

**Chart B** LCFIs' ratios of total assets to Tier 1 capital and risk-weighted assets to total assets<sup>(a)</sup>



Sources: Published accounts and Bank calculations.

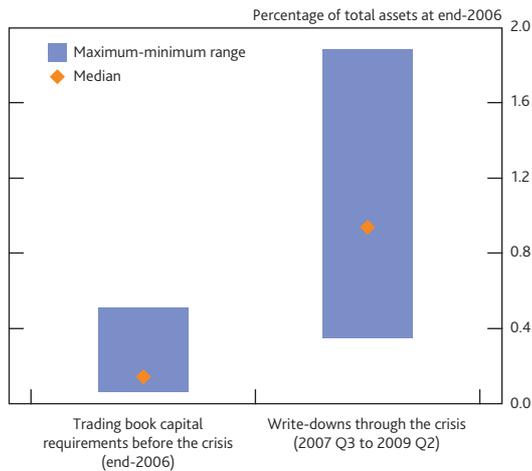
- (a) See **Chart A**, footnote (a).  
(b) Excludes the US securities houses.  
(c) US leverage ratio limit proxied by a ratio of Tier 1 capital to total assets of 4%. The inclusion of qualifying off balance sheet assets places some US LCFIs above the leverage ratio limit.

### A Pillar 1 requirement

The Bank would support the introduction of a leverage ratio and this being hard-wired into regulatory rules through Pillar 1, provided that it can be well defined. It will be difficult to set a single standard applicable across different business models and accounting regimes, but it is important to achieve consistent implementation across jurisdictions.

(1) See Section 3 and 'The role of macroprudential policy', *Bank of England Discussion Paper*, November 2009.

**Chart 3.7** Trading book capital requirements and write-downs across UK and European LCFIs<sup>(a)(b)(c)</sup>



Sources: Published accounts and Bank calculations.

- (a) Includes six UK and European LCFIs that reported trading book risk-weighted assets at end-2006.  
 (b) Cumulative write-downs due to mark-to-market adjustments where disclosed by firms.  
 (c) Not all assets accounted for on a fair-value basis will be part of the regulatory trading book. So the chart is likely to overstate write-downs originating in the regulatory trading book.

(Chart 3.7). In July, the BCBS announced a set of revisions to the Basel II market risk framework, which will lead to significant increases in capital requirements against market risk.<sup>(1)</sup> But deep-seated potential fault-lines in the regulatory framework for dealing with traded assets also need to be mitigated. The boundary between trading and banking books was a source of arbitrage ahead of the crisis. Banks classified as part of their trading books a growing range of illiquid assets, such as structured credit products, that would have received much higher capital charges under banking book rules.

The appropriate capital treatment of traded assets is due to be considered by the BCBS as part of a fundamental review of the trading book. Irrespective of whether an explicit regulatory boundary remains, the Bank believes that capital charges on traded assets should probably depend on two key factors. First, banks' trading intentions — assets purchased with the intent to hold to maturity should not be treated differently from non-tradable positions. Second, liquidity in the markets for traded assets, which will depend on the specific characteristics of the market where the relevant instrument is traded, as well as the instrument itself.

*The cost of higher capital may be lower than usually believed.*

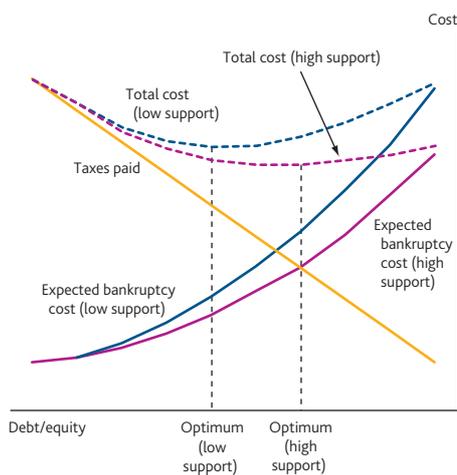
Raising more equity to satisfy tighter regulatory requirements will likely entail costs for banks and borrowers. The preferential tax treatment of debt over equity reduces the relative cost of debt and acts as an incentive for all firms, including banks, to increase leverage. But higher leverage also increases the probability of default, and hence the cost of debt finance, as expected bankruptcy costs rise. The optimal capital structure of any firm will balance these two effects. Regulatory requirements that impose a different allocation between equity and debt naturally imply some costs.

For banks, the relative attraction of debt over equity has been further strengthened by an expectation that government support would shield some creditors from incurring losses. Implicit support of this kind lowers expected bankruptcy costs and increases the optimal level of leverage. Successful policy action to ensure unsecured wholesale creditors are genuinely exposed to losses would reduce this effect. In principle, this should reduce the additional cost to banks of issuing equity rather than debt and, so, limit the difference between a firm's privately optimal capital structure and that imposed by regulatory standards (Chart 3.8).

*Banks should hold larger liquid asset buffers...*

The need for massive central bank liquidity support throughout the current crisis has clearly exposed banks'

**Chart 3.8** Impact of taxes and expected bankruptcy costs on banks' cost of capital<sup>(a)</sup>

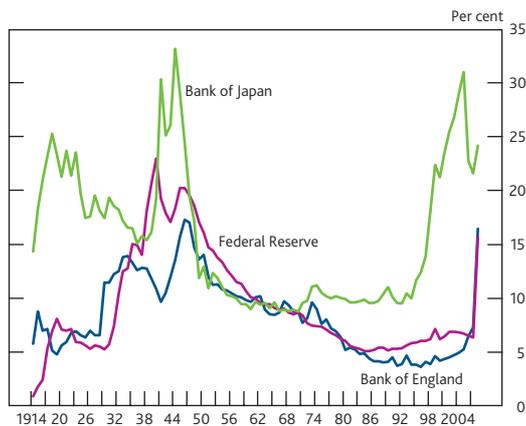


Source: Bank of England.

- (a) 'High support' refers to high expectations of government support and 'low support' refers to low expectations of government support.

(1) See BCBS (2009), 'Revisions to the Basel II market risk framework' and BCBS (2009), 'Analysis of the trading book quantitative impact study'.

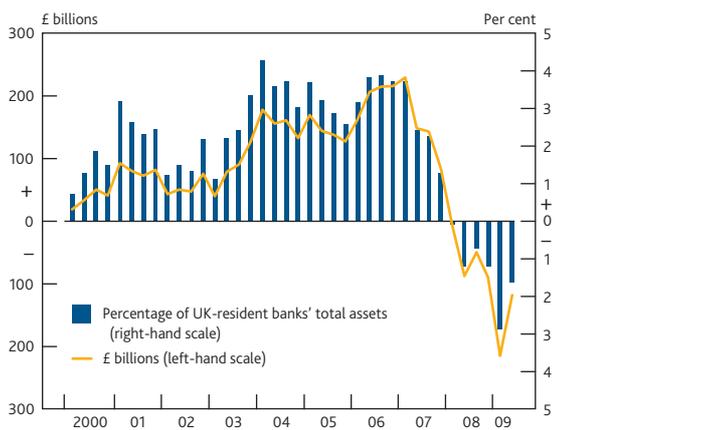
**Chart 3.9** Central banks' balance sheets as a percentage of GDP<sup>(a)</sup>



Sources: Bank of England, Bank of Japan, Federal Reserve, Thomson Datastream, www.measuringworth.org and Bank calculations.

(a) Bank of England balance sheet data: end-February 1914–66, end-year 1967–2008. UK GDP: annual data (nominal). Federal Reserve balance sheet data: end-year 1914–81, end-July 1982–95, end-year 1996–2008. US GDP: annual data (nominal). Bank of Japan balance sheet data: end-year. Japan GDP: annual data (nominal). Between 1914–51 National Income is used as a proxy for Japan's GDP. The National Income data point for 1945 is unavailable and estimated by the average of the 1944 and 1946 data points.

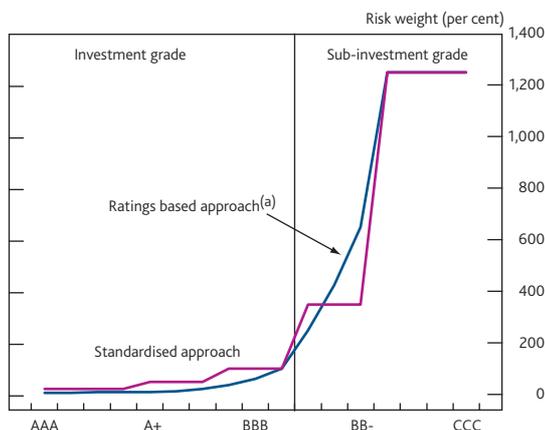
**Chart 3.10** Annual growth in interbank liabilities of UK-resident banks<sup>(a)</sup>



Source: Bank of England.

(a) Interbank liabilities are defined as sight and time deposits from, and liabilities under repo to, other UK banks and building societies.

**Chart 3.11** Risk weights for securitisations in the Basel II framework



Source: BIS.

(a) Base risk weights for securitisation exposures that are externally rated.

vulnerability to liquidity shocks (**Chart 3.9**). Underpricing of liquidity risk and excessive short-term borrowing from wholesale markets exacerbated cyclical fluctuations in the supply of credit. And, to the extent that wholesale debt funding was provided by other banks, it also contributed to the build-up of network risk, amplifying shocks in the crisis (**Chart 3.10**).

The June 2009 *Report* set out the high-level principles that the Bank believed should guide the design of prudential liquidity regulation. These principles are consistent with the United Kingdom's new liquidity regime, published by the FSA in October.<sup>(1)</sup> The FSA policy aims to ensure that banks hold large buffers of high-quality, unencumbered securities that can be reliably traded or exchanged in private markets, including in stressed circumstances.

*... and fund themselves from relatively stable sources.*

Reducing the reliance of the banking system on volatile sources of borrowing to fund illiquid assets is also important. A structural funding ratio could achieve that, by ensuring that a significant proportion of banks' loans were financed from more stable sources of funding, such as retail deposits and long-term wholesale liabilities. Such a requirement is currently being developed internationally as part of the introduction of global minimum liquidity standards by the BCBS. A careful impact assessment will be required to calibrate the new liquidity requirements. And, given the remaining fragilities in the financial system, tightening of liquidity regulation will also need to be phased in over a number of years.

*Regulatory reforms should reduce banks' reliance on external ratings...*

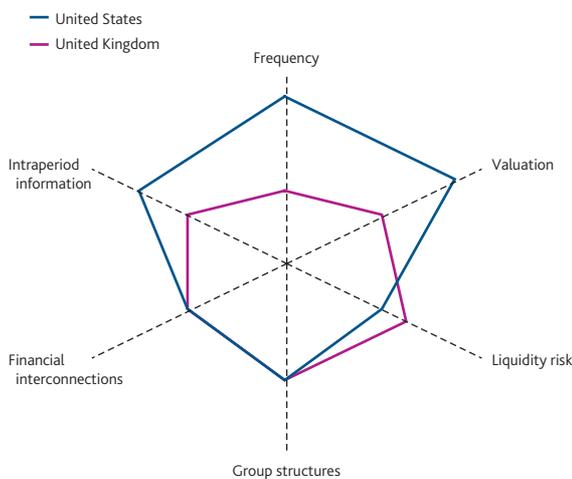
Regulatory reforms should also encourage stronger risk management within banks. By relying on external ratings, firms effectively delegate a key economic function of banking — the assessment and monitoring of borrowers — to rating agencies. Prudential standards could be reframed to provide capital incentives to banks that use both internal and external ratings, with a view to significantly reducing the reliance of the Basel II capital framework on external ratings over time.

Reducing banks' common dependence on the same external ratings would limit the collective tendency of the financial system to underestimate risk in the upswing, as was evident for example in the ratings of structured credit products ahead of the recent crisis. It would also contribute to reducing procyclicality in minimum capital requirements by addressing the 'cliff effects' caused by rating downgrades in a downturn — for example, as ratings fall below investment grade (**Chart 3.11**).

(1) See FSA (2009), 'Strengthening liquidity standards', *Policy Statement 09/16*.

**Table 3.B** Areas for improved disclosure

Valuation	Explanation of fair-value techniques, particularly when there are no direct market observables. Quantitative information on inputs used for key assumptions, including sensitivity analysis.
Liquidity risk	More granular information on the maturity structure and liquidity risk profile of firms' balance sheets and on firms' holdings of liquid assets.
Group structures	Detailed information on balance sheets and profitability of key group affiliates, particularly in the case of large and complex financial groups.
Financial interconnections	Granular information on assets and liabilities to different types of financial institutions, split by the nature of the exposure.
Intraperiod information	Period averages and highs/lows to present a window on the risks that institutions run during reporting periods.
Frequency	More quantitative balance sheet information on a quarterly basis.

**Chart 3.12** Disclosure practices in selected areas of financial reports for large US and UK banks<sup>(a)(b)(c)</sup>

Sources: Published accounts and Bank calculations.

- (a) The sample uses five of the largest US and five of the largest UK commercial banks by total assets.
- (b) This chart summarises an assessment of quantitative information disclosed on fair-value methodologies (Valuation), liquidity risk profiles (Liquidity risk), legal structure and risk positions of key group affiliates (Group structures), exposures between financial institutions (Financial interconnections), period averages, highs and lows (Intraperiod information) and frequency of comprehensive reports (Frequency).
- (c) 2008 and 2009 interim reports (SEC quarterly filings in United States, Interim Management Statements and semi-annual reports in United Kingdom) were used to assess Frequency. 2008 annual reports were used for all other areas.

*...and encourage improved disclosure practices.*

Reliable, timely and granular information is essential for banks' own risk management and for market discipline to be effective. Better information would have constrained excessive risk-taking behaviour in the run-up to the crisis. And, in stressed times, it would have helped reduce market uncertainty.

There are a number of areas where significant improvements in disclosure would be desirable (Table 3.B), notably liquidity risk, where more granular information is required on the maturity structure of banks' balance sheets and their holdings of liquid assets. Banks should also disclose better information on their exposures to, and funding from, other financial institutions to help constrain network risk.

The Bank welcomes efforts to improve the quality of disclosure in the United Kingdom, such as the British Bankers' Association Code for Financial Reporting Disclosure introduced in a recent FSA Discussion Paper.<sup>(1)</sup> But disclosure practices in the United Kingdom lag those in other countries, including the United States (Chart 3.12). Some level of prescription on disclosure standards may be necessary if principle-based approaches prove insufficient.

*Macroprudential instruments should target systemic risk...*

If prudential regulation is calibrated to individual institutions' balance sheet characteristics, it may overlook the build-up of risk across the system as a whole. Macroprudential instruments might fill a gap in the current policy framework between macroeconomic policy on the one hand and microprudential policy on the other. In a recent Discussion Paper (DP), the Bank contributed to emerging ideas on how such a macroprudential regime could be made operational.<sup>(2)</sup>

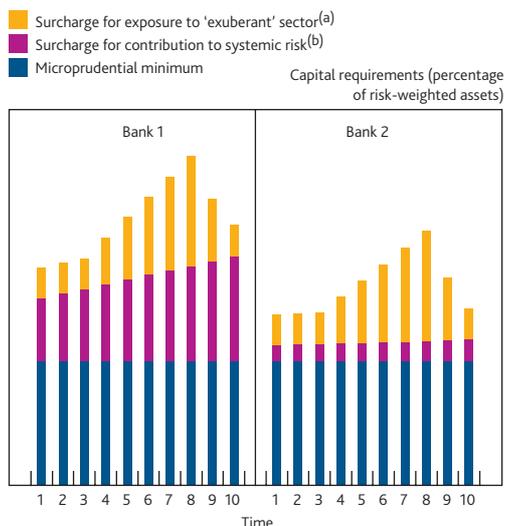
The DP examined the possibility of applying time-varying capital surcharges on banks to dampen cyclical exuberance (the orange bars in the stylised example in Chart 3.13). Raising capital requirements in a credit boom would offer greater self-insurance for the financial system against a subsequent bust. It could also provide incentives for banks to restrain exuberant lending by raising its marginal cost.

In addition, the DP suggested that capital surcharges could be imposed on firms to better reflect their individual contribution to systemic risk (the magenta bars in Chart 3.13). These could be based on factors such as firms' size, complexity, interconnectedness and propensity to cause losses to others through asset fire sales. The key objective would be to lower the probability of default of banks whose failure would impose a large spillover cost on the financial system. Systemic

(1) See FSA (2009), 'Enhancing financial reporting disclosures by UK credit institutions', Discussion Paper 09/5.

(2) See 'The role of macroprudential policy', Bank of England Discussion Paper, November 2009.

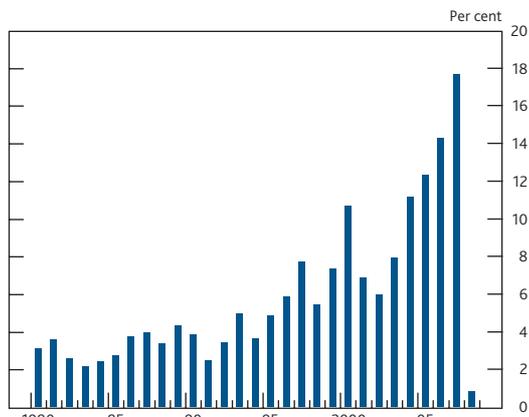
**Chart 3.13** Stylised representation of a macroprudential regime based on capital surcharges



Source: Bank of England.

- (a) Cyclical surcharge on sector that becomes increasingly exuberant through periods 4–8.  
 (b) Surcharge based on the contribution of each bank to systemic risk. Bank 1's contribution is assumed to be large and slowly rising through periods 1–10. Bank 2's contribution is assumed to be smaller throughout.

**Chart 3.14** Global cross-border capital flows (percentage of world GDP)<sup>(a)</sup>



Sources: IMF *World Economic Outlook* and Bank calculations.

- (a) Sum of purchases of foreign assets by domestic residents.

#### Structural changes to support stability could include:

- Extension of central counterparty (CCP) clearing for financial contracts, backed up by robust CCP risk management.
- Development of capital markets to reduce economic dependency on credit intermediated by the banking system.
- Insulation of core financial services — such as payments and credit provision — from disruption stemming from other activities, and removal of the expectation of government support for wholesale creditors.

surcharges could also provide incentives for banks to alter their balance sheets or business models, supporting structural initiatives in this area (see Section 3.2).

*...although significant operational challenges still need to be overcome.*

Calibrating macroprudential surcharges in practice would be a considerable challenge. Policymakers would need to consider trends in the real economy, developments in the financial system, and the interaction between the two. They would need to draw on quantitative data, analysis, market intelligence and modelling. That suggests macroprudential policy decisions are likely to require a substantial element of discretion. Such discretion could, however, be constrained by placing macroprudential choices within an explicit policy regime.

International leakages could limit the effectiveness of a macroprudential regime in practice. Given the free flow of capital across borders (**Chart 3.14**), it is generally not possible to control tightly the quantity of credit to the real economy from abroad. But even without strong international co-ordination, macroprudential tools could still strengthen the resilience of the domestic banking system to future shocks.

## 3.2 Structure of the financial system

The regulatory measures discussed above aim to reduce the likelihood that banking system distress will undermine the stable provision of financial services to the real economy. But calibration challenges, coupled with the risk that regulatory standards might be eroded over time, suggest that they may not be sufficient by themselves. There is merit in considering structural measures to contain systemic risks.

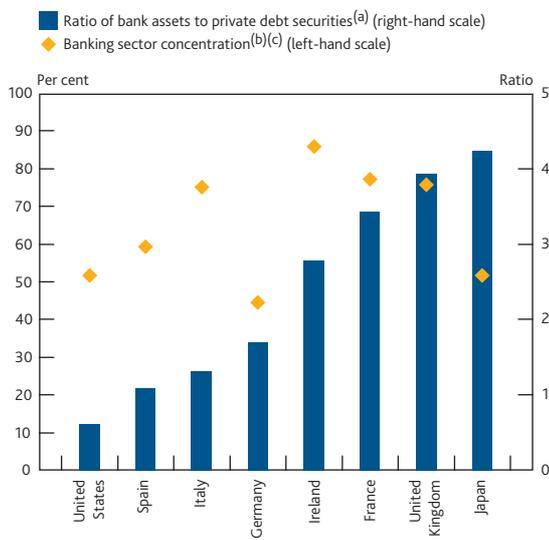
*More diversified funding sources for the real economy are required...*

Relative to other major economies, UK firms are heavily reliant on finance from a small number of large banks (**Chart 3.15**). Further development of alternative channels of intermediation, such as debt capital markets, could help smooth the credit cycle by reducing borrowers' dependence on bank finance. It would also reduce the economic disruption that would be caused by the failure of a major bank.

With these objectives in mind, HM Treasury has announced that it intends to publish a discussion paper on developing non-bank lending channels in the United Kingdom, drawing on advice from the FSA and the Bank.<sup>(1)</sup> Key issues to be considered include identifying necessary improvements to market infrastructure that will help corporate borrowers to access non-bank investors.

(1) See Chapter 3 of the Pre-Budget Report 2009.

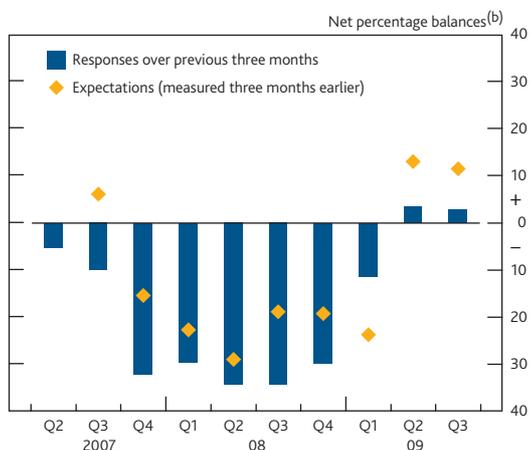
**Chart 3.15** Ratio of bank assets to private debt securities and concentration of domestically owned banking sectors



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

- (a) Bank assets defined as total assets of commercial banks, including subsidiaries. Data are for 2008.  
 (b) Concentration defined as the three largest domestically owned banks' share of total domestically owned banking sector assets. This includes assets of domestic banks held abroad.  
 (c) UK data are from Bankscope as at end-2008 and include all banks and building societies. Data for all other countries are from *The Banker's* ranking of the world's largest 1,000 banks as at end-2007. This measure will underestimate the size of banking systems that have a large proportion of banking sector assets outside of the list.

**Chart 3.16** Credit conditions for UK households and businesses during the financial crisis<sup>(a)</sup>



Source: Bank of England *Credit Conditions Survey*, 2009 Q3.

- (a) Net percentage balances are calculated by weighing together the responses of those lenders who answered the survey questions on the change in the availability of credit. A simple average has been taken across household secured, household unsecured and corporate lending.  
 (b) A positive balance indicates that more credit is available.

*...but banks will remain the key provider of certain core financial services...*

Non-bank finance is a substitute for some of the financial services banks provide to the wider economy. But in other areas, notably payments and lending to households and small businesses, there are fewer alternatives available. Adequate safeguards are needed to ensure that bank failures do not unduly compromise the continuity of these financial services. Substantial government support for distressed banks, along with robust market infrastructure, have ensured that essential payment services have been largely uninterrupted during the present crisis. But these measures have not been able to prevent a sharp reduction in credit availability for UK households and businesses (Chart 3.16).

Losses incurred by banks should, to the fullest extent possible, fall on their shareholders and unsecured wholesale creditors before the taxpayer. Arrangements that insulate banks' utility services from disruption stemming from other types of banking activity would reduce the likelihood that government support will be needed to ensure continuity of these services.

*...and preserving the integrity of these services could be achieved in various ways.*

One way of ensuring continuity of payment services could be to require banks to invest retail deposits solely in risk-free assets such as government bonds — an approach commonly referred to as 'narrow banking'. A number of commentators have put forward proposals along these lines in response to the crisis.<sup>(1)</sup> This could be seen as an extension of arrangements already in place for private banknotes issued by some Scottish and Northern Irish banks. These banks are required to hold cash or credit balances with the Bank of England fully backing their note issuance. These assets cannot be used for any other purpose and would be excluded — or 'ring-fenced' — from any insolvency proceeding and reserved for satisfying the claims of note holders.

An arrangement where retail deposits are backed by risk-free assets need not require the creation of dedicated narrow banks, although this could conceivably occur naturally over time. Existing banks could instead be required to segregate their retail deposit books and the assets backing them within their internal structures. The segregated part of a bank would effectively be subject to a 100% liquidity requirement, and would need to be easily extractable from the wider group using available resolution tools. In this way, the integrity of the payment system would be assured, while still allowing banks to exploit economies of scope between payment services and other types of banking activity.

(1) See, for example, Kay, J (2009), 'Narrow banking: the reform of banking regulation', Centre for the Study of Financial Innovation, September.

*Imposing restrictions on banks' activities is one possible option...*

Narrow banking is one particular form of a broader approach to improving the resilience of the financial system through structural change. More generally, utility financial services could be insulated from risks associated with other banking activities by imposing restrictions along two different dimensions:

- Business lines — the activities that different types of financial institution are permitted to undertake; and
- Geographical — the ways in which banks operate outside their home country.

Current regulatory arrangements impose relatively few restrictions on business lines and across geographical borders. For example, building societies must ensure that at least three quarters of their lending is secured against residential property, but otherwise UK financial institutions are generally free to engage in a wide range of activities. In the geographical dimension, European law allows banks incorporated in any European Economic Area (EEA) country to operate throughout the European Union via branches, although tighter restrictions can be imposed on banks incorporated outside the EEA.

*...with some historical precedents and parallels in other industries...*

There are historical examples of regulators imposing restrictions on banks' business lines, notably the Glass-Steagall Act in the United States. Prior to its repeal in 1999, this legislation — crafted during the Great Depression — placed limits on the ability of retail banks to participate in investment banking activities and *vice versa*. Some US commentators have suggested the reintroduction of similar restrictions — for example, by limiting commercial banks' involvement in activities more suited to capital markets.<sup>(1)</sup> In the United Kingdom, restrictions on membership of the London Stock Exchange prior to the reforms of the 1980s had the effect of establishing a *de facto* boundary between the activities of commercial banks and securities firms active in regulated exchange-traded markets.

Business line restrictions are a common feature of regulatory arrangements in other industries that provide public services through a tightly connected network. One example is the energy sector, where licences for major network operators place limits on their activities. Utilities regulators typically complement business line restrictions with measures intended to improve firms' financial resilience and special arrangements for responding to problems that do occur (Box 7).

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(1) See, for example, the testimony of Paul Volcker (former chairman of the Federal Reserve) to the US House of Representatives' Committee on Banking and Financial Regulation in September 2009.

## Box 7

### Possible lessons from utilities industries

In common with banking, many utilities industries supply 'essential' services to the public. Many also involve networks through which problems could spread widely. Utilities regulators use a number of tools to address various market failures and promote continuity of service. This box looks at possible lessons for how banking regulation could address network risk and the too important to fail problem.<sup>(1)</sup>

#### Regulatory tools in utilities industries

Energy and water regulators use a range of tools including:

- **Financial resilience measures** can limit incentives for risk-taking and reduce the likelihood of financial distress. Provisions in the utility sector include requiring licence holders to meet requirements such as minimum credit ratings.
- **Special administration regimes** for utilities are designed to ensure that essential activities continue in the case of the operator being (or likely to be) unable to pay its debts, without the provisions of normal insolvency applying. The energy and water regulators have signalled that costs of financial distress arising from inappropriate actions of the operator should be borne by investors.
- **Ring-fencing** can be applied to both activities and financial structure. In the energy sector, for example, licences for major network operators place limits on their core activities. Activity by non-licensed (or non-exempt) operators is prohibited. Financial ring-fencing provisions in some water and energy operator licences seek to prevent cross-subsidy of non-regulated activities either by financial transfers from or risk transfers to regulated activities.

Reporting requirements support a number of these tools. For example, financial accounting requirements can support enforcement of ring-fences, and network reporting can help regulators assess the need for future investment.

**Table 1** Examples of regulatory tools used in different industries<sup>(a)</sup>

Sector (regulator)	Ring-fencing	Financial resilience measures	Special administration arrangements
Water and sewerage (Ofwat)	Financial	Minimum credit ratings	Priority is transfer
Energy networks (Ofgem) <sup>(b)</sup>	Activities and financial	Minimum credit ratings	Explicitly allows for 'rescue'
Banking (FSA)	Limited	Capital against risk exposures	Special Resolution Regime

Sources: Bank of England, Energy Act (2004), FSA, Ofgem, Ofwat and Water Industry Act (1991).

(a) This table shows examples and is not an exhaustive list.

(b) Examples shown for electricity distribution and transmission, and gas transportation.

These tools can work together to ensure successful private sector transfers of utility functions in the case of wider group financial distress. Such transfers include the YTL acquisition of Wessex Water, following the failure of the parent company (Enron) of Wessex's owner (Azurix) in 2002. Ring-fencing provisions enabled Wessex to be successfully extracted from the wider group and auctioned without use of special administration, government support or disruption to services.

#### Parallels with banking regulation

Some of the tools used in utility regulation have clear parallels in banking. Financial resilience measures such as capital and liquidity requirements are a key feature. Arrangements for resolving failure outside of normal insolvency regimes are relatively common. For example, the United Kingdom's Special Resolution Regime is designed to facilitate orderly resolution and continuity of key financial services.

Reporting is also a common theme of banking regulation — for example, banks are typically required to provide data on large exposures. Regulators need to ensure they have adequate information to understand risks to the system as well as risks to individual institutions. For example, timely and granular data on interconnections between banks could help to calibrate macroprudential instruments.

There are fewer parallels with ring-fencing in banking regulation. While there are some historical examples of activity restrictions, currently these are largely limited to the building society sector.

Experience in the utilities sector suggests that ring-fencing might be an area worth exploring in banking. In combination, appropriately designed financial resilience measures and ring-fencing could reduce the probability of financial distress. And in the event of distress, special administration and ring-fencing could help ensure continuity of service without eliminating potential losses for investors or protecting non-utility functions.

However, there are limitations in applying ring-fencing as used in utilities to banking. Network utilities are typically natural monopolies supplying services that may not be feasibly replicated outside the regulated sector. By contrast, the banking sector is more competitive and there could be a number of substitutes for 'utility' functions such as deposit-taking. As such, a key challenge in banking would be to prevent the potential disintermediation (regulatory arbitrage) from the utility bank sector to a 'shadow' sector. This challenge could be met by establishing and robustly policing a clear boundary between essential public services and other activities.

(1) The parallels between utilities and banking have been noted by a number of commentators, including John Kay — see for example Kay, J (2009), 'Narrow banking: the reform of banking regulation', Centre for the Study of Financial Innovation.

**Table 3.C** Stylised example of modularity in financial systems

A comparison of two alternative configurations of the financial system can usefully illustrate the relationship between diversification and systemic risk. In the first panel below, a single diversified bank invests in two assets (A and B), while in the second panel two banks invest only in asset A or asset B. In both cases banks hold 10% equity.

An idiosyncratic shock that results in a 20% drop in the value of asset A causes the diversified bank to fail. In the modular system, by contrast, only one bank is affected and the other can continue to provide financial services to the wider economy. Intuitively, the effect of diversification is to expose the equity backing asset B to shocks affecting asset A and vice versa.<sup>(a)</sup> The benefits of modularity are greatest where the likelihood of a common shock affecting returns on the two assets A and B is relatively low.

Diversified system							
Pre-shock				Post-shock			
Bank 1				Bank 1			
Assets		Liabilities		Assets		Liabilities	
A: 100	Equity: 16			A: 80	Equity: 0		
B: 60	Debt: 144			B: 60	Debt: 140		
Modular system							
Pre-shock				Post-shock			
Bank 1		Bank 2		Bank 1		Bank 2	
Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
A: 100	Equity: 10	B: 60	Equity: 6	A: 80	Equity: 0	B: 60	Equity: 6
	Debt: 90		Debt: 54		Debt: 80		Debt: 54

(a) This example is a numerical illustration of the general result that a portfolio of options is always at least as valuable as an option on the portfolio established by Merton, R (1973), 'Theory of rational option pricing', *The Bell Journal of Economics and Management Science*, Vol. 4(1), pages 141–83.

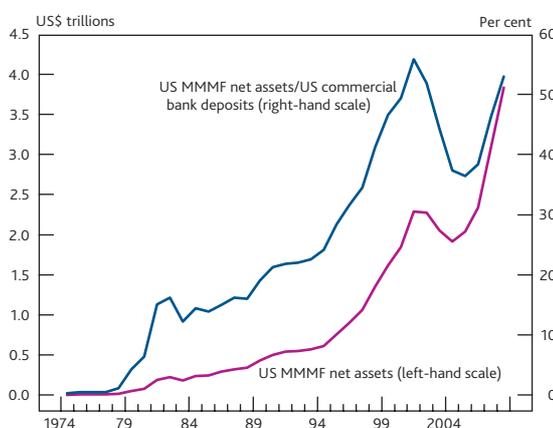
There are clear parallels between utilities and banking, in the sense that both provide essential public services. Equally, there are also some important differences — while utilities tend to be natural monopolies, banks face competition from alternative providers of financial services. Business line restrictions in banking may therefore be susceptible to disintermediation.<sup>(1)</sup>

#### ...and which could help reduce systemic risk.

Imposing restrictions on banks' activities could trigger fundamental changes in the structure of the financial system. Banks may become smaller and more specialised and the financial system, thereby, more diverse. By reducing the economic impact of financial distress at any one institution, expectations of government support would be reduced. A more modular financial system, with sufficient diversity across banks, may also be better able to absorb shocks without disruption to core financial services, as illustrated by the stylised example in Table 3.C.

#### Other measures would also be necessary to support business line restrictions.

Wherever the boundary is drawn, business line restrictions would need to be complemented by suitable regulatory and resolution arrangements for institutions on either side of the boundary. For banks providing utility services, a robust resolution regime would still be required to cater for unexpected problems and ensure continuity of key financial services. Suitable measures to prevent institutions outside the utility sector from becoming too important to fail would also be needed — for example, a capital structure that ensured losses automatically fell on investors, thereby reducing expectations of government support.<sup>(2)</sup>

**Chart 3.17** Size of US money market mutual funds' (MMMFs) total net assets relative to US commercial bank deposits, 1974–2008

Sources: Federal Reserve, Investment Company Institute and Bank calculations.

A pertinent example here might be the experience of US money market mutual funds (MMMFs), which have expanded rapidly over the past few decades (Chart 3.17). Most of these funds seek to maintain a constant net asset value (CNAV) and provide their customers with similar payment services as banks, despite being subject to substantially weaker regulatory requirements. As discussed in the June 2009 Report, the Bank believes that CNAV MMMFs (and other non-bank entities offering withdrawal at par and, effectively, on demand) should be required to convert into variable net asset value funds, so that losses are borne by investors, or be subject to the same regulatory standards as banks.

#### More investment in market infrastructure is needed...

Robust infrastructure can contribute significantly to altering the structure of the financial network and thereby improving

(1) For more discussion on the risk of disintermediation in finance, see Goodhart, C (2008), 'The boundary problem in financial regulation', *National Institute Economic Review*, Vol. 206, pages 48–55.

(2) A proposal along these lines, essentially requiring all financial intermediaries to be 100% equity funded, is put forward in Kotlikoff, L and Goodman, J (2009), *Back to basics*, New Republic, May.

its resilience. For example, expanding central clearing of financial instruments can help reduce network complexity by interposing a central counterparty (CCP) between the original counterparties to a trade.

Significant progress has been made in expanding the use of CCP clearing by major dealers in markets for standardised and liquid over-the-counter (OTC) instruments, such as interest rate swaps and credit default swaps. But there would be benefits in extending CCP clearing to other key OTC markets where concerns about counterparty risk contributed to contractions in liquidity during the crisis. This would include cross-currency interest rate swaps, forward rate agreements and longer-dated FX swaps, forwards and options. CCP clearing should also be expanded in markets where it is already available, such as equity derivatives and repo. Expanding direct access to CCP clearing services in these markets would help reduce network complexity, although the CCPs themselves would need to manage carefully any additional risks that might result.

*...including reducing barriers to central clearing...*

A critical practical question is how to introduce CCP clearing in markets where no such arrangements currently exist. There are a range of potential impediments to rapid progress in this area. Actual or prospective CCPs need to develop ways of managing risks from expanding clearing in new markets. And, given the perceived costs of higher collateralisation, market participants may prefer to retain bilateral clearing arrangements with their counterparties and clients.

It is important that the authorities provide the right incentives to use central clearing. Capital requirements on bilaterally cleared positions need to increase relative to those on CCP-cleared positions.

Bilateral clearing arrangements will continue to be necessary for markets that lack the requisite liquidity or standardisation to enable CCPs to clear them safely. The Bank welcomes current industry initiatives to enhance portfolio reconciliation, improve dispute resolution procedures, and strengthen collateralisation arrangements underpinning bilateral clearing.

*...although central counterparties' own risk management standards need to be strengthened...*

As central clearing expands, policymakers must ensure that CCPs have in place more robust arrangements than in the past for managing credit, liquidity and operational risks. Current global standards need to be strengthened to take account of advances in risk management and lessons learned over the past few years.

CCPs should be required to conduct high frequency stress tests of their margin models, default funds and treasury operations, allowing for both participant default and impaired market

liquidity. CCPs need adequate protection against the possible failure of their largest counterparties. The appropriate size of default funds should be reviewed. CCPs must be able to call intraday margin where market conditions warrant.

International standards should also require CCPs to restrict their investment policies so that they can access liquid funds in a timely way. In practice, this means that CCPs should concentrate their investments in highly liquid and creditworthy assets. And a CCP's payment arrangements need to minimise credit, liquidity and other risks.

A segregation of client accounts from house accounts (and ideally segregation between client accounts) would appropriately protect CCPs and facilitate post-default processes, including the transfer of client positions and collateral. It would also provide clearing members with incentives to collect appropriate margin from their clients.

*... which will require international co-ordination.*

Many central counterparties clear in a range of currencies, reflecting the reality of multi-currency trading in major financial centres and the netting benefits available across currencies. Requiring that a CCP clears only the currency of its own jurisdiction would significantly hinder systemic risk reduction. Any CCP clearing in the foreign exchange markets would, by definition, have to operate in a range of currencies. At the same time, national authorities have a legitimate interest in ensuring that a CCP clearing their currency of issue is suitably robust. For genuinely international infrastructures, the Bank believes that these interests are best met through effective co-operative oversight involving relevant national authorities, based on strengthened global standards.

#### Better crisis resolution arrangements should include:

- Pre-funded and risk-based deposit insurance to limit subsidies to riskier banks.
- The use of recovery and resolution plans (RRPs) to identify and reduce barriers to orderly resolution of financial institutions and to ensure losses can fall on unsecured wholesale creditors.
- Consideration of stronger arrangements to cater for the resolution of non-deposit taking institutions whose failure could undermine financial stability in some circumstances.
- Clear principles for public provision of capital support that ensure banks' shareholders and unsecured wholesale creditors bear losses.

### 3.3 Financial system resolution arrangements

No set of regulatory or structural policy measures would, or indeed should, prevent all bank failures. There is a need for robust arrangements to deal with failures when they occur. Effective resolution arrangements that ensure unsecured wholesale creditors incur losses improve market discipline by strengthening investor incentives to monitor banks' behaviour. This should reduce the accumulation of risks during the upswing of the financial cycle. And when failures do occur, robust resolution arrangements can mitigate network risks and wider economic disruption by helping to contain spillover effects.

*The scope of special resolution arrangements should be reviewed...*

The creation of the Special Resolution Regime in the United Kingdom under the Banking Act 2009 has enhanced the ability of the authorities to resolve deposit-taking institutions in a way that does not lead to systemic

disruption.<sup>(1)</sup> But disorderly failure of other types of institution could also cause material disruption. For example, the failure of Lehman Brothers — a non-deposit taking institution — in September 2008 led to a sharp reduction in the provision of credit and risk insurance in the United States and internationally. This episode has prompted legislative proposals in the United States to establish a special resolution regime for non-bank financial institutions.

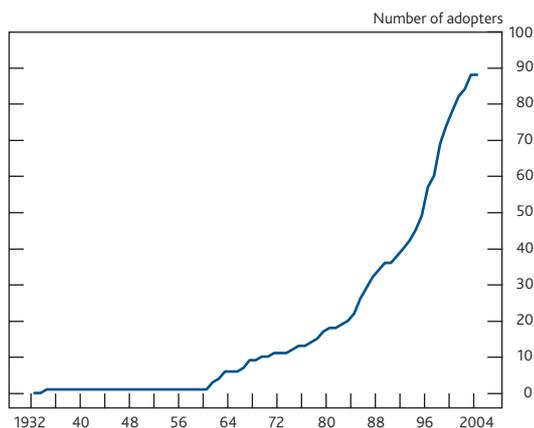
The tripartite authorities are currently exploring ways to improve resolution arrangements for UK investment firms, and HM Treasury has recently published a consultation document outlining a package of policy initiatives in this area.<sup>(2)</sup> A review of the scope of resolution arrangements should also cover the tools available to deal with bank holding companies. The Banking Act allows a bank holding company to be taken into temporary public ownership, if this is deemed necessary to resolve or reduce a serious threat to financial stability. But temporary public ownership is a tool which, by design, should be used only in extreme situations. Consideration should now be given to strengthening resolution arrangements for bank holding companies, and any non-deposit taking subsidiaries of those holding companies, whose failure could have systemic effects.

*...as should deposit insurance arrangements...*

A well-designed deposit insurance regime can help to facilitate orderly resolution by protecting the interests of retail depositors, preserving the integrity of the payments system and mitigating the network spillovers caused by retail depositor runs. The merits of deposit insurance are now widely accepted. Following a steep rise in adoption over the past two decades (**Chart 3.18**), deposit insurance schemes are now in place in nearly 100 countries. But there are variations in design, specifically in funding arrangements and the pricing of insurance premia (**Table 3.D**), which influence the effectiveness of deposit insurance regimes in mitigating the build-up of risks in the system.

The FSA intends to review the funding model for the Financial Services Compensation Scheme, which operates the depositor protection fund in the United Kingdom, in 2010.<sup>(3)</sup> As discussed in the June 2009 *Report*, the Bank believes that deposit insurance should be pre-funded through risk-based levies on banks. Box 8 outlines the benefits of pre-funding, discusses how risk-based premia could help to mitigate the distortion in deposit rates caused by deposit insurance, and suggests how risk-based levies could be set in practice.

**Chart 3.18** Number of deposit insurance schemes worldwide



Sources: World Bank and Bank calculations.

**Table 3.D** Comparison of selected deposit insurance schemes

	Pre-funded?	Risk-based premia?
Canada	✓	✓
Germany	✓	✓
Italy	✗	✓
Japan	✓	✗
Sweden	✓	✓
United Kingdom	✗	✗
United States	✓	✓

Sources: Canada Deposit Insurance Corporation, Deposit Insurance Corporation of Japan, European Commission and Financial Services Compensation Scheme.

(1) For further discussion, see Brierley, P (2009), 'The UK Special Resolution Regime for failing banks in an international context', *Bank of England Financial Stability Paper no. 5*, July.

(2) See HM Treasury (2009), 'Establishing resolution arrangements for investment banks'.

(3) See FSA (2009), 'Banking and compensation reform', *Policy Statement 09/11*.

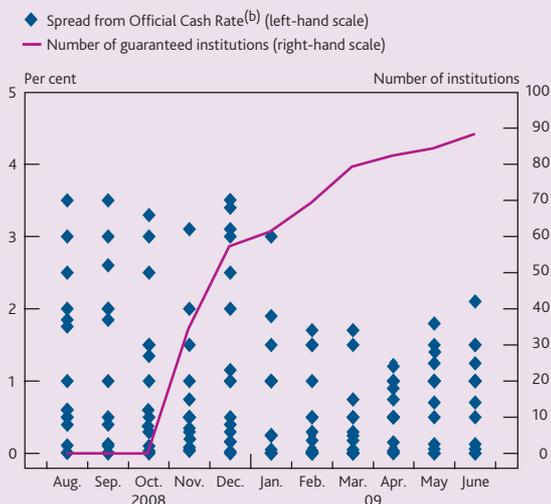
## Box 8 Pre-funded deposit insurance with risk-based levies

In the June 2009 *Report*, the Bank supported a pre-funded deposit insurance scheme with risk-adjusted levies. This box considers the case for such a scheme and discusses options for its design. The case for a risk-adjusted levy system is considered separately from the arguments for pre-funding, as it is possible to design schemes with one feature but not the other.<sup>(1)</sup>

### Case for risk-adjusted deposit insurance levies

Like any insurance contract, deposit insurance weakens depositors' incentives to monitor banks. It also causes a distortion in deposit rates by lowering risky banks' cost of obtaining retail deposits. An empirical study found that risk premia on retail deposits are over 40 basis points lower on average in countries with deposit insurance.<sup>(2)</sup> Without the need to pay risk premia, competitive pressures should cause deposit rates to converge, as occurred in New Zealand following the introduction of a deposit guarantee scheme in October 2008 (Chart A).<sup>(3)</sup>

**Chart A** Spread of six-month deposit rates from Official Cash Rate in New Zealand<sup>(a)</sup>



Sources: New Zealand Treasury, Reserve Bank of New Zealand, [www.interest.co.nz](http://www.interest.co.nz) and Bank calculations.

(a) Figures are for deposit accounts with minimum balance requirements of NZ\$5,000, other terms may vary.

(b) Spreads of commercial institutions' six-month term retail deposit rates from Official Cash Rate are for the first week of each month.

One way to correct for the effect of deposit insurance on risky banks' deposit funding costs is to impose risk-adjusted capital requirements on banks. These requirements would need to be calibrated to equalise across banks the impact their failure would have on the deposit insurer. But, in practice, perfect calibration would be very difficult to achieve. Moreover, the

principle for calibrating minimum microprudential capital standards is to set an upper bound on banks' probability of failure, rather than to equalise expected losses to the deposit insurer. Differences in banks' business models and risk appetites mean that there is a difference between their failure probabilities and expected losses to the deposit insurer.

### Case for pre-funded deposit insurance

There are three main arguments for a pre-funded deposit insurance scheme. First, building up a deposit insurance fund in advance of a crisis is likely to be less procyclical than a pay-as-you-go (PAYG) scheme that levies banks when their profitability is weak. For this reason, levies payable to the Financial Services Compensation Scheme (FSCS) are currently capped at £1 billion until March 2012. If a pre-fund sufficient to cover FSCS payouts during the current crisis had been accumulated over the ten years prior to the crisis and invested in risk-free assets returning 4%, annual levies would have averaged around 7% of the ten largest UK banks' aggregate profits over the period.

Second, a PAYG scheme is reliant on government support. The FSCS has borrowed around £21 billion from taxpayers during the present crisis, at a charge of Libor plus 30 basis points. A pre-funded scheme would avoid this borrowing cost. Third, importantly, a pre-funded scheme is more equitable because failed banks will have contributed to the cost of compensating their own depositors.

### Designing a risk-based, pre-funded scheme

The design of a pre-funded deposit insurance scheme with risk-adjusted levies can be classified as either top-down or bottom-up.

#### Bottom-up approach

The bottom-up approach attempts to charge banks levies equal to the risk they pose to the deposit insurer. It requires the deposit insurer to calculate individual banks' actual level of risk. No specific pre-fund size is targeted; instead the fund fluctuates naturally over time. Although some deposit insurers use such bottom-up approaches, they tend to use relatively simple methods to calculate risk, which are prone to significant measurement error.

The bottom-up approach is conceptually appealing. It is socially fair because in the long run payouts would be fully financed by levies on insured banks. On average, banks' contributions would equal the amount they draw from the fund when they fail. However, it is difficult to design an accurate bottom-up scheme. Methods to calculate individual banks' riskiness exist — for example, variations of the Merton (1974) model of credit risk.<sup>(4)</sup> But these methods rely on market data such as equity prices or CDS spreads, which are

unavailable for some banks and not always reliable measures of risk. Inaccurate measures of banks' level of risk could result in charging banks unfairly large or small levies.

### Top-down approach

Top-down schemes target a certain size of pre-fund, set according to an estimate of the deposit insurer's aggregate exposure to insured banks. Annual levies are calibrated so that the pre-fund will meet this target in a given time frame, with individual banks' levies varying according to their relative riskiness. The United States and Canada are among the countries that have this type of scheme.

An advantage of the top-down approach is that it may be easier to estimate the exposure of the deposit insurer to the banking sector as a whole rather than to individual banks. And there are established methods to measure banks' relative riskiness. A top-down scheme can also be administered using regulatory information that is readily available on all banks.

The top-down approach is not without difficulties. First, this crisis has shown that it is difficult to calculate an appropriate target fund size. In the United States, significant draws on the deposit insurance fund have required the deposit insurer to impose special levies to maintain the fund.<sup>(5)</sup> It is important that the target fund size is calculated on the basis of robust rules so that it is not vulnerable to lobbying pressures when the banking sector is performing well. This is likely to be important in a concentrated banking sector like the United Kingdom, where bank failures are infrequent. Second, to avoid the distortions in deposit pricing, the design of the top-down scheme will need to allow for risk-adjusted levies to be charged even when the fund approaches or reaches its target size. One possibility is to pay out dividends, distributed on the basis of past contributions to the fund, while simultaneously charging risk-adjusted levies.

### Other design issues

The approaches outlined above focus primarily on the probability of bank failures and the aggregate exposure of the deposit insurer. However, the risk a bank poses to the deposit insurer is also determined by the deposit insurer's loss given default (DLGD) when a bank fails. There are a number of factors that may cause DLGD to vary between banks — for example, it is likely to increase when a bank's funding structure means depositors are subordinate to the majority of other creditors. Using balance sheet data, it is possible to identify and assess a bank's DLGDs relative to other banks, though it is difficult to quantify the effect of each factor.

### Conclusion

This box sets out the case for risk-based, pre-funded deposit insurance, and identifies options for the design of such a

scheme. Further analysis is required to assess alternative design features.

- 
- (1) For example, Italy has an *ex-post* funded scheme with risk-based levies and Japan has a pre-funded scheme with flat-rate levies (see Table 3.D).
  - (2) Batholdy, J, Boyle, G W and Stover, R D (2001), 'Deposit insurance and the risk premium in bank deposit rates', *Journal of Banking and Finance*, Vol. 27, pages 699–717.
  - (3) There was no deposit insurance in New Zealand prior to the introduction of the deposit guarantee scheme.
  - (4) Merton, R (1974), 'On the pricing of corporate debt: the risk structure of interest rates', *Journal of Finance*, Vol. 29, No. 2, pages 449–70.
  - (5) [www.fdic.gov/news/news/press/2009/pr09178.html](http://www.fdic.gov/news/news/press/2009/pr09178.html).

**Table 3.E** Recommendations of the BCBS Cross-border Bank Resolution Group (CBRG)

In September 2009, the BCBS CBRG published a report as part of an ongoing project stocktaking the legal and policy frameworks for cross-border crisis resolution. It makes ten recommendations:

- (i) **Effective national resolution powers** — National authorities should have tools to ensure orderly resolution of all types of financial institutions.
- (ii) **Frameworks for a co-ordinated resolution of financial groups** — Each jurisdiction to co-ordinate resolution of financial groups and conglomerates within its jurisdiction.
- (iii) **Convergence of national resolution measures** — Authorities to facilitate the co-ordinated resolution of cross-border financial institutions.
- (iv) **Cross-border effects of national resolution measures** — Authorities should consider procedures to facilitate mutual recognition of crisis resolution measures.
- (v) **Reduction of complexity and interconnectedness of group structures and operations** — Authorities to consider encouraging simplification where necessary for effective resolution.
- (vi) **Planning in advance for orderly resolution** — Systemic cross-border financial firms to promote resilience of key functions, and plan for recovery and rapid resolution.
- (vii) **Cross-border co-operation and information sharing** — Key authorities to agree arrangements for information sharing, for contingency planning and crisis management.
- (viii) **Strengthening risk mitigation mechanisms** — Authorities to promote the use of risk mitigation techniques that reduce systemic risk and enhance resilience during crisis or resolution.
- (ix) **Transfer of contractual relationships** — Allow resolution authorities to temporarily delay contractual termination clauses to complete a transfer in resolution.
- (x) **Exit strategies and market discipline** — Authorities to have clear options or principles for exit from public intervention.

Source: BIS.

**Table 3.F** Resolution funds in selected European countries

Feature	Spain	Sweden
Current size (% of GDP)	€9 billion (0.8)	€3.21 billion (1.0)
Flexibility (% of GDP)	Can be expanded to €90 billion (8.3)	Set to reach €7.7 billion (2.5)
Resolution powers	Capital injection, merger or total/partial transfer of business units	Capital injection (Tier 1) into ailing or sound institutions
Funding	Public (75%) and private (25%)	Public (45.5%) and private (54.5%)

Sources: Banco de España, IMF, Regeringskansliet and Bank calculations.

*...and financial firms should be required to prepare recovery and resolution plans.*

Financial firms' recovery and resolution plans (RRPs) can also help protect against threats to the smooth provision of financial services posed by network risks. Recovery plans aim to reduce the likelihood of a firm's failure, by ensuring the continuity of critical financial services under severely adverse conditions. Resolution plans aim to help ensure that, when firms do fail, they can be resolved in a way that protects financial stability, depositors and public funds. Effectively enforced, such plans might lead to some institutions changing the structure and legal complexity of their businesses. The FSA will establish rules on RRP, following the passage of the Financial Services Bill, a pilot exercise, and a consultation process.

RRPs could be a useful input to reducing impediments to effective cross-border resolution. The objective should be to avoid a situation in which tensions between national regimes (or uncertainty over how they would interact) make large cross-border banks too difficult to resolve. One option could be to promote greater convergence between national regimes, as recommended by the BCBS Cross-border Bank Resolution Group (Table 3.E) and as suggested more recently by the European Commission.<sup>(1)</sup>

*But government may still be required to provide rescue capital...*

Systemic financial crises have often resulted in government provision of capital to banks. An IMF study found that banks were recapitalised by the government in 33 out of 42 systemic crises over the period 1970–2007.<sup>(2)</sup> During the recent crisis, capital has been provided, or made available, by governments to banks in most countries of the European Union, in the United States and in Japan. Some European countries have recently established resolution funds, which effectively serve as sources of rescue capital (Table 3.F). A similar approach is under discussion by the US authorities.

Reform of regulation, structure and resolution arrangements should be designed to remove the need for such support by governments in the future. But no set of measures can remove entirely the risk that a systemic crisis will occur. One way to deal with this fundamental uncertainty is to set up clear principles for the role of the state as provider of rescue capital.

*...for which transparent principles and design features should be developed.*

Rescue capital should be provided only where necessary to prevent serious systemic disruption to key financial services,

(1) See BCBS (2009), 'Report and recommendations of the Cross-border Bank Resolution Group' and European Commission (2009), 'An EU framework for cross-border crisis management in the banking sector'.

(2) See Laeven, L and Valencia, F (2008), 'Systemic banking crisis: a new database', IMF Working Paper, WP/08/224.

and only if distressed banks' shareholders and unsecured wholesale creditors incur losses. One possible option could be to require that the principal value of banks' unsecured debt instruments was automatically written down on receipt of rescue capital — an approach broadly analogous to the role of contingent capital in absorbing losses for going-concern institutions.

Ensuring unsecured wholesale creditors knew that they stood to make losses in all states of the world would be the crucial design feature of any rescue capital scheme, and would sharpen these creditors' incentives to discipline bank management. Another important design feature would be the funding arrangements for rescue capital, as considered by HM Treasury in a recent discussion document.<sup>(1)</sup>

The recent crisis has made it clear that an overhaul of the financial system is required. But no single set of policy measures is likely to be a panacea. So it is important that tighter regulatory standards are complemented by structural reforms and improvements to resolution frameworks. That would deliver a policy framework that is more robust to future changes in behaviour.

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(1) See HM Treasury (2009), 'Risk, reward and responsibility: the financial sector and society'.

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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 June 2009 *Report*.

### Regular publications

#### Markets and operations article, *Bank of England Quarterly Bulletin*, 2009 Q3.

This article reviews developments in global financial markets since the 2009 Q2 *Quarterly Bulletin* up to end-August 2009. The article also reviews the Bank's official operations.

[www.bankofengland.co.uk/publications/quarterlybulletin/qb0903.pdf](http://www.bankofengland.co.uk/publications/quarterlybulletin/qb0903.pdf)

#### Markets and operations article, *Bank of England Quarterly Bulletin*, 2009 Q4.

This article reviews developments in sterling financial markets since the 2009 Q3 *Quarterly Bulletin* up to end-November 2009. The article also reviews the Bank's official operations.

[www.bankofengland.co.uk/publications/quarterlybulletin/qb0904.pdf](http://www.bankofengland.co.uk/publications/quarterlybulletin/qb0904.pdf)

### Speeches

#### Regimes for handling bank failures: redrawing the banking Social Contract.

Paul Tucker, Deputy Governor, June 2009.

[www.bankofengland.co.uk/publications/speeches/2009/speech396.pdf](http://www.bankofengland.co.uk/publications/speeches/2009/speech396.pdf)

In this speech, the third of a series on redrawing the 'Social Contract' for banking in the light of the financial crisis, Paul Tucker discussed the need for banks to organise and manage themselves in a way that facilitates the orderly management of crises, including through deposit insurance and the resolution of distressed firms. He explained how the banking system should bear the cost of insuring retail depositors against loss, through a risk-based, pre-funded system of deposit insurance. Pre-funding ensures that you are not trying to collect levies from risky banks after they have failed. Risk-based premia are necessary to head off risk-taking by banks on the back of *de facto* 100% deposit insurance for retail depositors. Further to their role in funding the deposit insurance scheme, banks also need to structure themselves to permit their orderly resolution should that be required. As part

of that, banks needed to maintain and provide better information to facilitate rapid payout to retail depositors by the Financial Sector Compensation Scheme; to aid the Bank of England's choice and execution of resolution tools under the United Kingdom's Special Resolution Regime; and for potential bidders for part of or all a failed bank. This will require a major change in the information banks have about themselves.

Mr Tucker argued that banks should maintain a realistic resolution plan for how they could be derisked and, if necessary, wound down in an orderly way. That now had to be part of the banking Social Contract. It would probably entail a radical simplification of some group structures. That would not be easy. But it was important to bring about the kind of regime shift necessary to restore confidence and trust in the industry without a government prop.

In relation to the cross-border aspects of bank resolutions, he noted the potential tension between the regulatory division of labour in normal times and insolvency or resolution regimes, which in distressed times can effectively split banks into a series of *de facto* ring-fenced entities. The Financial Stability Board's 'Principles for Cross-Border Co-operation on Crisis Management', which were endorsed by the G20 Heads of Government, have the potential to bring about material changes in the way banks structure their businesses, in how they interact with the authorities, and in the wider environment in which they operate.

#### Small lessons from a big crisis.

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

[www.bankofengland.co.uk/publications/speeches/2009/speech397.pdf](http://www.bankofengland.co.uk/publications/speeches/2009/speech397.pdf)

In this speech, Andrew Haldane discussed seven issues arising from the crisis and assessed their implications for policymakers and practitioners. These included a role for a systemic overseer in detecting exuberance in financial markets and institutions; the need for banking returns to more accurately reflect risk, especially when higher returns are generated from higher leverage and hence risk; the need to reassess the Modigliani-Miller hypothesis in a banking context to understand why raising equity is perceived as costly; the importance of other markets learning lessons from the robustness of payment and settlement infrastructures exhibited during this crisis; and the need for fundamental reform of post-trade infrastructure in over-the-counter financial markets.

### The Great Moderation, the Great Panic and the Great Contraction.

Charles Bean, Deputy Governor, August 2009.

[www.bankofengland.co.uk/publications/speeches/2009/speech399.pdf](http://www.bankofengland.co.uk/publications/speeches/2009/speech399.pdf)

Charles Bean delivered the Schumpeter lecture at the Annual Congress of the European Economic Association. In the lecture he looked back at the causes of the financial crisis and subsequent recession. He discussed macroeconomic factors. The decade of unusually stable activity in advanced economies leading up to the crisis had created a false sense of security. Real short and long-term interest rates were also low due to loose monetary policy and strong global savings. He also discussed microeconomic distortions in financial markets which created strong incentives for financial institutions to become highly geared. He also described the severe information problems created by highly complex financial instruments. When losses grew, the financial sector was impaired because the complexity of the interbank network created enormous uncertainty about the extent of counterparty risk.

Uncertainties in the financial system were transmitted to the real economy after the collapse of Lehman Brothers which made the task of deleveraging in the financial system more difficult and the tightening of credit more severe. Mr Bean discussed whether central banks should use monetary policy to counteract credit cycles but concluded they should develop macroprudential instruments instead.

He argued that there are lessons for the economics profession to learn but it does not need radical change because much of what went wrong can be analysed using standard economic tools. Economists should take more notice of history and not treat crises as pathologies but as a central feature of free-market economies that models should aspire to explain. Finally, macroeconomists have to put credit markets into their models which enable us to examine shocks originating in the financial sector rather than just as an amplification mechanism.

### Credit is trust.

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

[www.bankofengland.co.uk/publications/speeches/2009/speech400.pdf](http://www.bankofengland.co.uk/publications/speeches/2009/speech400.pdf)

In this speech, Andrew Haldane discussed how the financial crisis was caused by a break down of trust within the banking sector, which through a collapse in confidence led to a withdrawal of credit to the real economy. He assessed the implications of this for three aspects of the financial

system: structure, where there may be a case for local relationship-based, as well as global, banking; strategy, where diversity, not diversification, can provide benefits to system stability; and governance, where the alignment of stakeholder incentives with the public good can help ensure the risk of banking activities is better-matched with the possible return. These principles, which were missing in the run-up to the present crisis, can help in building a more stable financial system for the future.

### Speech by Mervyn King.

Mervyn King, Governor, October 2009.

[www.bankofengland.co.uk/publications/speeches/2009/speech406.pdf](http://www.bankofengland.co.uk/publications/speeches/2009/speech406.pdf)

In this speech, the Governor set out two key underlying causes of the financial crisis that had engulfed the world economy over the past year: global imbalances; and deficiencies in the structure and regulation of the financial sector. In this speech, the Governor majored on the latter factor.

He highlighted that at the heart of the problem of managing and regulating the financial system is the 'too important to fail' problem — that some banks' incentives are distorted by the knowledge that in a crisis, the government would stand behind them. He set out two possible approaches to dealing with this issue, and called for a debate about how they might be used. One is to try to ensure that the probability of those institutions failing, and hence of the need for taxpayer support, is extremely low. The other is to find a way that institutions can fail without imposing unacceptable costs on the rest of society.

The authorities could set out to achieve the first approach through better regulation — for example through higher capital requirements. This might be complemented by a requirement to have additional contingent capital available when capital gets eroded. But any given capital requirement can never be enough to ensure the stability of an institution with certainty — and a higher capital requirement would always be safer. And through a highly connected financial system, the failure of an important institution would always have the potential to infect the essential — or utility — services banks provide to the real economy.

The alternative is to change the structure of the industry so that the utility services are insulated from the other activities of financial companies, and to restrict public support to these utility providers. But this does not resolve all misaligned incentives. The fundamental issue is that when private companies, outside of the utility sector, engage in a high degree of maturity transformation on a scale that could have consequences for the rest of the economy, the government would not want to stand aside when such an entity fails.

The Governor concluded that there are no easy answers, but the two approaches he outlined could be used in a complementary way.

### The debate on financial system resilience: macroprudential instruments.

Paul Tucker, Deputy Governor, October 2009.

[www.bankofengland.co.uk/publications/speeches/2009/speech407.pdf](http://www.bankofengland.co.uk/publications/speeches/2009/speech407.pdf)

In this speech, Paul Tucker summarised the Bank of England's developing thinking on possible macroprudential instruments, designed to help make the financial system more resilient to swings in the credit cycle. There are at least four dimensions to be considered. First, the objective. The Bank doubts that it is feasible to target asset prices or credit growth as such. Instead, the focus could be on the dynamic resilience of the banking system, which could indirectly have a material effect on domestic credit-supply conditions. Second, instruments. They could involve using microregulatory requirements on capital and liquidity for macro, system-wide ends. Sometimes overly exuberant credit expansion affects particular sectors rather than the economy as a whole. So Mr Tucker airs the possibility of sometimes adjusting capital (or liquidity) requirements for lending to specific sectors. Variations of collateral haircuts might also be deployed for secured lending. Third, rules or discretion? Given that simple rules have not been developed for monetary policy, Mr Tucker doubts that a rules-based approach would suffice for macroprudential policy. But to the extent that judgement and discretion were involved, they would need to be constrained by a clear mandate and transparency involving explanations of policy decisions. Fourth, whether international co-ordination is needed, given that domestic residents and firms can always borrow from abroad. Mr Tucker suggests that increasing the capital (and liquidity) requirements of domestic banks would at least enhance their resilience, and so their ability to lend to the real economy when a bubble bursts. Transparency and exchanges of information among authorities might also encourage overseas authorities to apply similar tools. International co-operation would be highly desirable. Concluding, Mr Tucker said that the Bank would issue a Discussion Paper over the subsequent weeks.

### Banking on the state.

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

[www.bankofengland.co.uk/publications/speeches/2009/speech409.pdf](http://www.bankofengland.co.uk/publications/speeches/2009/speech409.pdf)

This paper discusses the evolution in the risks to banks' balance sheets and the impact on the evolution of the three elements of the banking safety net — liquidity insurance,

deposit insurance and capital insurance. Evidence shows a progressive rise in banking risk that has been accompanied by a widening and deepening of the safety net. The paper then goes on to explain the sources of this time-consistency problem and approaches to tackling it, including introducing leverage limits, reconsidering the industrial organisation of banking and redesigning the safety net.

### The crisis management menu.

Paul Tucker, Deputy Governor, November 2009.

[www.bankofengland.co.uk/publications/speeches/2009/speech410.pdf](http://www.bankofengland.co.uk/publications/speeches/2009/speech410.pdf)

In this speech, Paul Tucker reviewed the various components of a crisis management package for financial institutions. These are central bank liquidity insurance for viable firms and markets; recovery and resolution plans, or 'living wills' for firms; and official sector support operations, including capital of last resort. During the crisis governments have gone beyond insuring retail deposits via established schemes, to guarantee uninsured wholesale creditors too. Principles need to be developed to ensure that the cost falls to firms, their wholesale creditors and equity holders, rather than the general taxpayer.

### Recovery and resolution plans.

Andrew Bailey, Executive Director for Banking Services and Chief Cashier, November 2009.

[www.bankofengland.co.uk/publications/speeches/2009/speech412.pdf](http://www.bankofengland.co.uk/publications/speeches/2009/speech412.pdf)

In remarks at the Santander International Banking Conference, Andrew Bailey discussed the role of recovery and resolution plans (RRPs) as part of the response to the banking crisis.

He noted that RRPs should be critical tools for financial institutions themselves (where they should be owned at Board level), banking supervisors and resolution authorities. Mr Bailey stressed that the Bank, in its role as resolution authority, would place great emphasis on the existence of credible and usable resolution plans. He noted that while these must be owned and produced by the authorities, firms would need to play a vital role in producing and maintaining the information needed to enable a resolution plan to be enacted. Mr Bailey went on to use the examples of Northern Rock and Lehman Brothers to illustrate the role that RRPs might play as a device to enable tough questioning on structures and business models.

### The Bank of England's balance sheet: monetary policy and liquidity provision during the financial crisis.

Paul Fisher, Executive Director for Markets, November 2009.

[www.bankofengland.co.uk/publications/speeches/2009/speech413.pdf](http://www.bankofengland.co.uk/publications/speeches/2009/speech413.pdf)

The extent of the Bank of England's support for the economy during the past two years has been historically exceptional. In this speech, Paul Fisher used the Bank's balance sheet as a framework to describe the expanded set of operations which have been undertaken during the financial crisis. There has been an unprecedented pace of innovation. New tools and facilities, such as the Asset Purchase Facility, have been created to implement monetary policy. Other operations, such as the Special Liquidity Scheme, have been focused toward providing liquidity support to the banking system. The Discount Window Facility has been one of the most significant, permanent developments in this framework. He noted that at some point the Bank's balance sheet may return to something like its former composition, and perhaps even its former size, but the innovations introduced during the crisis should leave the Bank better prepared to deal with stresses in the future.

### The UK bank resolution regime.

Andrew Bailey, Executive Director for Banking Services and Chief Cashier, November 2009.

[www.bankofengland.co.uk/publications/speeches/2009/speech414.pdf](http://www.bankofengland.co.uk/publications/speeches/2009/speech414.pdf)

In this speech, Andrew Bailey described the new special resolution regime (SRR), created under the 2009 Banking Act. Having set out the case for an SRR, he described the objectives of the UK regime, the tools available, the roles of the different authorities and the safeguards that exist to protect property rights.

Mr Bailey went on to highlight several areas where further work was required to hone the regime. The Financial Services Compensation Scheme should gradually be pre-funded by industry contributions. On safeguards, the right balance should be struck between discretion and ensuring banks and markets knew as much as they could about how the Bank would, and would not, act in a resolution. Noting that resolution is an invasive form of surgery requiring large amounts of information, he welcomed work on recovery and resolution plans. Finally, he noted the importance of ensuring the regime could deal with cross-border resolutions.

## Financial Stability Papers

### The UK Special Resolution Regime for failing banks in an international context.

Peter Brierley, July 2009.

[www.bankofengland.co.uk/publications/fsr/fs\\_paper05.pdf](http://www.bankofengland.co.uk/publications/fsr/fs_paper05.pdf)

This paper seeks to place in an international context the UK Special Resolution Regime (SRR) for failing banks, which came into effect in February 2009 with the adoption of the Banking Act. The SRR's key purpose is to enable an orderly resolution of a failing UK bank to be carried out in a manner preserving the public interest, particularly by maintaining financial stability, preserving confidence in the banking sector, and protecting both depositors and the taxpayer. The Northern Rock crisis in 2007 demonstrated clearly that the UK authorities lacked the powers necessary to achieve such a purpose at that time.

### A risk-based methodology for payment systems oversight.

Ben Norman, Peter Brierley, Peter Gibbard, Andrew Mason and Andrew Meldrum, August 2009.

[www.bankofengland.co.uk/publications/fsr/fs\\_paper06.pdf](http://www.bankofengland.co.uk/publications/fsr/fs_paper06.pdf)

The Bank of England has developed a risk-based methodology to support its oversight of payment systems. The methodology provides more precise estimates of risks in payment systems than previously available. Because it is consistent and systematic in its application, the methodology assists the Bank in focusing its attention and resources — the intensity of oversight — where the level of risk is estimated to be greatest. This paper provides an overview of the framework.

## Working papers

### International financial transmission: emerging and mature markets.

Guillermo Felices, Christian Grisse and Jing Yang, August 2009.

[www.bankofengland.co.uk/publications/workingpapers/wp373.pdf](http://www.bankofengland.co.uk/publications/workingpapers/wp373.pdf)

### How do different models of foreign exchange settlement influence the risks and benefits of global liquidity management?

Jochen Schanz, August 2009.

[www.bankofengland.co.uk/publications/workingpapers/wp374.pdf](http://www.bankofengland.co.uk/publications/workingpapers/wp374.pdf)

### Endogenous choice of bank liquidity: the role of fire sales.

Viral V Acharya, Hyun Song Shin and Tanju Yorulmazer,  
November 2009.

[www.bankofengland.co.uk/publications/workingpapers/wp376.pdf](http://www.bankofengland.co.uk/publications/workingpapers/wp376.pdf)

### Other papers

#### The Bank of England's oversight of interbank payment systems under the Banking Act 2009.

September 2009.

[www.bankofengland.co.uk/publications/other/financialstability/oips/oips090928.pdf](http://www.bankofengland.co.uk/publications/other/financialstability/oips/oips090928.pdf)

Part 5 of the Banking Act 2009 establishes a statutory regulatory regime for interbank payment systems. This regime, which will be operated by the Bank, will replace the current non-statutory arrangements. Under the new regime, payment systems which meet the criteria set out in the Act (section 185(1)) may be recognised by HM Treasury and brought within the Bank's oversight regime. This paper explains how the Bank intends to fulfil its responsibilities in this area.

### The role of macroprudential policy.

Discussion Paper, November 2009.

[www.bankofengland.co.uk/publications/other/financialstability/roleofmacroprudentialpolicy091121.pdf](http://www.bankofengland.co.uk/publications/other/financialstability/roleofmacroprudentialpolicy091121.pdf)

In this paper the Bank contributes to emerging ideas on how macroprudential instruments might be designed and deployed to help to restrain the build-up of risks within the financial system. The aim of doing so would be to make the financial system more resilient and the real economy more stable.

The paper does not reach definitive answers, nor does it advocate a particular operational regime. Rather it suggests some possible directions for the international debate in the period ahead on how the authorities might deploy policy instruments to lower the incidence and cost of future systemic crises.

# 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.

**CPI inflation** – inflation measured by the consumer prices index.

**FICC** – fixed income, currency and commodities.

**GDP** – gross domestic product.

**Libor** – London interbank offered rate.

**OIS** – overnight index swap.

**RMBS** – residential mortgage-backed security.

**SIV** – structured investment vehicle.

## Abbreviations

**APS** – Asset Protection Scheme.

**BCBS** – Basel Committee on Banking Supervision.

**BHC** – bank holding company.

**BIS** – Bank for International Settlements.

**CBRG** – Cross-border Bank Resolution Group.

**CCP** – central counterparty.

**CEE** – Central and Eastern Europe.

**CGS** – Credit Guarantee Scheme.

**CNAV** – constant net asset value.

**DLGD** – deposit insurer's loss given default.

**ECB** – European Central Bank.

**EEA** – European Economic Area.

**EME** – emerging market economy.

**EU** – European Union.

**FDIC** – Federal Deposit Insurance Corporation.

**FSA** – Financial Services Authority.

**FSB** – Financial Stability Board.

**FSCS** – Financial Services Compensation Scheme.

**FTSE** – Financial Times Stock Exchange.

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

**GAAP** – generally accepted accounting principles.

**HMT** – Her Majesty's Treasury.

**IBES** – Institutional Brokers' Estimate System.

**IFRS** – International Financial Reporting Standard.

**IFS** – IMF *International Financial Statistics*.

**IMF** – International Monetary Fund.

**IPD** – Investment Property Databank.

**ISA** – individual savings account.

**LBG** – Lloyds Banking Group.

**LCFI** – large complex financial institution.

**LTV** – loan to value.

**MFI** – monetary financial institution.

**MMMF** – money market mutual funds.

**MoU** – Memorandum of Understanding.

**Ofgem** – Office of Gas and Electricity Markets.

**Ofwat** – The Water Services Regulation Authority.

**ONS** – Office for National Statistics.

**OTC** – over the counter.

**PAYG** – pay-as-you-go.

**PIA** – Property Industry Alliance.

**PNFC** – private non-financial corporation.

**RBS** – Royal Bank of Scotland.

**RRPs** – recovery and resolution plans.

**RWA** – risk-weighted asset.

**SEC** – Securities and Exchange Commission.

**SLS** – Special Liquidity Scheme.

**SME** – small and medium-sized enterprise.

**SRR** – Special Resolution Regime.

**S&P** – Standard & Poor's.



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