Financial Stability Report

June 2010 | Issue No. 27

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

On 16 June, the Chancellor of the Exchequer set out a plan for fundamental changes to the system of UK financial regulation. These are summarised in a box on page 5 in this *Report*. The *Report* was largely prepared prior to the announcement of these changes.

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. The Bank aims to bring its expertise in economic analysis and its experience, both as a bank and as a participant in financial markets, to the assessment and mitigation of risks to the UK financial system. Where necessary, this involves helping to manage and resolve financial crises, and making use of the Special Resolution Regime for dealing with distressed banks. The Bank works closely with authorities domestically and overseas on issues relevant to the stability of the UK financial system, including the international financial architecture and regulatory frameworks.

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

This document was delivered to the printers on 23 June 2010 and, unless otherwise stated, uses data available as at 4 June 2010.

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

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

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Changes to the UK regulatory system

At the Mansion House on 16 June, the Chancellor of the Exchequer announced plans to change the system of UK financial regulation. A further statement was made by the Financial Secretary in Parliament on the following day.(1) A Government policy document for public consultation will be published before Parliament's summer recess.

This *Report*, which was prepared largely ahead of these announcements, focuses on the Bank's assessment of conjunctural risks and aspects of the broader international financial stability policy agenda, rather than the proposed changes to UK regulatory arrangements.

The changes will move the United Kingdom's regulatory framework towards a 'twin peaks' model of financial regulation, with prudential regulation of banks separated from oversight of consumer protection and market conduct. The changes will also give the Bank a new responsibility for macroprudential regulation of the financial system. The process will be completed in 2012.

Prudential Regulation Authority

The Government plans to legislate to create a new Prudential Regulation Authority (PRA) as a subsidiary of the Bank to conduct prudential regulation of sectors such as deposit-takers, insurers and investment banks. The PRA will be chaired by the Governor. The Chancellor announced that Hector Sants will remain at the FSA to oversee the transition and will become Chief Executive of the PRA and a new Deputy Governor of the Bank in due course. Andrew Bailey, the Bank's Chief Cashier, will be Deputy in the new regulator, and will help with the transition. The Deputy Governor for Financial Stability will also sit on the PRA Board.

In addition to the PRA, there will be a new Consumer Protection and Markets Authority (CPMA), separate from the Bank, to regulate the conduct of all financial firms, including those prudentially regulated by the PRA. The CPMA will also have responsibility for the Financial Services Compensation Scheme.

Financial Policy Committee

The Government also announced that it will legislate to create a Financial Policy Committee (FPC) in the Bank, which will be placed in charge of macroprudential regulation. It will have responsibility to look across the economy at macroeconomic and financial issues that may threaten stability and will be given tools to address the risks it identifies. It will have the power to require the new PRA to implement its decisions by taking regulatory action with respect to all firms.

The Governor will chair the FPC. Its members will include the Deputy Governors for monetary policy and financial stability, the new Deputy Governor for prudential regulation, the Chair of the CPMA, as well as external members and a Treasury representative. The Committee will be accountable to Parliament, as is the case with the Monetary Policy Committee, and to the Bank's Court of Directors.

Speaking at the Mansion House, the Governor said: 'It is not difficult to see what role such a macroprudential regime might have played in the run-up to the crisis. A progressive tightening of capital standards, for example, would have helped rein in the near-tripling of UK bank balance sheets between 2002 and 2007…But a macroprudential regime also has a key role to play in the downswing phase of the cycle. Since 2008, credit conditions have tightened, jeopardising the recovery and, in turn, threatening renewed losses for banks. By allowing banks to draw on their macroprudential capital buffers, while credit conditions remain tight, the system is countercyclical. In other words, a credible macroprudential regime could help forestall both excessive exuberance and unnecessary caution'.

It is intended that an interim FPC will be set up by the autumn in advance of the passage of primary legislation.

(1) The Chancellor's speech is available at www.hm-treasury.gov.uk/press_12_10.htm. The statement by the Financial Secretary is available at www.hm-treasury.gov.uk/statement_fst_170610.htm.

Overview

Since the December 2009 *Report*, markets have focused increasingly on strains placed on sovereign balance sheets. In April, concerns over Greek sovereign risk spilled over to other European countries and developed rapidly into a generalised retreat from risk-taking. Inadequate transparency about sovereign exposures led to counterparty concerns and renewed strains in bank funding markets. In response, the IMF and European authorities put in place a substantial package of support. While these measures helped to stabilise conditions, market pressures have not yet abated. EU leaders also recently announced plans to publish the results of stress tests conducted on the largest European banks; this will be another important step.

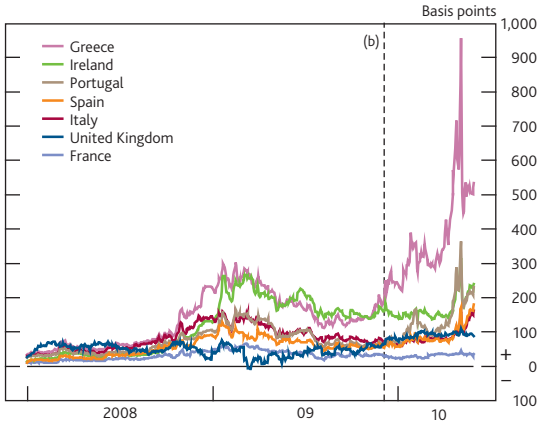
UK banks have raised their capital and liquidity buffers substantially, which has helped them weather recent tensions. But, in common with their peers, they face a number of challenges in the period ahead. UK banks need to maintain resilience in a difficult environment, while refinancing substantial sums of funding; they have a collective interest in providing sufficient lending to support economic recovery; and they will need over time to build larger buffers of capital and liquidity to meet more demanding future regulatory requirements. The new Basel regulatory regime will be agreed in the autumn. An extended transition to this new regime would enable banks to build resilience through greater retention of earnings, while sustaining lending.

A near-term challenge

Banks' operating environment has become more challenging. Since the December 2009 *Report*, markets have focused increasingly on strains placed on sovereign balance sheets. In April, concerns about the sustainability of the Greek fiscal position became acute and spilled over to a number of other European economies (**Chart 1**). Amid increased market uncertainty (**Chart 2**), corporate debt issuance dried up and investors sought safer assets (**Chart 3**), such as US Treasuries. Concerns about banks' sovereign debt exposures contributed to a marked tightening in funding market conditions. In the face of heightened systemic risk, the IMF and European authorities put in place a substantial package of support measures (**Table A**), which helped to stabilise key markets.

Sovereign risk had been highlighted previously, including in the December 2009 *FSR* and by market participants in the Bank's *Systemic Risk Survey* (**Table B**). But the speed with which Greece's problems were transmitted to other countries and markets highlighted persisting fault lines in the global financial system. A lack of transparency about sovereign exposures amplified counterparty risk concerns, affecting funding

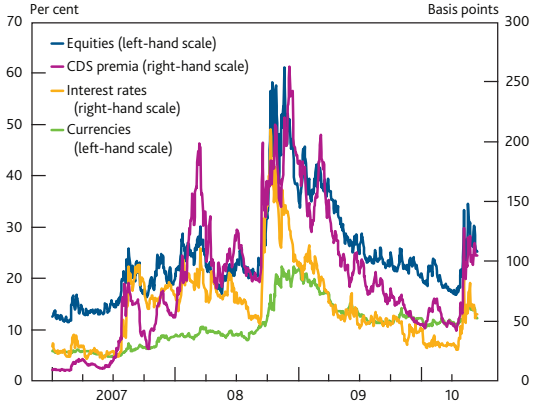
Chart 1 European sovereign spreads[a]



Sources: Thomson Reuters Datastream and Bank calculations.

(a) Spread of ten-year government bond yields over German bunds for selected countries. Data to close of business on 10 June.
(b) December 2009 *Report*.

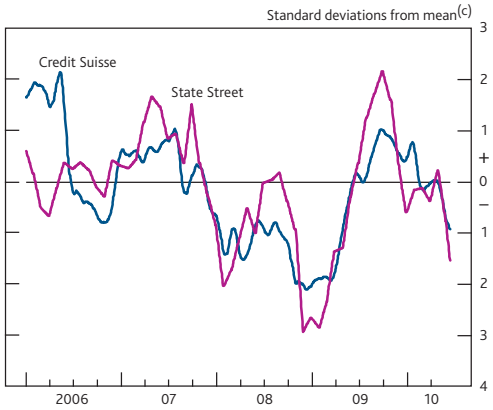
Chart 2 Market uncertainty[a]



Sources: Bloomberg, British Bankers' Association, Chicago Mercantile Exchange, Euronext.liffe, JPMorgan Chase & Co. and Bank calculations.

(a) Three-month option-implied volatilities. For further details, see **Chart 3.3**.

Chart 3 Indicators of risk appetite[a][b]



Sources: Bloomberg, Credit Suisse and Bank calculations.

(a) Indices are adjusted so that positive numbers in both series indicate increased risk-taking and negative numbers indicate reduced risk-taking.
(b) Data to close of business on 14 June 2010.
(c) Mean and standard deviation calculated from 28 July 2004.

Table A European sovereign concerns timeline

2008/2009	Recession and public sector support for banking sector lead to deteriorating fiscal positions
Oct. 2009	Newly formed Greek Government revises estimate for 2009 budget deficit from 3.7% to 12.5%
Oct.-Dec. 2009	Greek sovereign debt ratings downgraded
Feb. 2010	Council of the European Union gives notice to Greece to correct its deficit by 2012
Apr. 2010	ECB announces that it will keep the minimum credit rating threshold for eligible collateral at BBB- beyond 2010
Apr.-May 2010	Deterioration of Greek sovereign and bank funding market conditions spreads to a number of other European countries
2 May 2010	€110 billion support package for Greece is announced with €30 billion to be contributed by the International Monetary Fund and the remainder by euro-area Member States
3 May 2010	ECB suspends the application of the minimum credit rating threshold for eligible Greek collateral
9 May 2010	IMF and European authorities announce a wide-ranging set of measures to support European financial stability
May-June 2010	Spain and Greece sovereign debt ratings downgraded. Governments in Germany, Greece, Italy, Portugal, Spain and the United Kingdom announce accelerated plans for fiscal consolidation

markets internationally. And strains in foreign exchange swap markets revealed the continued heavy reliance of many European banks on short-term dollar funding from wholesale markets (**Chart 4**).

UK banks have increased their resilience…

UK banks strengthened their resilience during 2009. Capital increased significantly (**Chart 5**), with average ratios now at their highest level in more than a decade. This is a strong capital platform. In addition, leverage declined sharply (**Chart 6**), reflecting equity issuance and reductions in assets in roughly equal measure. Those asset reductions were predominantly falls in intrafinancial sector exposures, including derivatives, rather than lending to the real UK economy.

But, like their peers, UK banks — as well as building societies (see box on pages 48–49) — face significant challenges. They need to remain resilient in a difficult environment, while refinancing substantial sums of funding in coming years. They have a collective interest in supporting lending, given the continued dependence of small and medium-sized businesses on bank credit and signs of more difficult capital market conditions for larger companies. And they need to plan their adjustment to tighter future regulatory requirements.

…building up a buffer against sovereign concerns…

Although UK banks have limited holdings of sovereign debt in economies where fiscal concerns have been most acute (Section 2), they have counterparty relationships with European banking systems that have larger exposures (**Chart 7**). These banks face further write-downs in 2010, according to the IMF and ECB.

If undiminished, sovereign concerns could also affect UK banks through their impact on global financial markets (Section 3). Renewed concerns about counterparty risk could further reduce the availability of bank funding. And funding strains could be exacerbated by any falls in the perceived value of government support for banks. Deteriorating investor sentiment could also trigger further falls in asset prices. Market participants currently appear to place increased weight on such a tail scenario for asset prices (**Chart 8**).

Sovereign risk concerns in Europe might lead to a further shift in investors' demand — both geographically (from European to Asian and US assets) and across the risk spectrum (from risky to safer assets). That redistribution of risk capital would weigh on prospects for growth in Europe. It would also intensify the slower-fuse risk of overheating in some emerging Asian economies (see box on pages 28–29).

International authorities have taken action to mitigate the immediate market consequences of perceived sovereign risks. On 9 May, the EU announced the creation of a European

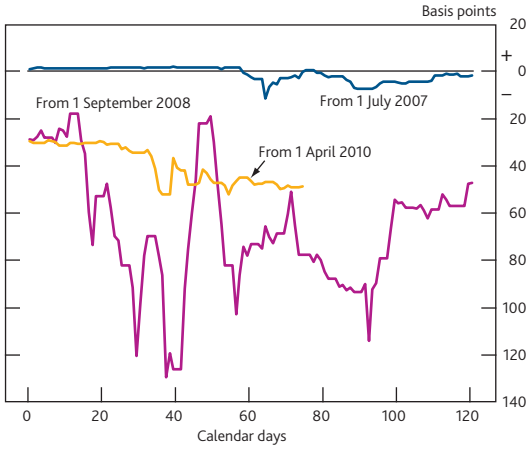
Table B *Systemic Risk Survey* results: key risks to the UK financial system[a]

	Key risks		Risks most challenging to manage	
	May 2010	Nov. 2009	May 2010	Nov. 2009
Sovereign risk and/or concerns about public debt	69	24	43	3
Economic downturn	67	68	43	41
Regulation, taxes on banks	41	49	33	35
Funding and liquidity problems	33	35	20	30
Financial market disruption/ dislocation	28	30	20	19
Property price falls	28	27	6	5
Tight credit conditions	20	24	7	11
Household and corporate defaults	17	49	11	22
Election uncertainty	17	0	0	0
Financial institution failure/distress	15	11	11	14

Sources: Bank of England *Systemic Risk Surveys* 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. Risks cited in the previous survey have been regrouped into categories used to describe the latest data.

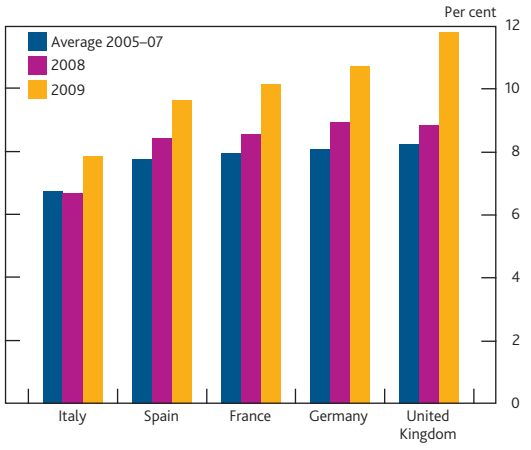
Chart 4 Euro-dollar basis swap rates[a][b]



Sources: Bloomberg and Bank calculations.

(a) Additional rate over three-month Euribor to swap US dollars, which pay three-month dollar Libor, for euros for one year.
(b) Data to close of business on 14 June 2010.

Chart 5 Tier 1 capital ratios for selected European banking systems[a][b]



Sources: Capital IQ, Moody's Investors Service, published accounts and Bank calculations.

(a) Includes banks with total assets of more than US$100 billion.
(b) Aggregated from individual banks, weighted by total assets.

Stabilisation Mechanism, with the IMF providing complementary financing arrangements. In parallel, the ECB has undertaken a range of measures, including purchases of euro-area public debt and, in co-ordination with other central banks, resumption of US dollar liquidity operations. The forthcoming stress test for European banks will be another important step.

…and losses from legacy exposures to overextended borrowers.

UK banks are exposed to domestic borrowers, some of whom overextended their balance sheets in the build-up to the crisis. To date, a combination of low interest rates and forbearance or restructuring of loans by banks has helped to contain stress to households and businesses. But weaker-than-anticipated growth or a pickup in market interest rates could increase financial pressures on those sectors and on banks. Corporate liquidations, including in the commercial property sector, could increase if banks become less willing or able to allow breaches in loan covenants (see box on pages 32–33).

US exposures account for around a quarter of UK banks' foreign claims. While the US economic outlook has improved, there are downside risks to the US housing market, reflecting an overhang of supply and the potential for a rise in foreclosure rates as official sector support is unwound. That could increase losses on US household lending, where around a quarter of mortgagors are currently in negative equity (see box on pages 26–27).

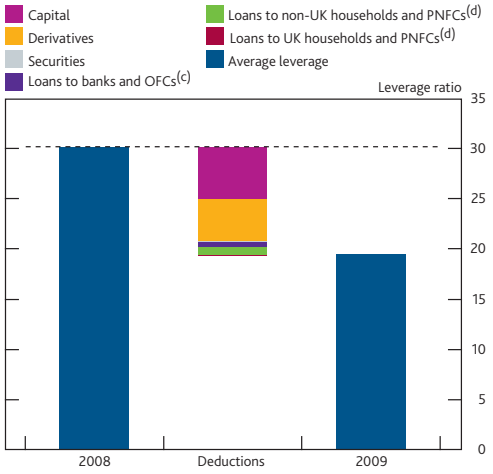
Banks face a substantial refinancing challenge,…

Banks internationally face a substantial refinancing challenge over the coming years, as private sector funding matures and extraordinary public support is withdrawn. Globally, banks are estimated to have at least US$5 trillion of medium to long-term funding maturing over the next three years (**Chart 9**). In the United Kingdom, the largest banks will need to refinance or replace around £750 billion–£800 billion of term loans and liquid assets by the end of 2012. That equates to over £25 billion each month on average, more than double the average monthly issuance achieved so far this year. UK banks also need to extend the maturity of their wholesale funding, around 60% of which falls due within one year.

…need to have credible plans in place,…

The UK authorities are working with the UK banks to assess the individual and collective credibility of their funding strategies. In aggregate, banks might make optimistic assumptions about their ability to attract retail deposits, domestically and internationally, at a time when both they and non-banks are competing aggressively for inflows. That underlines the importance of some front-loading of efforts to term out funding, despite its relatively greater cost given the current slope of the yield curve.

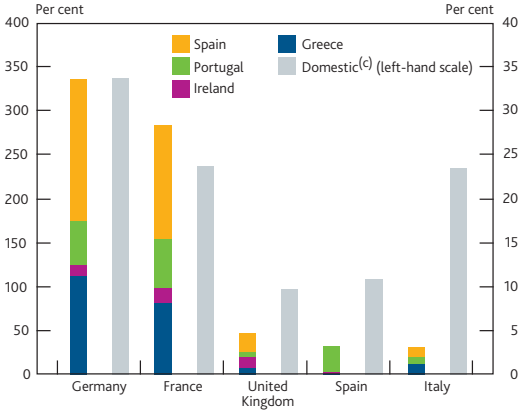
Chart 6 Changes in major UK banks' gross leverage ratio[a][b]



Sources: Bank of England, published accounts and Bank calculations.

(a) Bank of England estimates used to correct for a change in the reporting basis of loans to UK households — see Bank of England: *Monetary and Financial Statistics* (May 2009), Table A4.1 and footnotes.
(b) Gross leverage is calculated as total assets divided by total equity. By accounting for derivatives positions on a gross basis, this measure best captures the risks around the associated counterparty exposures.
(c) Other financial corporations.
(d) Private non-financial corporations.

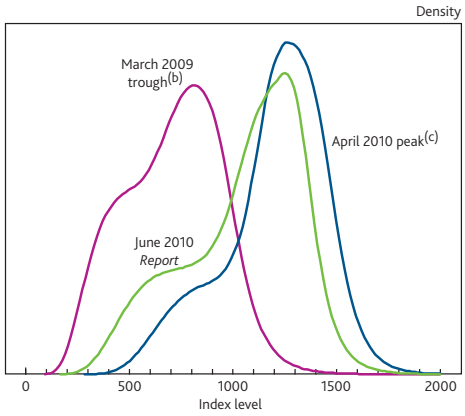
Chart 7 Selected BIS banks' claims on public sectors[a][b]



Sources: Bank for International Settlements (BIS), European Central Bank and Bank calculations.

(a) Chart shows exposures of each country to the public sectors of other selected countries and to its own public sector. All claims are as a fraction of 2008 aggregate shareholder equity.
(b) All claims exclude guarantees and derivatives. Claims of German banks are not adjusted for risk transfers.
(c) Exposures to own public sector.

Chart 8 Market-implied probability distributions of S&P 500[a]



Sources: Chicago Mercantile Exchange and Bank calculations.

(a) One year ahead. For further details, see footnote (a) in **Chart 3.15**.
(b) Taken as 10 March 2009.
(c) Taken as 23 April 2010.

…and support lending to the real economy,…

Banks have a collective interest in supporting economic recovery through their lending activities. Credit availability remains tight for some sectors, despite recent improvements. And the recent retreat from risk by unleveraged investors might have increased those pressures. There is a risk that banks alleviate their own funding pressures by further constraining credit conditions for customers. That would dent economic recovery and so raise credit risk for all banks.

Over time, UK banks have the capacity to provide greater support to creditworthy customers — while meeting funding requirements and remaining resilient — by adopting more conservative retention policies. Banks have slightly reduced payout ratios. But, while profits remain buoyant, further reductions in discretionary distributions to staff and shareholders could raise substantial amounts of new capital (**Chart 10**).

…during an extended transition to new regulatory requirements.

While more prudent international regulatory standards are required, the transition to the new regime should take due account of the economic environment. An extended transition would make it easier for banks to build resilience through profit retention, while sustaining lending. Lengthening the transition timetable should not, however, detract from the need to agree internationally the shape and calibration of the new Basel regulatory regime during the autumn, to reduce investor and management uncertainty.

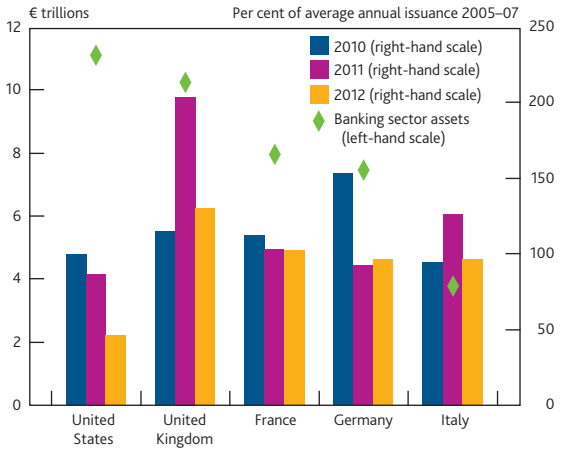
Safeguarding stability

More prudent regulatory standards will be required when economic conditions improve.

The Basel Committee for Banking Supervision (BCBS) is currently developing a package that will require banks to hold larger buffers of resiliently liquid assets and loss-absorbing capital. The required level of capital in the system depends on two key judgements. First, the amount of capital that banks would be expected to hold when credit supply is neither overly exuberant nor overly conservative. This must balance the costs of higher capital, such as any adverse impact on the cost of credit, against the benefits of fewer or less severe future financial crises (see box on pages 58–60). The second judgement is the split of total capital between a credible hard minimum (below which the authorities would typically take action, such as placing a bank in resolution) and a usable buffer (**Chart 11**). The latter buffer should be material. As the Governor set out at the Mansion House,[1] it might also vary over the credit cycle, as part of the

(1) At the Mansion House on 16 June, the Chancellor of the Exchequer also announced plans to change the system of UK financial regulation. See the box on page 5 for further details.

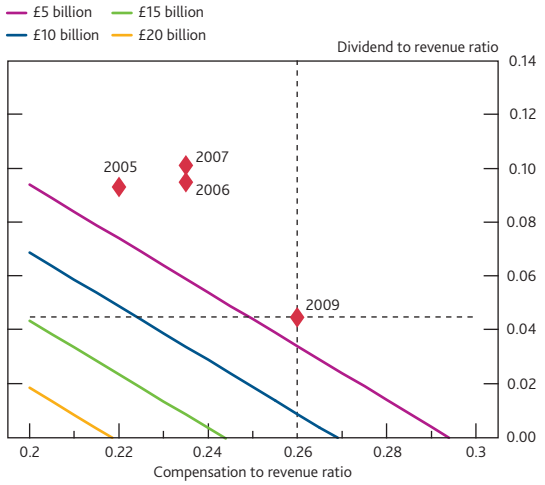
Chart 9 Bank refinancing requirements internationally[a]



Sources: Bank of England, Dealogic, ECB, FDIC, Fitch, SoFFin, UK DMO and Bank calculations.

(a) See **Chart 4.16** for details.

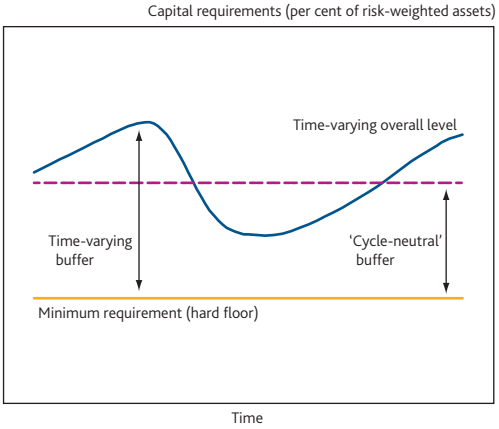
Chart 10 Capital accumulation achievable through lower discretionary distributions by UK banks[a][b]



Sources: Published accounts and Bank calculations.

(a) Lines indicate staff compensation and dividend ratios that would generate various levels of retained capital, and are based on major UK banks' 2009 results. Diamonds indicate compensation to revenue and dividend to revenue ratios for the major UK banks in various years. Diamonds for 2005–08 are not indicative of capital retained in 2005–08, as results in these years differ from the 2009 results used to calibrate the lines.
(b) Compensation to revenue and dividend to revenue ratios were high in 2008, partly due to lower revenue in that year. Though the 2008 ratios are outside the limits of this chart, they are presented in **Chart 4.20**.

Chart 11 Varying capital buffers over the credit cycle



Source: Bank of England.

macroprudential toolkit. Following the passing of adverse shocks, banks could drain the buffer to absorb losses without an unnecessary tightening of credit conditions.

Policymakers plan to tackle fault lines in the regulatory treatment of trading activities…

Ahead of the crisis, banks had an incentive to shift assets to the regulatory trading book where capital charges were often much lower than in the banking book. But, during the crisis, the majority of losses in banks' trading books were linked to credit positions. The BCBS has started a fundamental review of the regulatory regime for trading assets. Two principles could usefully form building blocks for the eventual regime: consistent treatment of similar types of risk across banks' balance sheets, irrespective of where they are booked; and explicit allowance for the risk of swings in liquidity premia on positions that are marked to market.

…and strengthen market discipline and risk management.

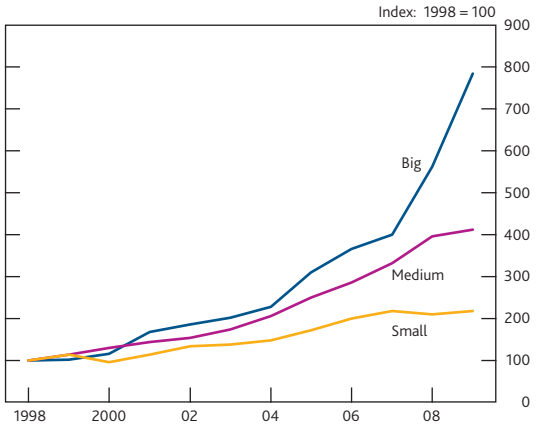
Effective market discipline can contribute to a more resilient financial system. Convergence of international accounting standards would help facilitate comparisons of international banks' financial positions. Market discipline would also be aided by improved disclosure by banks, including on the variation in key balance sheet measures during reporting periods (see box on pages 63–64). Better disclosure might have helped to mitigate strains in funding markets in recent years, which were exacerbated by a lack of information regarding banks' exposures. Banks should also strengthen internal risk management, with treasury functions executing risk-based transfer pricing policies and not serving as profit centres.

Policy action is needed to reduce the distortions created by too important to fail banks…

Policy action is needed to reduce the structural problems caused by banks that are too important to fail (TITF). Larger UK banks expanded much more rapidly than smaller institutions in the run-up to the crisis (**Chart 12**) and have received disproportionate taxpayer support during this crisis. That reflected a misalignment of risks on TITF banks' balance sheets, due to implicit guarantees on their liabilities.

The Bank welcomes the Government's establishment of a new independent commission to review the structure of and competition in the UK banking system. Incentives to become TITF could also be reduced by restrictions on activities and capital surcharges on institutions generating systemic risk. And further measures are needed to ensure that banks' uninsured creditors face a credible threat of loss. For example, there is international debate about requiring uninsured creditors to recapitalise distressed banks through an extension of the scope of statutory resolution regimes and through convertible debt instruments.

Chart 12 Liabilities of banks and building societies by size[a]



Sources: Building Societies Association, published accounts and Bank calculations.

(a) 'Big' includes Barclays, HBOS, HSBC, Lloyds TSB and RBS; 'medium' includes Alliance & Leicester, Bradford & Bingley, Nationwide and Northern Rock; 'small' includes all current building societies except Nationwide. Based on subsample of institutions for 1998–2000.

…and to strengthen market infrastructure.

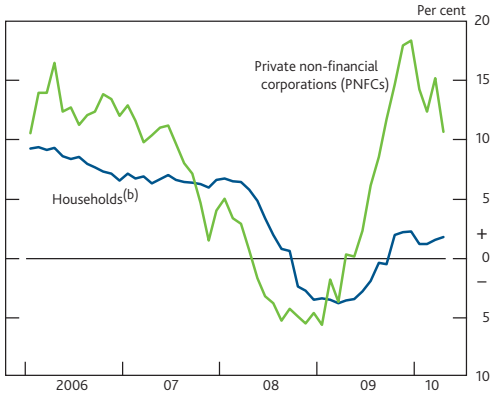
The crisis has underlined the importance of ensuring that emerging shifts in market structure do not result in systemic risks developing outside the banking system. For that reason, the authorities should monitor carefully the expansion of leverage in exchange-traded funds and in UCITS hedge funds that offer ready liquidity to investors. The crisis also highlighted the importance of strengthening the infrastructure supporting capital markets. Initiatives are under way to extend central counterparty (CCP) clearing. But this will only improve resilience if appropriate CCP risk management standards are in place (see box on pages 69–70). For example, holding sufficient resources to meet the default of at least the two largest member counterparties — in stressed but plausible market conditions — would help to reduce systemic risks. The ongoing review of international standards for financial market infrastructures represents an important opportunity to raise standards for the new markets.

1 The provision of financial services to the UK economy

A stable financial system is able to sustain the supply of key services to the economy even in the face of material shocks. This section reviews the performance of the financial system in delivering these core services over the past six months. Subsequent sections of this *Report* assess threats to stability in the period ahead and policy actions needed to sustain stability in the future.

Over the past six months, the provision of transactions services by banks and the key payments and settlement systems has remained resilient. Availability of credit to larger companies has improved since the crisis. But credit conditions for both smaller firms and some households remain tight. Most capital markets have improved significantly since the crisis, though recent concerns about sovereign risk have exposed some fragilities. Securitisation markets are not transferring risk, though insurance markets are functioning normally.

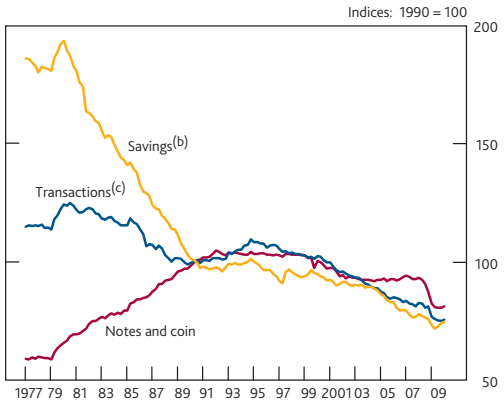
Chart 1.1 Sight deposits with UK banks(a)



Source: Bank of England.

(a) Twelve-month growth rates.
(b) Includes individuals, unincorporated businesses and non-profit institutions serving households.

Chart 1.2 Velocity of transactions and savings money(a)



Sources: Bank of England and ONS.

(a) Velocity is nominal GDP divided by money.
(b) Savings is M4 excluding intermediate OFCs minus notes and coin. Intermediate OFCs are: mortgage and housing credit corporations; non-bank credit grantors; bank holding companies; and those carrying out other activities auxiliary to financial intermediation.
(c) See footnote (2) on this page.

The Bank has framed the purposes of its financial stability role in terms of contributing to the maintenance of critical services that the financial system performs in the wider economy:(1) providing the main mechanism for paying for goods, services and financial assets; intermediating between savers and borrowers by channelling savings into investment through bank credit, debt and equity instruments; and helping to insure against and disperse risk across the system. The financial crisis impaired some of these functions, particularly credit intermediation services. This section reviews performance over the past six months.

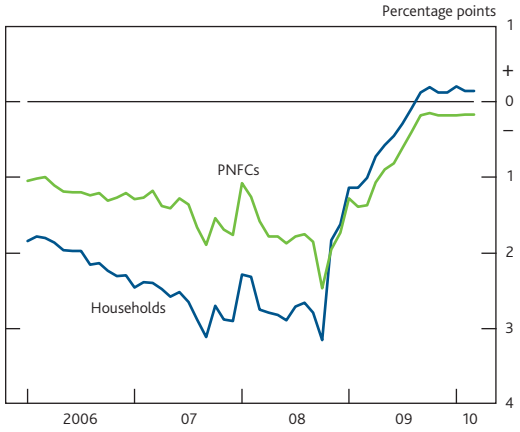
1.1 Payment, settlement and transaction services

Bank transaction services have been sustained…

Banks, and in particular bank deposits, are a key source of transactions services to households, corporates and investment managers. During the financial crisis, there was a sharp slowdown in growth in sight deposits held at UK banks (**Chart 1.1**), which may have partly reflected concerns about UK banks' viability. More recently, deposit growth has recovered. While holdings of cash have risen relative to GDP, the trend in transactions money velocity — measured as nominal GDP divided by transactions balances — has remained relatively stable in recent years, especially when compared with the financial liberalisation of the 1980s (**Chart 1.2**).(2)

(1) Bank of England *Annual Report 2010*.
(2) Transactions balances are measured using the Divisia index for money, which weights the growth rate of each of the M4 component assets according to the extent to which they provide transaction services.

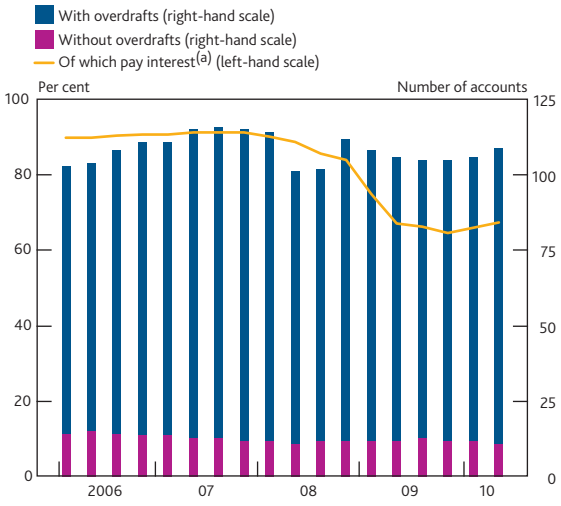
Chart 1.3 Spreads on sight deposit rates[a]



Source: Bank of England.

(a) Effective sight deposit rates minus three-month Libor.

Chart 1.4 Advertised current accounts



Sources: Moneyfacts Group plc and Bank calculations.

(a) Percentage of current accounts with overdrafts.

Table 1.A Selected payment systems[a]

		Bacs	CHAPS	CLS	CREST	FPS
Average daily volumes (thousands)	2010 to May	22,405	125	782	191	1,615
	2007–09	22,221	134	484	219	945
Average daily values (£ billions)	2010 to May	16.0	220	2,657	536	0.62
	2007–09	15.2	263	2,036	514	0.35
Operational availability of core infrastructure (per cent)	2010 to May	100.000	99.988	99.815	99.997	100.000
	2007–09	99.987	99.848	99.753	99.468	99.999

Sources: Bank of England, CLS Bank International, Euroclear UK & Ireland, UK Payments Administration and Bank calculations.

(a) Operational availability shows percentage of time systems have been available to process transactions during their normal opening hours. FPS data start in June 2008, its first full month of operation. CLS volumes and values are measured in sides. There are two sides to most foreign exchange transactions settled in CLS. Value figures report the total settlement obligations (effectively double the 'value' of the underlying transactions). Volume figures report the number of sides before splitting (the process of breaking down high-value transactions into smaller parts in order to improve settlement efficiency). CREST volumes and values are for sterling settlement only and do not include liquidity flows generated by the self-collateralising repo mechanism.

Banks are offering relatively favourable terms on transaction accounts as they seek to attract deposits. The spread between interest rates on sight deposits and Libor narrowed markedly from October 2008 to September 2009 and has remained steady since then (**Chart 1.3**). The availability of current accounts with overdraft facilities is similar to before the crisis, although fewer accounts now pay interest (**Chart 1.4**).

…and payment and settlement services have been resilient.
The provision of transactions services by banks is also reliant on the smooth functioning of critical payment systems. In the United Kingdom these include CHAPS, CLS and CREST, and Bacs and the Faster Payments Service (FPS) retail systems. During 2010, these payment systems have continued to exhibit high levels of operational availability (**Table 1.A**). In May, CLS — which eliminates principal risk in its settlement of member banks' foreign exchange transactions — handled spikes of over twice average volumes, reflecting higher foreign exchange market volatility associated with the recent sovereign debt concerns.

Banks use overnight sterling money markets, as well as reserves at the Bank of England, to manage day-to-day fluctuations in customers' transactions needs. Recent strains in some European sovereign debt markets have tested money markets but have not resulted in overnight markets becoming disorderly. Overnight market interest rates have remained close to Bank Rate.

Banks' reserves account balances have risen sharply since early 2009 as one result of the Bank's programme of asset purchases, to around £150 billion (**Chart 1.5**). In consequence, a side effect of the Bank's monetary interventions is that banks have a larger buffer against intraday payments shocks and the probability of a disruption to payment flows is correspondingly lower.

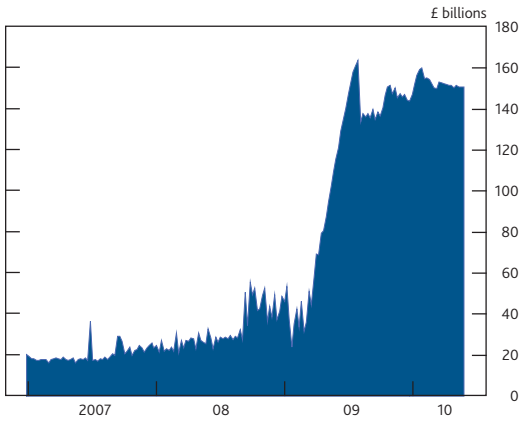
1.2 Intermediation services

The financial system channels surplus funds from firms and households to those that want to borrow. Savings can be held as bank or building society deposits or can flow into other financial institutions, such as pension and mutual funds. Lending is provided by banks or finance can be raised directly through debt and equity capital markets.

Savings have flowed to banks and non-banks…
Savings deposits account for about a fifth of UK banks' debt.[1] Being an important source of funds, these deposits are crucial for banks in providing credit. The trend in UK banks' savings money velocity has remained relatively stable during the crisis

(1) For these purposes, savings with banks are measured as M4 excluding intermediate OFCs minus notes and coin.

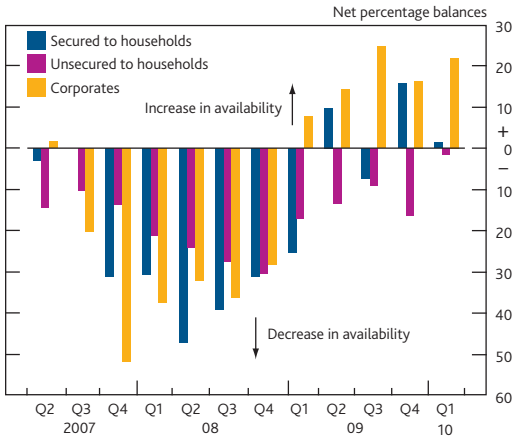
Chart 1.5 UK banks' aggregate reserves account balances[a]



Source: Bank of England.

(a) Current account balances held by commercial banks at the Bank of England.

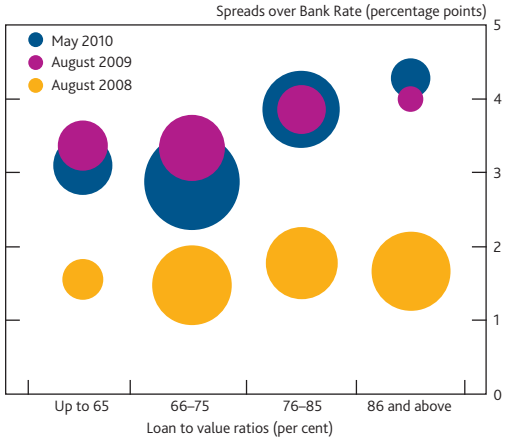
Chart 1.6 Household and corporate credit availability[a]



Source: Bank of England *Credit Conditions Survey*.

(a) Net percentage balances are calculated by weighting together the responses of those lenders who answered the question as to how the availability of credit provided to the sector overall changed in the past three months.

Chart 1.7 Mortgage spreads by loan to value ratios and product availability[a]



Sources: Moneyfacts Group plc and Bank calculations.

(a) End-month advertised rates for floating-rate products across different loan to value (LTV) ratios. Size of bubble reflects product availability. The spread is calculated over Bank Rate at the end-month for the relevant period. The first observation on the left is for products up to 65% LTV ratio, the second is for products in the 66%–75% range, the third is for products in the 76%–85% range and the final observation on the right is for products above 86% LTV ratio.

(**Chart 1.2**). This suggests that the UK banking system has largely been able to sustain its role as a store of value. Critical to this was government support of the banking sector.

Competition among banks for retail savings has been vigorous. The spreads between effective interest rates paid on time deposits to households and to firms and Libor rose sharply in 2009; they remain above historical averages. Competition has also come from non-banks, with strong flows into retail mutual funds over the past six months (**Chart 4.18** in Section 4).

Savings also flow back to banks through wholesale funding markets — for example, from corporate treasurers, local authorities, insurance companies, pension funds and investment trusts. As discussed in Section 4, banks' unguaranteed debt issuance picked up in the early part of 2010, though it has since fallen back as market risk appetite has diminished.

…but bank lending to households remains tight…

Household borrowing has slowed during the crisis. Although it is difficult to disentangle the influence of supply from demand, there is evidence of lower credit availability for some borrowers.

One source of information on the availability of credit is the Bank's *Credit Conditions Survey*. Past responses to the survey indicate that the availability of credit to households was severely tightened in 2007 and 2008 (**Chart 1.6**). Secured credit was restricted through a reduction in the number of loan products available and steep rises in spreads, particularly at high loan to value (LTV) ratios (**Chart 1.7**). Partly as a consequence, the stock of lending to individuals has been increasing at a slow pace (**Chart 1.8**).

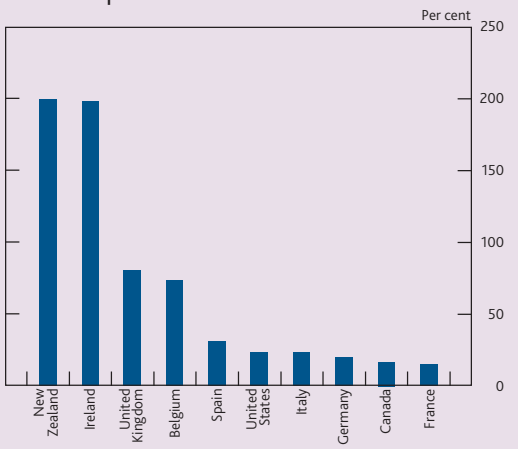
There have been few significant signs of increased availability of secured credit to households since the December 2009 *Report*. Lenders have reported some increase in maximum LTV ratios, breaking a two-year trend of declining maximum LTV ratios. But estate agent contacts suggest that demand from first-time buyers has been constrained by credit availability at higher LTV ratios. A box in the Bank's June *Trends in Lending* shows that the median LTV ratio on new loans to first-time buyers has remained broadly unchanged during 2010.

In the 2010 Q1 *Credit Conditions Survey*, lenders reported little change in the amount of unsecured credit made available to households (**Chart 1.6**). And spreads on unsecured loans remain high. For example, the spread of credit card rates over Bank Rate has remained about 6 percentage points wider than in 2004 (Section 2). Survey responses indicate that credit scoring criteria are much tighter than at the start of 2008.

Box 1
Provision of banking services to the UK economy by foreign-owned banks

Foreign-owned banks located in the United Kingdom account for almost half of total UK-resident banking sector assets. In part, that reflects the United Kingdom's role as an international financial centre. But foreign banks also play a large part in the provision of banking services to the UK economy, a higher proportion than in many other developed economies (**Chart A**).

Chart A BIS banks' consolidated foreign claims on non-bank private sector[a][b]



Sources: BIS, IMF *World Economic Outlook* (April 2010) and Bank calculations.

(a) All claims as a percentage of 2009 nominal GDP.
(b) Data to end-2009, adjusted for risk transfers. Excludes guarantees and derivatives.

Size of the UK banking sector

The UK-resident banking sector[1] is large, relative to the size of the UK economy, with household and non-financial corporate deposits of around £1,270 billion (91% of 2009 UK GDP) and loans of £1,760 billion (126% of 2009 GDP). It is also concentrated, with six UK-owned lenders accounting for 69% of deposits and 67% of loans. UK-resident foreign banks account for around 20% of deposits and 26% of loans.

In addition, foreign banks provide cross-border lending to the UK private sector. Total cross-border claims of foreign banks on the United Kingdom were £790 billion (58% of 2009 GDP) at end-2009. The majority of this can be accounted for by interbank lending, which can then be lent on abroad. But cross-border bank lending can also be an important channel through which some UK corporates obtain funds.

The presence of foreign lenders should help to diversify the provision of credit to the UK economy. This could prove important if domestic banks experience an idiosyncratic shock. However, there can also be risks. Following the failure of Lehman Brothers, and in line with the experience of other countries, there is some evidence that foreign banks reduced the provision of lending to the United Kingdom via their branch and cross-border operations (see Section 1).[2]

Deposit-taking services

Among foreign-owned banks, Spanish and Irish institutions are the largest holders of deposits from UK households and companies (**Table 1**). The share of household deposits held by Santander, and its share of lending to households, has grown following a series of acquisitions of UK-owned banks.

Table 1 Provision of UK banking services by selected foreign-owned UK-resident banks

Per cent of UK banking sector total

	Households		Non-financial corporates	
	Deposits[a]	Lending	Deposits	Lending
Country of ownership				
Spain	10	14	–	3[b]
Ireland	2	3	4	7
United States	1	2	3	2
Germany	0	0	2	7
France	0	0	2	2
Japan	0	0	2	2
Switzerland	0	0	2	1
Sample total[c]	14	20	16	24

Sources: Bank of England, published accounts and Bank calculations.

(a) Includes deposits from unincorporated businesses and non-profit institutions serving households.
(b) Lending to small and medium-sized enterprises only.
(c) May differ from the sum of individual contributions due to rounding.

Lending services

Loans provided by Spanish-owned banks resident in the United Kingdom are predominantly to the household sector. By contrast, Irish banks provide a larger proportion of total loans to corporates. At end-April, Irish banks accounted for 10% of total domestic commercial property lending and 14% of lending to hotels and restaurants (**Table 2**).

Table 2 Provision of lending services by selected foreign-owned UK-resident banks

Per cent of total lending to sector

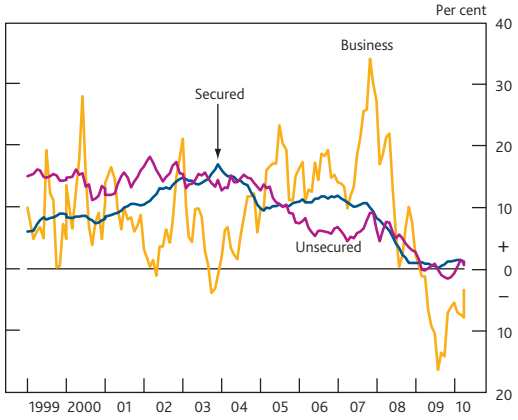
	Commercial property	Financial inter-mediation	Health and social work	Hotels and restaurants	Manu-facturing	Utilities	Transport, storage and communication
Country of ownership							
Ireland	10	1	11	14	3	4	2
United States	0	12	0	0	11	1	6
Germany	6	2	3	1	5	19	11
France	1	2	1	1	6	7	6
Japan	0	1	2	1	6	10	6
Switzerland	0	11	0	0	0	2	1
Sample total[a]	18	29	18	18	31	43	32

Source: Bank of England.

(a) May differ from the sum of individual contributions due to rounding.

(1) Balance sheet of UK banking operations of UK-owned and foreign-owned banks.
(2) See 'Funding patterns and liquidity management of internationally active banks', *Committee on the Global Financial System Papers*, No. 39, BIS, May 2010 and also December 2009 *Report* Box 2 'Cross-border capital flows and bank lending'.

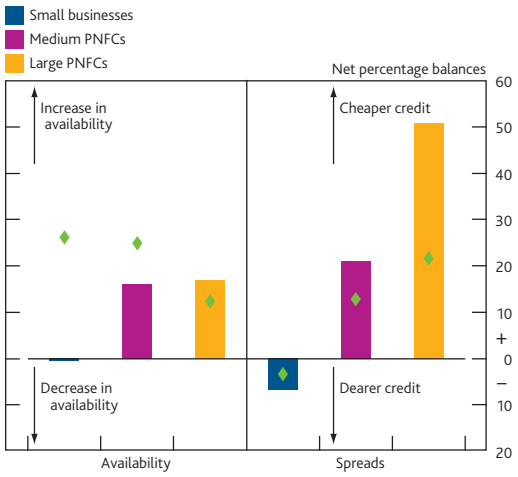
Chart 1.8 Lending to UK individuals and businesses[a][b]



Source: Bank of England.

(a) Three-month annualised growth rates.
(b) Lending by UK monetary financial institutions to UK PNFCs, and by UK monetary financial institutions and other lenders to individuals. Data cover lending in both sterling and foreign currency, expressed in sterling terms. Seasonally adjusted.

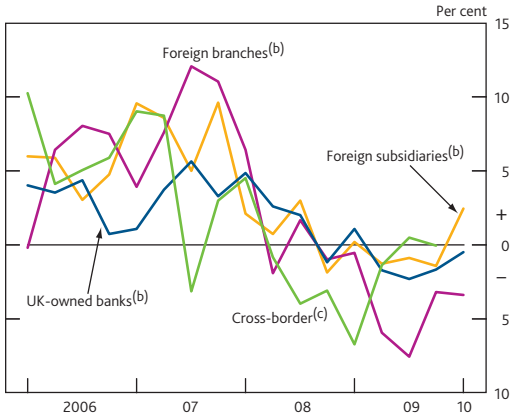
Chart 1.9 Credit conditions (across firm sizes)[a]



Source: Bank of England 2010 Q1 *Credit Conditions Survey*.

(a) The bars show the responses over the previous three months. The green diamonds show the expectations over the next three months. A positive balance indicates an increase in availability and cheaper credit.

Chart 1.10 Bank lending to UK non-financial corporations[a]



Sources: Bank of England, Bank for International Settlements (BIS) and Bank calculations.

(a) Quarterly growth rates.
(b) From UK-resident monetary financial institutions.
(c) Lending by BIS banks to UK non-banks, including syndicated loans.

Foreign-owned banks provide around a fifth of bank credit to UK households (Box 1). The presence of foreign-owned banks helps to diversify the provision of credit. But it also represents one of the key transmission channels to the UK financial system and economy for overseas shocks. Continuing trends since mid-2008, Irish banks have scaled back their lending to UK households during 2010, while Spanish-owned banks have expanded credit.

…and bank credit availability for PNFCs remains restricted.
The stock of bank lending to UK companies has continued to fall, with debt repayments exceeding new lending (**Chart 1.8**). As with household borrowing, there is evidence that the supply of credit remains restricted compared with pre-crisis levels. Recent *Credit Conditions Surveys* have pointed to increased credit availability for corporates overall (**Chart 1.6**). Conditions for small firms, which depend more on banks for finance, remained unchanged in 2010 Q1 but were expected to improve in Q2 (**Chart 1.9**).

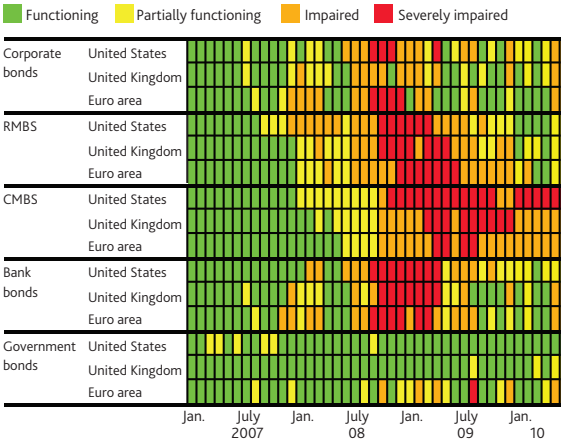
Spreads on loans for larger companies narrowed in early 2010 (**Chart 1.9**). Dealogic data also indicate lower primary loan spreads in the first five months of 2010, compared with 2009. This is consistent with reports of increased competition from both domestic and foreign lenders. But estimates based on survey data from the Department for Business, Innovation and Skills suggest that spreads on lending to small firms remain close to levels at the end of 2009, and almost 1 percentage point above their levels at the end of 2008.

Foreign-owned resident banks account for more than a third of bank lending to UK companies (Box 1). Foreign bank lending has fallen very sharply through the crisis, particularly foreign-branch and cross-border lending (**Chart 1.10**). Foreign-owned subsidiaries have cut back their lending relatively less, and to a similar extent to UK-owned banks. The fall in foreign-branch lending continued into 2010 Q1.

The improvement in capital markets has been tested by recent volatility…
Bank loans represent only about a third of PNFCs' financial liabilities; capital markets provide an important source of corporate funding. A recovery in primary corporate bond and equity markets in 2009 (**Chart 1.11**) allowed larger firms to substitute away from bank credit (**Chart 1.12**). Although bond and equity finance raised in the first four months of 2010 was only about half of gross issuance in the same months of 2009, it was still above average levels between 2005 and 2008. It may also be that companies had pre-emptively secured funding during 2009. Recent market volatility has affected issuance since April.

Spreads in markets for sterling non-financial commercial paper and bonds, which were severely affected by the crisis, have also fallen. For example, sterling investment-grade

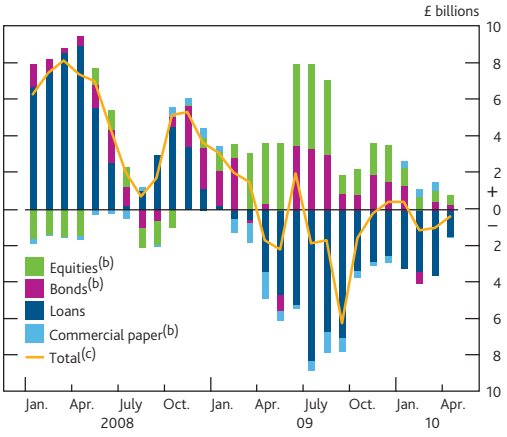
Chart 1.11 Primary market functioning(a)



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

(a) Shading is based on a score that reflects issuance (relative to GDP) and spreads at issue of publicly placed debt without government guarantees, both expressed as a number of standard deviations from average. Standard deviations and averages were calculated using as much data as was available from January 1998.

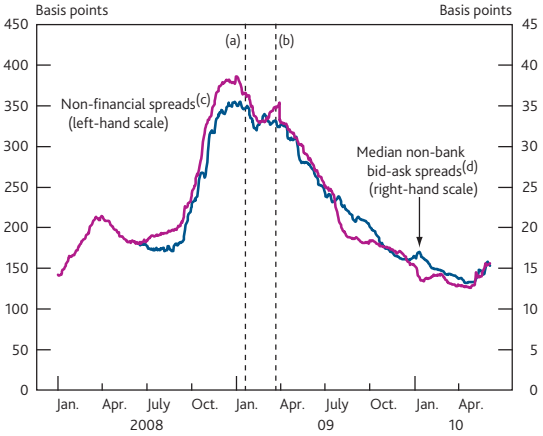
Chart 1.12 PNFCs' net finance raised(a)



Source: Bank of England.

(a) Three-month moving averages. Includes sterling and foreign currency funds.
(b) Non seasonally adjusted.
(c) The total may not equal the sum of its components.

Chart 1.13 Sterling investment-grade corporate bond spreads



Sources: UBS Delta and Bank calculations.

(a) Asset Purchase Facility announcement.
(b) Corporate bond facility launched.
(c) Option-adjusted spread over government rates.
(d) Based on 444 investment-grade sterling bonds issued by non-bank firms.

non-financial corporate bond spreads are close to pre-crisis levels (**Chart 1.13**), though they have risen somewhat since mid-April. The Bank's Asset Purchase Facility, introduced in 2009, has acted as a backstop in recent months. For example, liquidity, as measured by market makers' bid-ask spreads, was maintained during the recent period of volatility (**Chart 1.13**), when the facility was used.(1)

…and there has been a glitch in international equity market infrastructure.

The functioning of capital markets depends on resilient infrastructure. Capital market infrastructure has generally functioned well over the past six months. But there may be lessons to be drawn from the dislocation in US equity markets on the afternoon of 6 May. Between 2.30 pm and 2.47 pm (US EST) the S&P 500 declined by 5.9%. The falls were unevenly spread across individual stocks. While a precise trigger has not been identified,(2) the falls may have been exaggerated by reduced market liquidity from the NYSE switching to 'go-slow' mode, with trades being rerouted to other less liquid exchanges and some automated trading programmes being switched off before being manually overridden. The importance of robust market infrastructure is discussed in Section 5.

1.3 Risk transfer and insurance

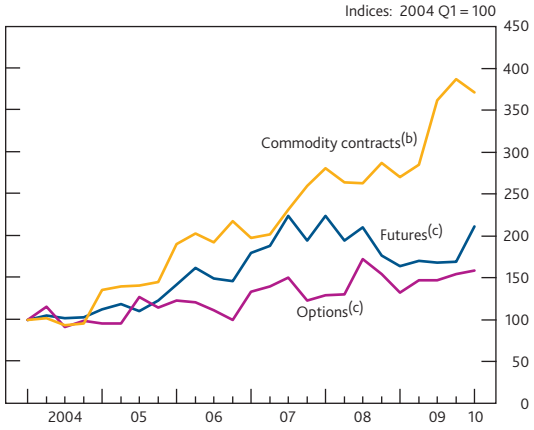
Securitisation markets are not transferring risk…

A well-functioning financial system enables participants to transfer risk to those best placed to bear it. Securitisations, derivative products and insurance markets are all designed to transfer risk.

Securitisation enables banks to transfer at least part of the risk from long-term income streams to willing buyers. These markets, in the main, remain impaired. Issuance of residential mortgage-backed securities (RMBS) improved during 2010, although commercial mortgage-backed securities (CMBS) markets continue to be dysfunctional (**Chart 1.11**). In the United Kingdom, all four publicly issued RMBS in the first five months of 2010 were AAA-rated, with the originator retaining the subordinated tranches. And two of these deals included a put option giving the investor the right to return the securities to the bank on a specified date.(3) In this sense, they acted like covered bonds, UK issuance of which was about £6 billion in the first five months of 2010. And a significant portion of the securitisations since September 2009 have been bought by other banks, so that risk remains within the banking system. In other words, recent securitisations have been funding rather than risk transfer vehicles.

(1) 'Markets and operations', *Bank of England Quarterly Bulletin*, 2010 Q2, pages 78–91.
(2) 'Preliminary Findings Regarding the Market Events of May 6, 2010: Report of the Staffs of the CFTC and SEC to the Joint Advisory Committee on Emerging Regulatory Issues', 18 May 2010.
(3) In return investors receive the principal less any credit losses incurred during the period.

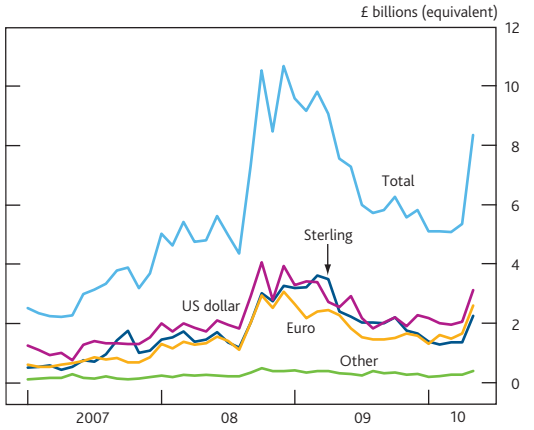
Chart 1.14 Activity in exchange-traded derivatives markets(a)



Source: BIS.

(a) Turnover in the number of contracts.
(b) Commodity contracts include both futures and options contracts.
(c) Interest rate, currency and equity index derivatives on all exchanges.

Chart 1.15 Average daily flows over LCH.Clearnet Ltd's UK-embedded payment system(a)



Sources: LCH.Clearnet Ltd and Bank calculations.

(a) Data are at a monthly frequency and adjusted to account for errors and omissions. Flows represent the value of payments between LCH.Clearnet Ltd and its members through the twelve banks that participate in its UK-embedded payment system.

Table 1.B Recent developments in clearing of OTC derivatives

Product	Launch date	CCP
North American Markit CDS indices	Mar. 2009	ICE Trust
Iron ore swaps	June 2009	LCH.Clearnet Ltd
European iTraxx indices	July 2009	ICE Clear Europe
European iTraxx indices	July 2009	Eurex Clearing
Corporate single-name CDS	July 2009	Eurex Clearing
Overnight index swaps	July 2009	LCH.Clearnet Ltd
Corporate single-name CDS	Dec. 2009	ICE Trust
Corporate single-name CDS	Dec. 2009	ICE Clear Europe
North American Markit CDS indices and corporate single-name CDS	Dec. 2009	CME Clearing
European iTraxx indices	Mar. 2010	LCH.Clearnet SA
50-year interest rate swaps	May 2010	LCH.Clearnet Ltd

Sources: CME Group Ltd, Eurex Clearing AG, Intercontinental Exchange Inc. and LCH.Clearnet Group Ltd.

…but derivatives markets have functioned smoothly…

Derivatives markets are critical for helping financial market participants and non-financial companies to manage interest rate, currency, commodity and credit risk. Having fallen from its peaks during the crisis, activity in interest rate, currency and equity options and futures markets has started to increase (**Chart 1.14**). Activity in commodity derivatives, which was steady during the crisis, picked up in 2009 and remains at a higher level. The recent fall in notional values outstanding of credit default swaps (CDS) is at least in part due to the termination of offsetting contracts — a welcome industry initiative to reduce settlement risks.

Central counterparties (CCPs) can promote the smooth functioning of financial markets by helping participants to manage their counterparty credit risk. In the United Kingdom, CCPs serve a wide range of markets, including equities, debt securities, derivatives, commodities and energy. Volumes processed through CCPs have generally increased during 2010. LCH.Clearnet Ltd is the United Kingdom's largest CCP. Values transferred across its UK-embedded payment system are below those seen at the height of the crisis in 2008, though they increased in May (**Chart 1.15**).

CCPs have also continued to expand their service offerings, particularly in relation to over-the-counter (OTC) derivatives. In recent months, CCPs have begun clearing products such as overnight index swaps, 50-year maturity interest rate swaps and single-name CDS (**Table 1.B**).

…and insurance markets are operating normally.

Insurance markets are another means by which risk can be pooled and dispersed.(1) Despite significant losses on insurers' investment portfolios in 2008 and early 2009, and with the important exception of financial guarantee markets, insurance markets have continued to function well. Credit risk premia on UK insurance firms in the first half of 2010 remain well below crisis levels.

The 2010 Q1 *CBI/PricewaterhouseCoopers Financial Services Survey* reported the first growth in business volumes by life insurers since September 2007. In contrast, general insurers experienced a sharp decline in activity because of slackening demand. The catastrophe bond market has continued its recovery that began in late 2009. Issuance in 2010 so far has been robust at over US$2 billion compared to US$3.4 billion for the whole of 2009. Contacts have reported no impairment of reinsurance markets in 2010.

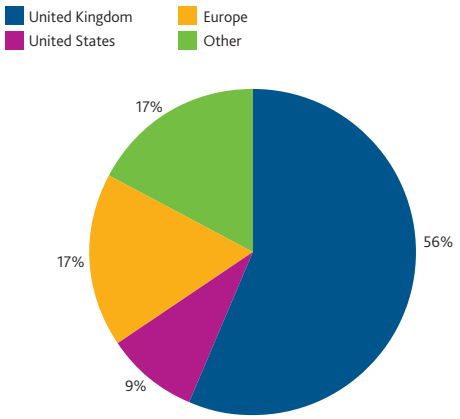
(1) For background on the role of insurance companies in capital markets see Rule, D (2001), 'Risk transfer between banks, insurance companies and capital markets: an overview', *Financial Stability Review*, December, pages 137–59.

2 Credit risks to the UK banking system

UK banks are exposed to credit risks through their lending to non-bank customers in the United Kingdom and overseas and through their counterparty credit exposures to domestic and foreign banks. Credit risks among some borrowers have receded as the global economic recovery has continued. But downside risks to growth persist in some countries as borrowers, including some governments, seek to strengthen their balance sheets.

In the euro area, a number of countries face pressures. The counterparty credit risk faced by UK banks on exposures to other major European banking systems has risen, including in France and Germany, because of their exposures to smaller countries in the region, as recently discussed in the *Financial Stability Review* published by the ECB. In the United States, banks remain exposed to any renewed deterioration in the US housing market. And in the United Kingdom, some parts of the household and corporate sector, including commercial property companies, remain highly leveraged and vulnerable to a setback to economic recovery or higher market interest rates.

Chart 2.1 Major UK banks' credit exposures[a][b][c][d]



Sources: Bank of England, Federal Deposit Insurance Corporation (FDIC), published accounts and Bank calculations.

(a) Aggregate balance sheet at end-2009, except for National Australia Bank and Nationwide which are as of March 2010 and April 2010 respectively.
(b) Includes exposures to households, non-financial companies, banks and other financial corporations, and holdings of sovereign debt.
(c) Total assets come from consolidated accounts. UK-owned banks' foreign exposures reflect consolidated claims of their banking operations. Non-UK owned banks' foreign exposures are sourced from consolidated global group accounts.
(d) The percentages do not sum to 100% due to rounding.

This section focuses on the credit risk faced by major UK banks[1] from lending to the real economy and bank borrowers, both domestically and internationally (**Chart 2.1**). This risk is ultimately driven by default losses among households and companies in the United Kingdom and overseas. Traded-credit risks to UK banks — and other non-credit risks arising from their activities in global financial markets — are discussed in Section 3.

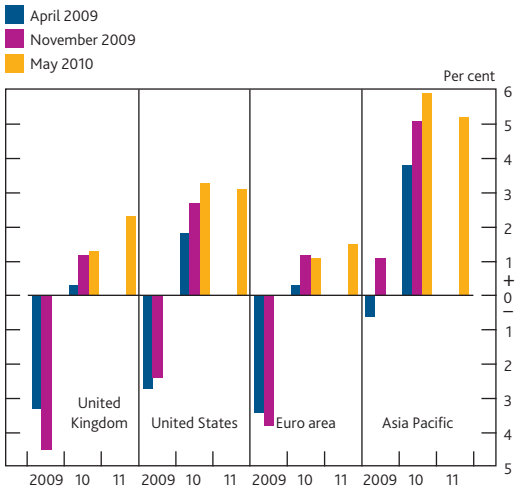
2.1 International risks

Growth has continued to recover internationally…

The global economy has continued to recover. In the *World Economic Outlook* published by the IMF in April, world output was projected to grow by more than 4% in 2010, higher than at the time of the December 2009 *Report*. Output has continued to recover in the United Kingdom, as described in the May 2010 *Inflation Report*. But the outlook for growth is uneven across countries (**Chart 2.2**), with external forecasters expecting weak growth in the euro area by international comparison during 2010 and 2011. Recent developments in the region will have added to the downside risks to those forecasts.

(1) Membership of the major UK banks peer group is based on the provision of customer services in the United Kingdom, regardless of country of ownership. The following financial groups, in alphabetical order, are currently members: Banco Santander, Bank of Ireland, Barclays, Co-operative Financial Services, HSBC, Lloyds Banking Group, National Australia Bank, Nationwide, Northern Rock and RBS. Foreign-owned banks' UK operations are locally incorporated except for Bank of Ireland, which operates as a branch.

Chart 2.2 International GDP growth forecasts



Source: Consensus Economics Inc.

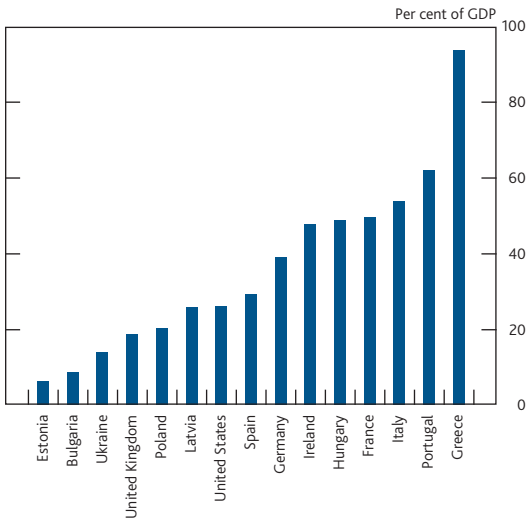
Table 2.A Selected sovereign credit default swap premia[a]

	January 2008	June 2009 *Report*	December 2009 *Report*	June 2010 *Report*
United Kingdom	9	87	70	93
United States	8	45	32	43
France	10	38	24	95
Germany	7	34	23	50
Greece	22	155	182	762
Ireland	13	220	150	285
Italy	20	105	85	245
Portugal	18	77	70	358
Spain	18	98	86	269

Source: Thomson Reuters Datastream.

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

Chart 2.3 Externally-held public debt for selected European economies[a]



Sources: BIS, IMF *World Economic Outlook* (April 2010), Joint External Debt Hub, OECD and World Bank.

(a) As at end-2009.

…but concerns about sovereign risk have increased…

The period since the previous *Report* has been dominated by concerns about sovereign credit risk, centred in Southern Europe. In response, the cost of insuring against sovereign risk, as implied by credit default swap premia, has risen for most countries (**Table 2.A**). In some countries, borrower credit risk may have risen as downside risks to growth have increased given the need for some governments to contract fiscal policy.

Concerns among investors about the commitment and ability of some European governments, in particular Greece, to strengthen their balance sheets became acute in April. This prompted large-scale intervention by the euro-area authorities and the IMF. Governments in Germany, Greece, Italy, Portugal, Spain and the United Kingdom have since announced accelerated plans for fiscal consolidation. Market contacts nevertheless suggest that the perceived likelihood of a sovereign debt restructuring in Greece remains high. Greece and some other smaller European economies have large external financing requirements (**Chart 2.3**), leaving them vulnerable to changes in sentiment among overseas investors.

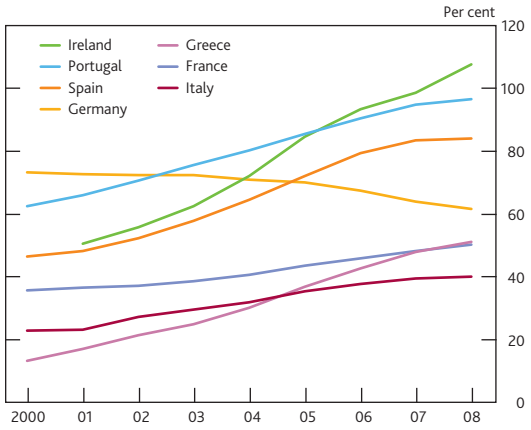
Heightened concerns about sovereign risk, and the possibility of weak economic growth in parts of Europe, have been accompanied by investors reallocating their portfolios towards safer assets within the region and internationally (Section 3). If this were to continue, the lower availability of risk capital could increase downward pressures on growth, amplifying credit risk across borrowers.

Some high-risk borrowers are particularly vulnerable to a sharp deterioration in euro-area economic growth. Borrowers in some European economies are highly indebted, including households in Spain, Portugal and Ireland (**Chart 2.4**). And in the corporate sector, although default rates of speculative-grade companies have receded over the past six months, according to Moody's they would increase sharply under a pessimistic scenario (**Chart 2.5**). Exposures to non-bank borrowers in Europe account for around 20% of UK-owned banks' total foreign claims (**Table 2.B**).

…and UK banks face increased counterparty credit risk on exposures to other European banks.

UK banks' direct claims on Greece and other small European economies facing economic pressures are modest relative to their capital (**Chart 2.6**). They are also small relative to UK banks' other foreign claims (**Table 2.B**). But the interconnectedness of the financial system amplifies the credit risk faced by individual banking systems. In the euro area, a number of banking systems have significant exposures to countries under economic pressure — including countries in Central and Eastern Europe (CEE) and the Balkans

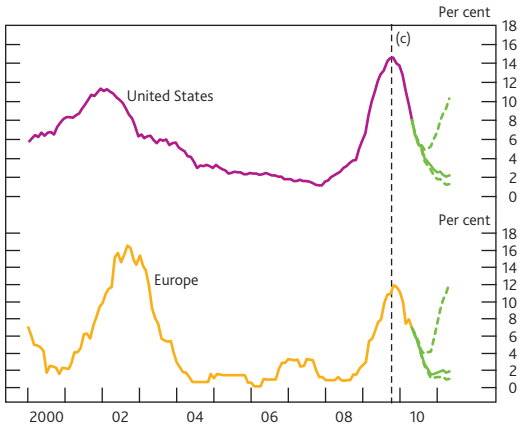
Chart 2.4 Household debt relative to GDP for selected European economies[a]



Sources: IMF *World Economic Outlook* (April 2010), OECD.Stat Extracts and Bank calculations.

(a) Total household loans as a proportion of GDP. Annual data, available to end-2008.

Chart 2.5 Speculative-grade corporate default rates[a][b]



Source: Moody's Investors Service.

(a) Trailing twelve-month issuer-weighted speculative-grade corporate default rate and forecasts as of May 2010 for the United States and Europe.
(b) Solid green lines show Moody's 'baseline' forecasts. Dashed green lines show Moody's 'pessimistic' and 'optimistic' forecasts.
(c) December 2009 *Report*.

(**Chart 2.6**).[1] Together, French and German banks have large exposures to borrowers in Spain, among which credit risk remains elevated. The IMF reported in its April *World Economic Outlook* that it expects Spain to grow more slowly than the euro area during 2010 and 2011. UK-owned banks are particularly exposed to the French and German banking systems, which account for around one quarter of their claims on banks globally (**Table 2.B**).

Uneven disclosures by individual banks about their exposures have exacerbated uncertainty among investors about the scale of default losses that major European banking systems could face. This has led to a significant increase in perceptions of counterparty credit risk during 2010 (**Chart 2.7**). There have also been signs of tiering in funding costs among euro-area banks (Section 3).

Major European banking systems strengthened their resilience during 2009 by raising capital and lowering risk-weighted assets (**Chart 2.8**). European banks' loan loss provisions also rose during 2009 (**Chart 2.9**). But the IMF estimated in its April *Global Financial Stability Report* that banks in the euro area may need to increase provisions significantly during 2010, having realised to date proportionally fewer losses than banks in the United Kingdom and United States.

Losses could rise if, for example, a persistent withdrawal of capital from smaller European economies and emerging markets in the region caused growth to weaken. Equity markets already appear to have reappraised prospects for the European banking system, with prices having fallen substantially during 2010 (**Chart 2.10**). As downside risks have built over the past six months, credit lines from overseas lenders to some smaller European banks, including in Spain, have reportedly been withdrawn, increasing counterparty credit risk. The European Council plans to disclose, by the second half of July, results from an EU-wide macroeconomic stress-testing exercise of banks' resilience that has been carried out by the Committee of European Banking Supervisors. This is clearly an important exercise.

Property markets remain a source of credit risk in the United States…

The outlook in the United States is stronger than in some countries in Europe (**Chart 2.2**). While loss rates on US loans remain elevated, they remain well below the levels implied from the banking system stress tests performed by the US authorities in 2009 (**Chart 2.11**). And looking ahead the IMF expects loss rates on US loans to fall, including on loans to companies. This is consistent with Moody's central case for US corporate defaults (**Chart 2.5**).

(1) Vulnerabilities from concentrated exposures of some euro-area banks to borrowers in Central and Eastern Europe are discussed in Section 4 of the June 2010 *Financial Stability Review* published by the European Central Bank (ECB).

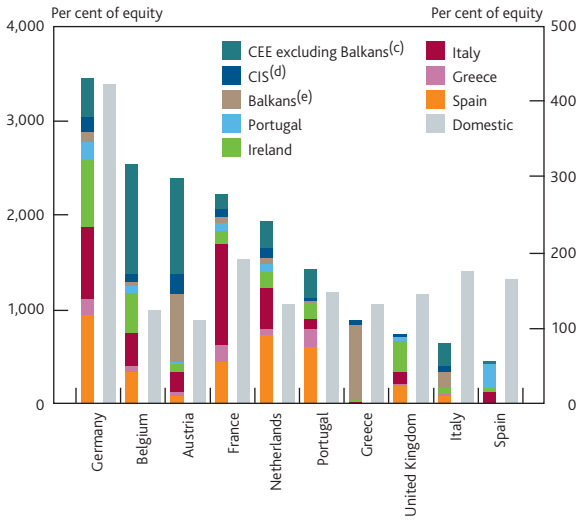
Table 2.B UK-owned banks' foreign claims[a][b][c]

	Per cent of total	£ billions	Per cent of which are claims on: Banks	Non-bank private sector	Public sector
World	100.0	2,204	20.3	61.6	18.1
Europe	31.2	687	33.7	51.1	15.2
France	7.0	155	43.0	41.7	15.3
Germany	5.0	111	39.9	24.9	35.2
Ireland	4.9	107	22.9	73.9	3.2
Spain	3.1	68	19.5	72.2	8.4
Italy	2.1	47	18.6	59.9	21.6
Portugal	0.7	16	21.4	65.7	12.9
Greece	0.4	10	35.4	41.3	23.4
Developing	0.9	20	19.9	58.8	21.4
United States	29.3	645	13.0	74.3	12.7
Other developed	9.0	199	31.7	43.2	25.2
Asia (excluding Japan)[d]	16.6	365	13.7	58.0	28.3
Other developing[e]	8.3	184	8.8	65.8	25.4
Memo item: other[f]	*5.6*	*124*	–	–	–

Sources: Bank of England and Bank calculations.

(a) End-2009, adjusted for risk transfers. Excludes guarantees and derivatives.
(b) UK-owned banks, including local claims by subsidiaries and branches.
(c) Peer group composition differs from **Chart 2.1**.
(d) Developing Asia, Hong Kong and Singapore.
(e) Africa, Middle East, Latin America and Caribbean.
(f) All other external claims.

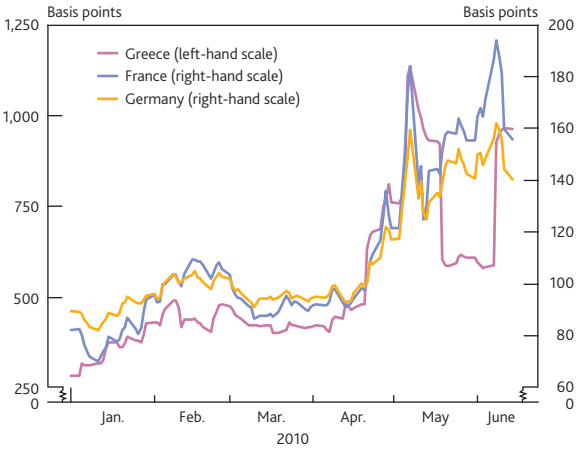
Chart 2.6 European banking systems' claims on selected countries and regions[a][b]



Sources: BIS, ECB, national central banks and Bank calculations.

(a) All claims are as a fraction of end-2008 aggregate shareholders' equity.
(b) Grey bars show claims of resident banks on domestic residents (left-hand scale). Other bars show selected foreign claims (right-hand scale). Coverage and timeliness of data vary slightly across countries.
(c) Includes Czech Republic, Estonia, Hungary, Latvia, Lithuania and Poland.
(d) Includes Kazakhstan, Russia and Ukraine.
(e) Includes Bulgaria, Croatia, Romania and Serbia.

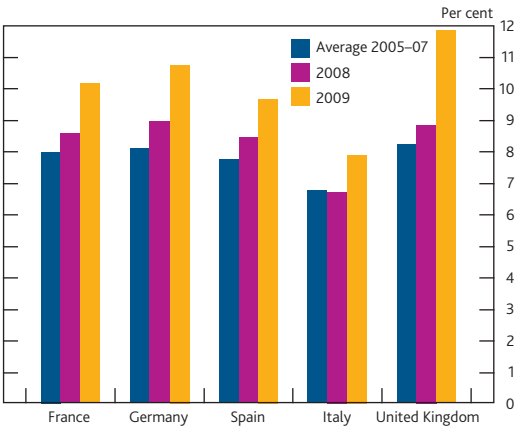
Chart 2.7 Counterparty credit risk for selected European banking systems[a][b]



Sources: Capital IQ, Thomson Reuters Datastream and Bank calculations.

(a) Average five-year senior credit default swap premia, weighted by assets, for banks with assets of more than US$100 billion.
(b) Data to close of business on 14 June 2010.

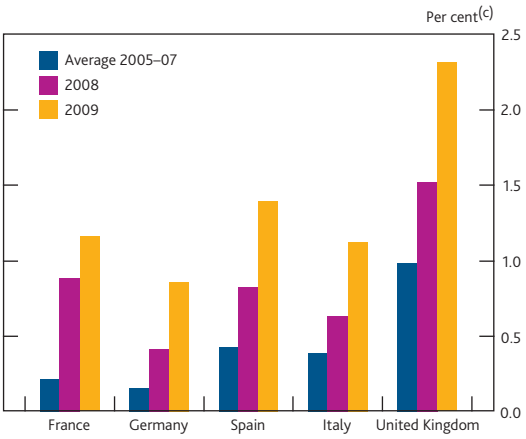
Chart 2.8 Tier 1 capital ratios for selected European banking systems[a][b]



Sources: Capital IQ, Moody's Investors Service, published accounts and Bank calculations.

(a) Includes banks with total assets of more than US$100 billion.
(b) Aggregated from individual banks, weighted by total assets.

Chart 2.9 Loan loss provisions for selected European banking systems[a][b]



Sources: Capital IQ, published accounts and Bank calculations.

(a) Includes banks with total assets of more than US$100 billion.
(b) Aggregated from individual banks, weighted by total assets.
(c) As a fraction of gross loans.

Box 2
Risks to the US housing market

US house prices fell by 30% between July 2006 and April 2009. Recent stabilisation has been attributed to government support, with a first-time buyer (FTB) tax credit and around US$1.5 trillion in purchases of government-sponsored enterprise debt. But risks to the US housing market remain and may crystallise as this support is withdrawn. This box considers those risks and potential financial stability implications. Developments in supply and demand are important in understanding risks to the US housing market.

Excess supply of housing

Rental and owner-occupied vacancies were at historic highs in 2005, pointing to a surplus of housing units at that point. From 2006 to 2008, household formation was low by historic standards, particularly in 2008 as the worst of the recession was felt. Over that period, construction of new houses (net of units destroyed) exceeded the number of new households formed by around 2.6 million (**Chart A**).

Chart A US household formation and housing units built

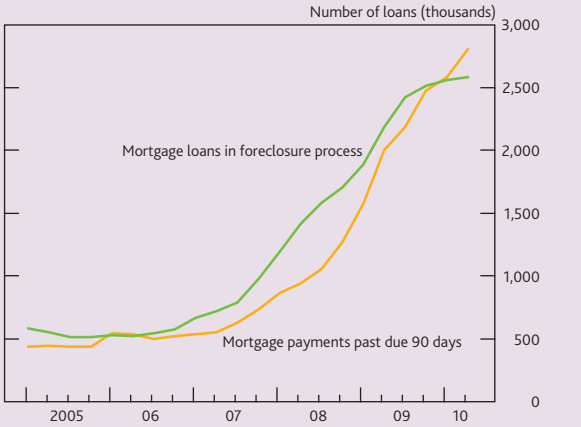
Sources: US Bureau of the Census and Bank calculations.

In 2009, a strong rebound in household formation cut the surplus of housing units built since 2006 to around 1.75 million. However, assuming pre-crisis rates of household formation and housing unit construction, even that surplus will take around two years to remove. This overhang of houses would, other things being equal, tend to exert downward pressure on house prices.

Sales of foreclosed properties

The number of properties in the foreclosure process has risen significantly since 2008. In part that reflects the role of non-recourse mortgage lending in some states, which provides an incentive for borrowers to default upon entering negative equity, leaving the property with the lender. It also reflects the shock to borrower income from declines in US employment. There are some signs of foreclosures flattening off. But the continuing rapid rise in the number of mortgages more than 90 days in arrears (**Chart B**) suggests the respite might be temporary. While the Home Affordability and Stability Program may help banks limit the number of foreclosures up to end-2012 (when the programme expires), the effect may be to defer foreclosures rather than avoid them.(1)

Chart B US mortgage loan delinquencies



Sources: Mortgage Bankers Association, Thomson Reuters Datastream and Bank calculations.

Sales of foreclosed properties crystallise losses for lenders. This is compounded by those assets typically being sold at discounts to the market price.(2) Sales at distressed prices would weigh on house prices, potentially worsening levels of negative equity and triggering more defaults and foreclosures.

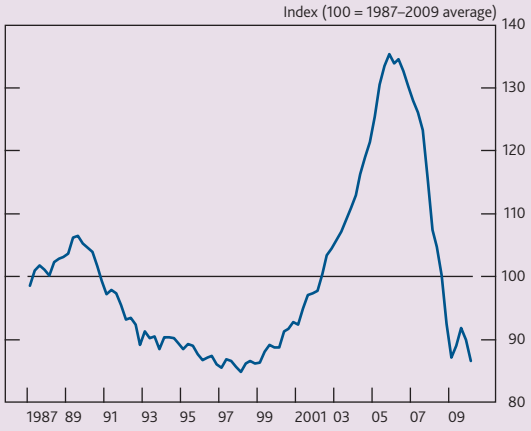
Demand factors

On one hand, demand-side factors may help to counter the excess supply problem. Housing market activity should be supported by improved affordability indicators. For example, the US house price to income ratio is below the average observed between 1987 and 2009 (**Chart C**).

On the other hand, factors such as continuing high levels of unemployment, economic uncertainty, fears of further price falls and tight credit conditions would tend to discourage buyers from entering the housing market. Moreover, if the FTB tax credit has brought forward purchases from that segment of the market, demand from FTBs may weaken in 2010. Taken together, this suggests there are likely to be a number of obstacles to the re-emergence of demand for owner-occupied housing over the coming months, which will weigh on prices.

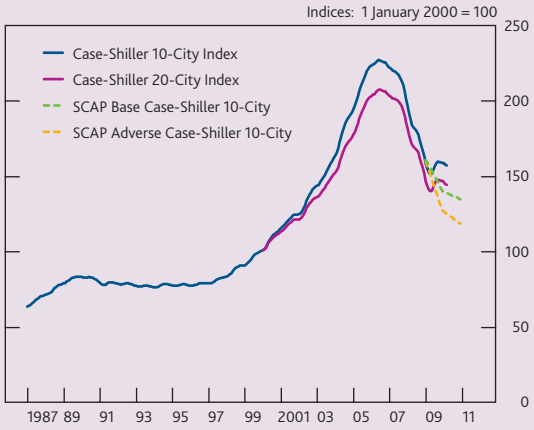
The overall effect of demand and supply factors on prices is hard to predict and is likely to vary between regions. In a

Chart C US house price:income ratio



Sources: Standard & Poor's Case-Shiller, Thomson Reuters Datastream and Bank calculations.

Chart D US house prices



Sources: Fiserv and Standard & Poor's Case-Shiller.

recent survey of expectations, mean forecasts for different US national and cross-regional house price indices suggested a range of views on growth, from -3.9% to +3.3% in 2010.(3) So there remains a relatively high degree of uncertainty about prospects for US house prices in the near term, with further falls a downside risk.

Financial stability implications

The transmission mechanism from US house prices to financial stability operates most directly through banks' losses on lending to US households and losses on holdings of securities linked to US mortgages (although there may be other instruments referenced to US mortgages). The prevalence of non-recourse lending in some states means mortgage defaults are inversely correlated with US house prices. And with around 25% of owners in negative equity,(4) loss given default will also be correlated with house price falls.

The Supervisory Capital Assessment Program (SCAP) conducted in 2009 assessed US banks' ability to maintain a 4% core Tier 1 capital ratio under a scenario involving the S&P/Case-Shiller 10-City Index falling by 22% in the first year (2009) and a further 7% in the second. The results suggested that large US banks held sufficient capital to meet that test. With actual prices falling by only 2.4% in 2009 and the banks having accumulated further capital in the meantime, this suggests a degree of resilience among US banks to further house price declines. **Chart D** illustrates the path for the 10-City Index projected under the base and adverse scenarios for the SCAP, relative to actual movements in the house price index.

As at end-2009, the largest UK banks had a combined exposure to the US housing sector and holdings of non-government residential mortgage-backed securities (RMBS) equal to £92.4 billion, representing 48% of core Tier 1 capital (**Table 1**).(5) If losses consistent with those implied by the SCAP 'adverse' scenario occurred, alongside write-downs on remaining holdings of non-government US RMBS consistent with peak to trough price falls to date, total losses would be less than 8% of core Tier 1 capital for UK banks (though increases in risk-weighted assets would depress capital ratios further). Large UK banks have a larger direct exposure than their European peers, for whom equivalent losses are estimated to amount to around 4% of core Tier 1 capital.

Table 1 Exposure to US mortgages and US non-government RMBS as a percentage of core Tier 1 capital (end-2009)

	Mortgage loans	RMBS	Total
United Kingdom(a)	34.9	13.1	48.1
European Union(b)	6.6	8.8	15.4
United States(c)	221.8	26.4	248.2

Sources: Published accounts and Bank calculations.

(a) Barclays, HSBC, LLoyds Banking Group and RBS.
(b) BNP Paribas, Credit Suisse, Deutsche Bank and Société Générale.
(c) Bank of America Merrill Lynch, Citi, Goldman Sachs, JPMorgan and Morgan Stanley.

In isolation, this might suggest that even severe US house price declines would have only a limited impact on the largest global banks' balance sheets. However, losses related to house price falls may be non-linear, because of the potential adverse impact of US housing market instability on the wider economic environment and on global capital markets via reduced risk appetite. These were key mechanisms propagating the sub-prime crisis in 2007. Recent examples of market disruption have illustrated the fragility of bank funding markets and the effects of uncertainty over the extent and location of losses. Given the source of the stress, its impact could be expected to fall hardest on dollar funding, a particular source of ongoing concern.

(1) The programme seeks to improve the ability of households with high loan to value ratios to refinance and to reduce monthly repayments, in part through forms of loan modification.
(2) In May 2009 the National Association of Realtors estimated distressed sale discounts in the United States were 20%.
(3) See 'First Quarter 2010 Survey of Professional Forecasters', Federal Reserve Bank of Philadelphia, February 2010.
(4) See 'How long will negative equity last?', CoreLogic research note, March 2010.
(5) In the hard copy of this *Report* the exposure of the largest UK banks was incorrectly stated as £224 billion. The exposure as a proportion of the largest UK banks' core Tier 1 capital remains 48%.

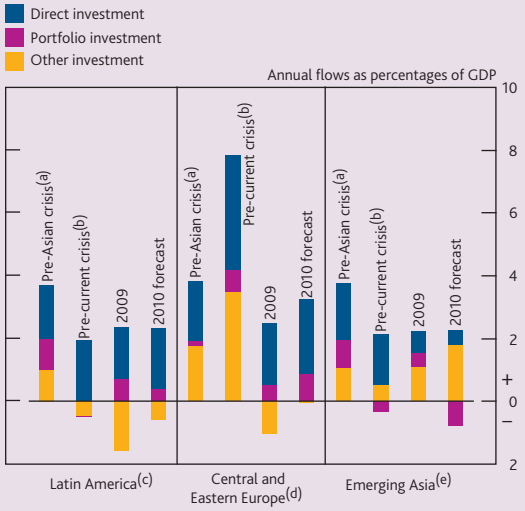
Box 3
Risks from emerging market capital inflows

This box assesses two risks to financial stability: a possible sudden stop in capital inflows to emerging market economies (EMEs) and medium-term overheating in these economies. If these risks were to crystallise, they could affect UK financial stability adversely through the credit exposures of UK banks and their counterparties or through a reduction in global risk appetite and market liquidity. UK-owned banks' EME credit exposures are largest in Asia, especially in South Korea and Hong Kong, but are also concentrated in Brazil, South Africa and the United Arab Emirates.

EME capital inflows

Notwithstanding outflows in May, net capital inflows to EMEs have risen strongly since the December 2009 *Report*. Strong inflows have been accompanied by an increase in growth in many EMEs, resulting in a more modest pickup in inflows as a fraction of GDP. Moreover, changes in inflows differ across regions (**Chart A**). Inflows into EME equities and debt have both been strong: cumulative inflows into EME funds amount to US$32 billion since the December 2009 *Report*, and the third and fourth quarters of 2009 set records for net foreign currency debt issuance by EMEs. By contrast, bank credit to EMEs from developed countries remained weak as banks repaired their balance sheets, only turning positive in 2009 Q4.

Chart A Net private capital flows to EMEs



Sources: IMF *World Economic Outlook* (April 2010) and Bank calculations.

(a) 1995–96 average.
(b) 2003–07 average.
(c) IMF Western Hemisphere country group.
(d) IMF Central and Eastern Europe country group.
(e) IMF Developing Asia country group plus Hong Kong, Singapore, South Korea and Taiwan, excluding Bangladesh and Pakistan.

The near-term risk of a sudden stop

While new investment in EMEs is welcome, particularly in countries that faced severe financing challenges during the global crisis, excessive capital inflows can lead to a build-up of vulnerabilities. One concern is a disruptive and sudden stop in inflows. Economic models do not provide robust forecasts of when sudden stops in capital flows will arise. But plausible contributory factors could include the underlying reasons for the capital flows and the type of investor involved.

An analysis of EME bond spreads suggests that until March 2010 the pattern of flows — and the concomitant fall in spreads — was driven by both 'push' factors and 'pull' factors, with the former being of relatively greater importance (**Table 1**). In terms of pull factors, investors have been attracted by relatively favourable EME growth prospects and sound public finances. At the same time, global risk appetite and market liquidity have — until the recent market turbulence — pushed capital into EMEs. The preponderance of push factors, particularly since March, suggests that capital inflows to EMEs remain sensitive to changes in risk appetite and liquidity.

Table 1 Accounting for changes in EME spreads

Basis points

	March 2010 to May 2010	May 2009 to March 2010
Risk appetite (push)	100	-95
Market liquidity (push)	0	-125
Credit rating (pull)	-10	-15
Growth forecasts (pull)	0	-40
Unexplained	-10	70
Total change in actual bond spreads	**80**	**-205**

Source: Bank calculations.

Low interest rates in advanced countries relative to EMEs, and lower exchange rate volatility, have also raised the attractiveness of traditional carry trades. Interest rate differentials, adjusted for exchange rate volatility, rose markedly for Brazil, Turkey and Indonesia up until May 2010, but have fallen back slightly recently.

The potential for abrupt withdrawals of capital may also depend on the characteristics of EME investors. So far, the majority of inflows appear to have been from unleveraged investors who typically invest long term and have stable sources of funding. EME inflows from developed country banks remain relatively depressed. Market intelligence suggests that leverage among EME-focused hedge funds also remains well below pre-crisis levels. That reduces the risk of a disorderly unwinding of positions. During the recent market turbulence, market contacts report that hedge funds did cut emerging market positions sharply. But EME equity and debt funds also experienced some outflows over this period, demonstrating that disruptions can also occur through real money investors.

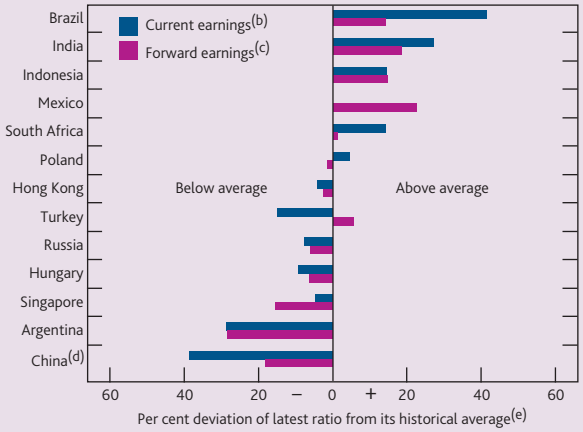
A sudden stop in inflows could have adverse consequences, particularly for EMEs in which growth prospects remain weak

and public finances strained, including some countries in Central and Eastern Europe (CEE). Direct UK bank exposures to CEE are low (**Chart 2.6**), but some financial institutions in the euro area that are important counterparties of UK banks have large exposures to these countries. In the event of a crisis in CEE, liquidity in European interbank markets could become impaired due to uncertainty about individual bank holdings of CEE debt, potentially affecting UK banks' funding.

The risk of overheating in the medium term

Despite weaker and more volatile inflows in May, a return to the conditions seen over most of the period since the December 2009 *Report* could lead to a medium-term risk of overheating in some EMEs. For the most part, the increase in EME asset prices represents a rebound from the depressed levels reached during the crisis. But some EME stock market valuations have exceeded historical averages (**Chart B**). And property price to rental indices in some Asian countries are approaching levels last seen in the run-up to the Asian crisis (**Chart C**). But any comparison with the Asian crisis should not be exaggerated. Domestic credit growth and investment ratios in most Asian economies remain far lower now than then.

Chart B EME equity price to earnings ratios[a]

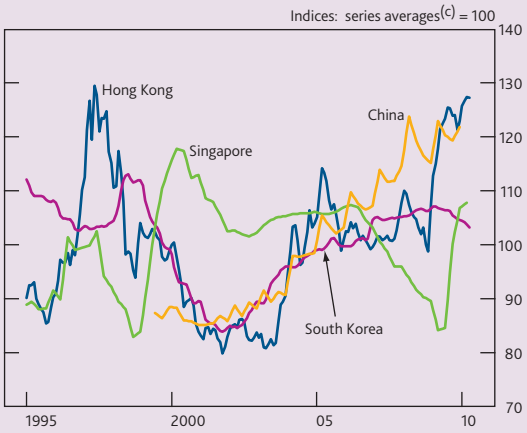


Sources: Thomson Reuters Datastream and Bank calculations.

(a) All ratios are based on domestic currencies, except for Brazil and Russia price to forward earnings ratios which are in US dollars.
(b) Market capitalisation of the index in each country divided by current earnings of all companies in the index.
(c) Weighted average price to earnings ratio based on twelve-month forward earnings.
(d) China's mainland A-share market.
(e) Averages are median values over sample periods that vary by country, the longest starting in 1995 and the shortest in 1999.

In Asia, a sharp growth contraction in China remains a particular concern. UK banks' exposures to important Chinese trade partners, such as Hong Kong, South Korea and Singapore are large. Latin America has also experienced strong capital inflows, with Brazilian and Mexican equity valuations looking high (**Chart B**). Potential overvaluation in Latin America could also affect UK financial stability via euro-area banks with large operations in both the euro area and Latin America.

Chart C Property price to rental indices[a][b]



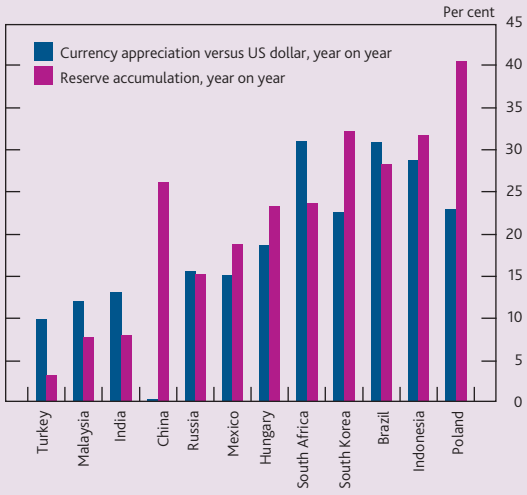
Sources: CEIC and Bank calculations.

(a) Data are on a monthly basis until April 2010, except for Singapore which is quarterly to March 2010 and China which is quarterly from June 1999 to December 2009.
(b) Using residential property indices, except for China which uses broader property indices.
(c) Series averages are calculated over the period shown on the chart.

Policy responses

Many EMEs have adopted prudential policies to curb exuberance.(1) China has tightened payment requirements on some real estate transactions and increased bank reserve requirements. Brazil and South Korea recently imposed capital controls. Several EMEs have also accumulated reserves, either as precautionary balances or to resist currency appreciation (**Chart D**). To the extent that these reserves are channelled back to advanced country government instruments (particularly US Treasuries), this would tend to depress interest rates in developed countries, while also possibly contributing to an underpricing of risk. This was the same set of global savings-investment imbalances that contributed to the financial crisis.

Chart D Reserve accumulation and currency appreciation[a]

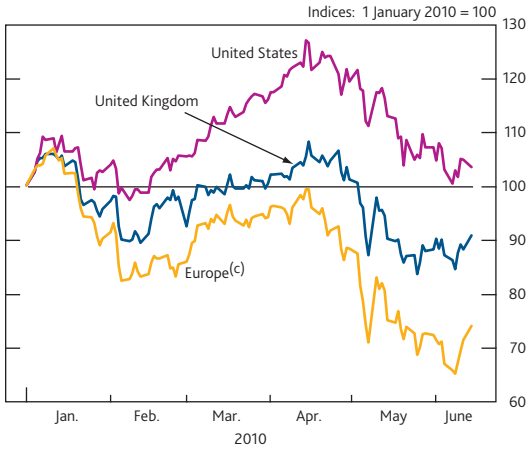


Sources: Bloomberg, IMF *International Financial Statistics* and Bank calculations.

(a) Appreciation and accumulation are year-on-year changes to end-March 2010.

(1) See 'Macroprudential instruments and frameworks: a stocktaking of issues and experiences', CGFS paper No. 38, May 2010.

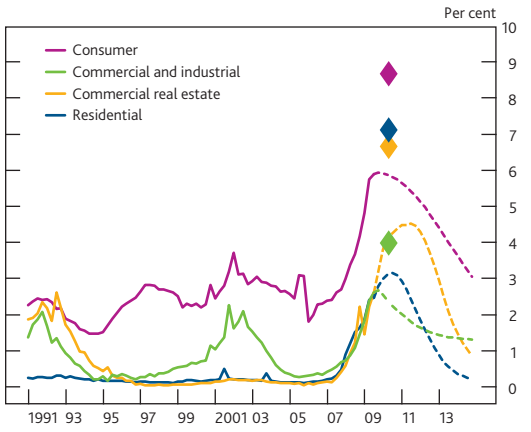
Chart 2.10 Equity prices for selected international banking systems[a][b]



Sources: Thomson Reuters Datastream and Bank calculations.

(a) Data to close of business on 14 June 2010.
(b) FTSE bank equity price indices, which are expressed in US dollar terms.
(c) Excluding the United Kingdom.

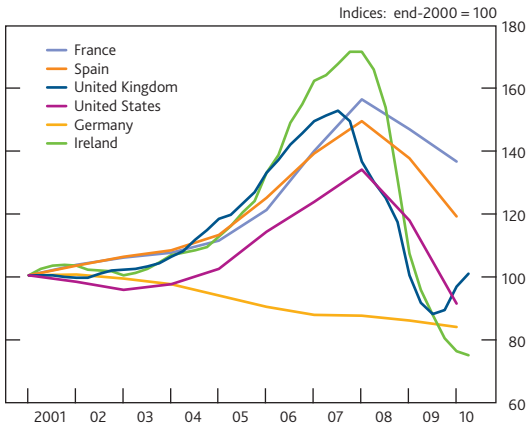
Chart 2.11 Loan loss rates in the United States[a]



Sources: FDIC, Federal Reserve, IMF and Bank calculations.

(a) Diamonds represent implied 2010 adverse scenario loss estimates from the Federal Reserve's Supervisory Capital Assessment Program. These are calculated by deducting 2009 loss rates from the mid-points of the 2009–10 range of loss estimates published in the overview of results on 7 May 2009. Dashed lines represent the IMF's central forecast of the future path of US loss rates.

Chart 2.12 International commercial property prices[a]



Sources: IPD, Thomson Reuters Datastream and Bank calculations.

(a) Annual data, except for United Kingdom and Ireland, which are quarterly to 2010 Q1.

But downside risks to the US economy persist, including from the housing market (Box 2). UK-owned banks are exposed to these risks, both through lending to non-bank private borrowers and to US banks, including securities dealers. Exposures to those borrowers account for around 20% and 4% of UK-owned banks' foreign claims respectively (**Table 2.B**).

Secured loans to US households accounted for around one fifth of the UK LCFIs'[1] US lending at the end of 2009. Lower house prices would increase loss given default rates among borrowers and could impede recovery in securitisation markets, with implications for credit availability to non-bank borrowers. Counterparty credit risk on UK banks' exposures to large US banks would also increase. These banks are proportionally more exposed than smaller banks to the residential mortgage market in the United States.

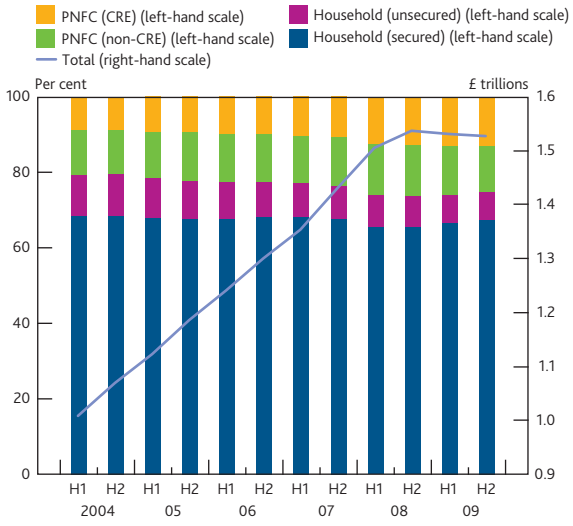
Small and mid-sized regional US banks have more concentrated exposures to US commercial real estate (CRE). Almost all of the 249 FDIC-insured bank failures since 2007 have involved smaller banks that held less than US$10 billion in assets. US commercial property prices remain substantially below their peak (**Chart 2.12**), leaving a number of borrowers in negative equity or with high LTV ratios. So far, defaults among US CRE companies have been contained by US banks extending and restructuring loans when borrowers have encountered difficulties. But refinancing needs among those firms are heavily skewed towards the near term. They peak in 2012, by which time approximately US$500 billion of US CRE loans are scheduled to mature. This is around one third of FDIC-insured commercial banks' common equity. Lenders' willingness and ability to refinance these loans will be an important driver of future defaults and will in turn affect the losses borne by US banks.

...while credit risks from other countries overseas appear to be relatively low in the near term.

The credit risk posed to the UK banking system by international borrowers in countries other than the euro area and the United States remains relatively low in the near term. In some cases risks have receded, reflecting robust economic growth. For example, China has continued to expand rapidly over the past six months and is projected by the IMF to grow by around 10% in real terms in 2010 and 2011. Over the medium term, however, there is a risk of overheating in some emerging market economies, including in Asia (Box 3).

(1) The large complex financial institutions (LCFIs) include the world's largest banks that carry out a diverse and complex range of activities in major financial centres. UK LCFIs are defined here as Barclays, HSBC and RBS.

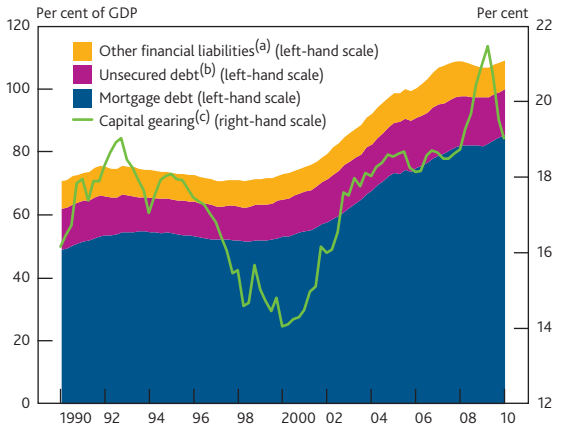
Chart 2.13 Major UK banks' loans to UK customers[a]



Sources: Bank of England and Bank calculations.

(a) Only includes loans from banks' UK operations.

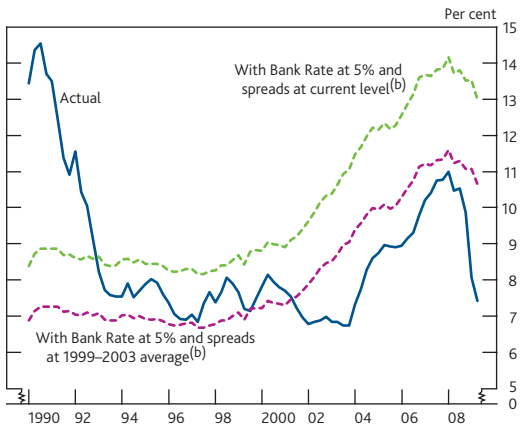
Chart 2.14 UK household debt and capital gearing



Sources: Bank of England, ONS and Bank calculations.

(a) Households' total financial liabilities less mortgage and unsecured debt.
(b) Unsecured debt owed to monetary financial institutions only.
(c) Household debt relative to the value of households' financial assets and gross housing wealth.

Chart 2.15 UK household income gearing[a]



Sources: Bank of England, ONS and Bank calculations.

(a) Gross interest payments as a percentage of post-tax income, excluding the impact of Mortgage Interest Relief at Source.
(b) Mechanical impact only, holding household debt and income constant. Bank Rate was most recently 5% on 7 October 2008.

2.2 Domestic risks

Balance sheets remain stretched within the UK household sector…

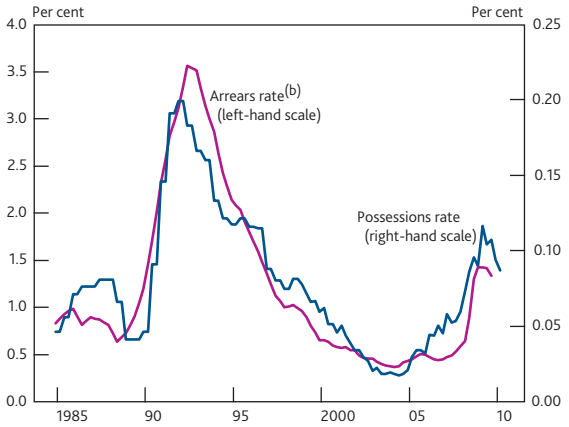
In the United Kingdom, secured lending to households accounts for around two thirds of UK banks' loans to UK customers (**Chart 2.13**), equivalent to just under four times their core Tier 1 capital, but has only accounted for around 5% of UK banks' domestic write-offs since the beginning of 2007. Over the past decade, rapid secured lending growth has left the UK household sector with high debt gearing in aggregate (**Chart 2.14**). In the absence of significant deleveraging by the household sector, UK banks are exposed to the risk of higher defaults were interest rates to rise from their current historically low levels or recovery to falter. Income gearing — historically closely associated with secured arrears rates — has continued to be held down by low market interest rates (**Chart 2.15**). But if, for example, Bank Rate were to rise to 5%, even if mortgage spreads reverted to their pre-crisis average, household income gearing would be close to its recent peak in 2008 — assuming for illustration that household debt and income remained unchanged.(1) In this scenario, household debt outstanding would need to fall to around 92% of GDP to restore income gearing to its historical average of just below 9%. The ratio of UK household debt to GDP was last at this level in late 2003 (**Chart 2.14**). If lending spreads remained at current levels, income gearing would rise to its early-1990s' levels. The ratio of debt to GDP would then need to fall to around 75% to maintain income gearing at its historical average, a level last seen in 2000. In practice, the impact of higher interest rates on the household sector would depend on the wider economic environment, with higher interest rates against a backdrop of robust growth likely to have a more benign impact than if growth were weak.

UK house prices stand around 10% above their trough in 2009, at around 12% below their peak in October 2007. Looking ahead, external forecasters expect house prices to increase slightly during 2010. But there are signs that the supply of houses for sale may be increasing, with new instructions exceeding new buyer enquiries in May for the fifth consecutive month according to the Royal Institution of Chartered Surveyors. As discussed in Section 1, credit availability is substantially tighter than pre-crisis.

Lenders report that loss rates on UK secured lending fell in 2010 Q1. They are well below their peak in the early 1990s. This partly reflects the dampening effect of recently rising house prices on losses in the event of default. But it may also reflect forbearance by UK banks. Towards the end of the credit boom, possessions by lenders rose ahead of secured arrears (**Chart 2.16**), contrary to the expected sequence. This would

(1) As described in the May 2010 *Inflation Report*, a change in market interest rates of this size is not at present expected by market participants.

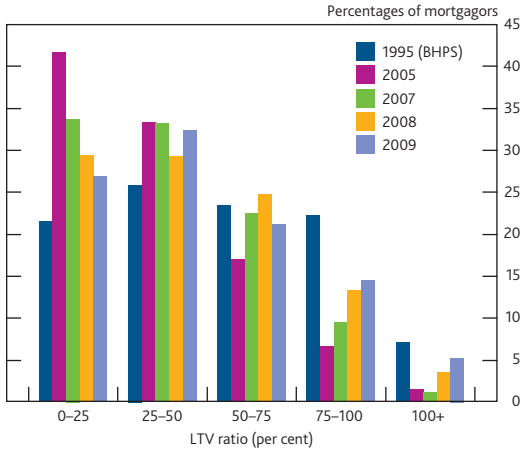
Chart 2.16 Arrears and possessions rates on secured lending to UK households[a]



Sources: Council of Mortgage Lenders and Bank calculations.

(a) Quarterly rates expressed as a percentage of mortgagors. Series converted from semi-annual rates to quarterly rates between 1985–99.
(b) Arrears of more than six months, brought forward six months.

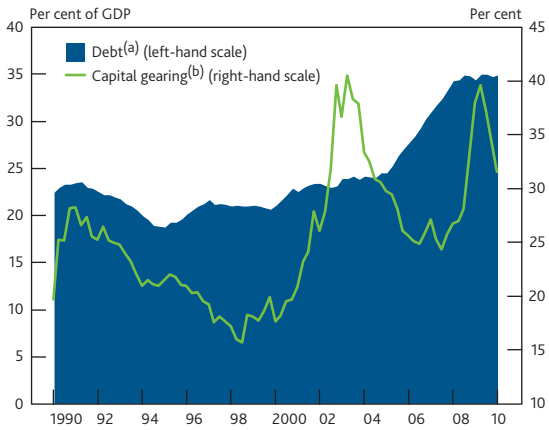
Chart 2.17 Loan to value ratios on UK borrowers' outstanding secured debt[a]



Sources: British Household Panel Survey (BHPS), NMG Financial Services Consulting survey and Bank calculations.

(a) Mortgage debt from the BHPS (1995 data) captures mortgage debt owed by households on all properties they own. Mortgage debt from the NMG survey (data for other years) captures only mortgage debt owed on households' primary residences.

Chart 2.18 UK corporate debt and capital gearing



Sources: Bank of England, ONS and Bank calculations.

(a) Only includes debt owed to UK monetary financial institutions.
(b) Debt net of liquid assets relative to the market value of capital.

be consistent with banks seeking to contain losses by taking early possession of properties. As house prices then fell, banks may have had an incentive to forbear on loans in arrears to avoid losses crystallising, thereby containing possessions (**Chart 2.16**). But mortgage arrears and possessions could both still increase in future if higher market interest rates reduced debt affordability among UK households and weakened the willingness of banks to forbear.

The majority of households have significant equity in their houses. But at end-2009, around 5% of mortgagors had no housing equity (**Chart 2.17**). These borrowers may have been unable to roll over expiring pre-crisis mortgage deals and therefore moved onto lenders' standard variable rates. So they are likely to be particularly exposed to a rise in market interest rates or unemployment. Some households also have high repayment gearing. For example, in 2009 almost 5% of UK mortgagors had repayment gearing of between 50% and 100% of their income.[1]

...and unsecured lending is a persistent source of credit risk...

Unsecured lending to UK households accounts for a relatively small proportion of UK banks' loans to domestic customers (**Chart 2.13**), equivalent to a little under half of their core Tier 1 capital. But since the beginning of 2007 these exposures have accounted for around two thirds (£23 billion) of domestic write-offs by UK banks.

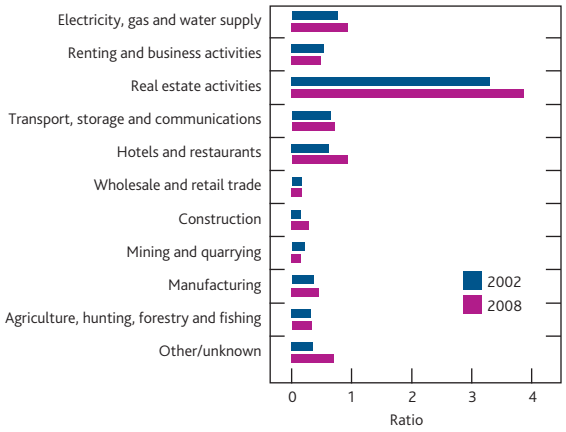
Lenders report that write-off rates on unsecured credit to UK households have recently been lower than they had expected.[2] Write-off rates on credit card lending have nevertheless reached record highs, hitting 10.4% in 2010 Q1 from 7.0% in 2007 Q1. In response, spreads on unsecured lending have risen sharply over the past two years, offsetting the low level of Bank Rate and causing payment difficulties for some borrowers. The spread over Bank Rate on UK credit card lending stands at around 12 percentage points, double its level at the trough in 2004. A setback to the economic recovery could aggravate household distress, particularly among the tail of borrowers with high unsecured debt repayment gearing.

...while some UK companies remain vulnerable...

Aggregate leverage among UK companies remains above its average over the past two decades. Corporate debt relative to GDP stands around twice the level of its trough in the mid-1990s (**Chart 2.18**). As with households, corporate income gearing continues to be held down by low market interest rates, but is sensitive to shocks pushing borrowing costs higher or which weaken corporate profitability. Corporate loans account for one quarter of UK banks' loans to domestic customers, equivalent to around 1.4 times their core

(1) The financial position of UK households, including the distribution of mortgage repayment gearing is discussed in the 2009 Q4 *Quarterly Bulletin*, pages 274–85.
(2) See June 2010 *Trends in Lending*.

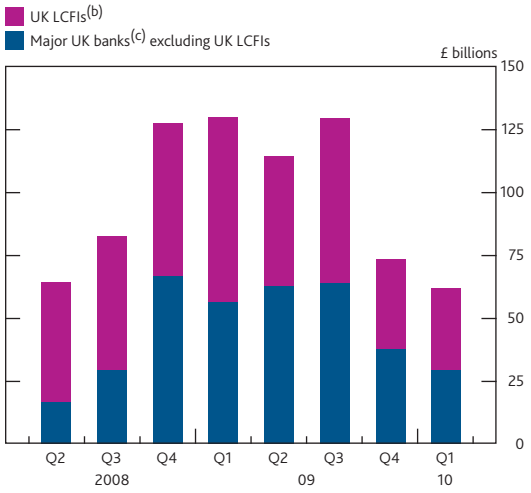
Chart 2.19 Ratio of total debt to total global turnover by UK company sector[a]



Sources: Bureau van Dijk Fame database and Bank calculations.

(a) Data include firms reporting turnover, short-term debt and long-term debt (a sample of around 28,000 firms in 2008 and 41,000 in 2002). Subsidiaries, as identified from current company structures, are excluded from the data set. Company accounts are assigned to calendar years according to the end of their accounting period. Sectors are based on SIC (2003) codes.

Chart 2.20 Major UK banks' intra-system large exposures[a]



Sources: FSA regulatory returns and Bank calculations.

(a) Exposures that exceed 10% of eligible capital at the end of the reporting period.
(b) Includes Barclays, HSBC and RBS.
(c) Excludes Bank of Ireland.

Tier 1 capital, of which around half is to CRE companies[1] (**Chart 2.13**). Since the beginning of 2007, these loans have accounted for around one quarter of UK banks' domestic write-offs. During 2009, some UK banks substantially increased provisions against losses on UK corporate lending.

Within the UK corporate sector, CRE companies are particularly indebted relative to their turnover (**Chart 2.19**). Commercial property values in the United Kingdom have risen by around 10% over the past six months. This partly reflects record net capital inflows into CRE funds in 2009 Q4, which remained strong in 2010 Q1, with investors attracted by the relative yield available on such investments. But recent demand from investors for UK commercial property exposures has been focused on prime properties with reportedly little appetite for lower-quality investments. There are also recent signs of demand faltering. Values remain more than one third below the peak in June 2007. And market contacts suggest that LTV ratios for many UK commercial property companies are significantly above levels at which banks would usually be willing to extend further credit.[2]

To date, banks appear to have accommodated breaches of LTV covenants among companies that have continued to service their loans. They have also helped to restructure debt taken out by borrowers experiencing cash-flow pressures. This is a pattern that has been mirrored in other parts of the corporate sector and helps to account for the low liquidation rate (Box 4).[3] But if banks were to become less willing or able to forbear on breaches of covenants, this could prompt an increase in corporate liquidations and a greater supply of foreclosed property. That could in turn trigger a renewed fall in prices and a rise in losses in the event of default on banks' commercial exposures. Market contacts suggest that the cost of breaking interest rate hedges, contracted when market interest rates were higher, may have contributed to forbearance among lenders. This cost could fall if market interest rates were to rise. Many of these hedges are in any case scheduled to terminate over the next couple of years.

...though interconnectedness among UK banks has fallen.
UK banks are also indirectly exposed to credit risk through their exposures to UK LCFIs. Large exposures to UK LCFIs fell further in 2010 Q1 and are less than half the peak reached in 2009 Q1. Exposures among UK banks also fell (**Chart 2.20**). This is consistent with the pattern of deleveraging among UK banks being concentrated in intrafinancial system exposures, as discussed in Section 4.

(1) This includes companies involved in the development, buying, selling and renting of real estate. Exposures do not include banks' holdings of commercial mortgage-backed securities or loans to other companies collateralised by UK real estate.
(2) See, for example, the end-2009 results of the De Montfort survey.
(3) Forbearance by major lenders is also described in Section 1 of the May 2010 *Inflation Report*.

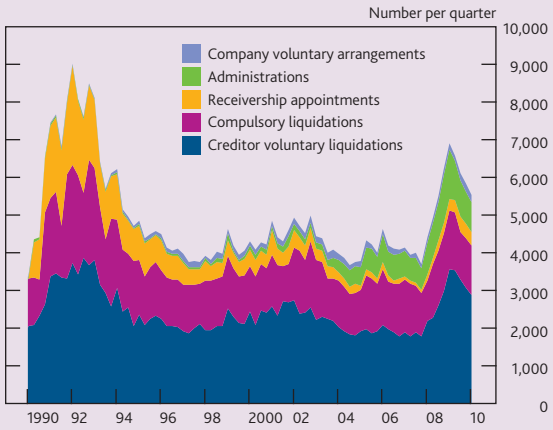
Box 4
Explaining corporate liquidations

The severe recession, alongside sharp falls in commercial property prices and tight credit conditions, has led to an increase in corporate distress and rising write-off rates on corporate exposures. To date, however, the corporate liquidations rate appears low relative to past recessions and the number of firms entering liquidation has fallen back over recent quarters. This box considers why the corporate liquidations rate has remained low, prospects for liquidations and the potential implications for UK banks.

Recent data

The number of corporate liquidations has so far remained below its 1990s' peak, even though the number of active companies has more than doubled over this period. Changes introduced under the Enterprise Act 2002 may have led to an increasing use of administration procedures in circumstances in which companies would previously have entered liquidation. But, although the number of other types of corporate insolvency rose sharply in 2008, the total number of insolvencies in any one quarter has been a little below the 1990s' peak (**Chart A**).(1)

Chart A Corporate insolvencies in England and Wales(a)

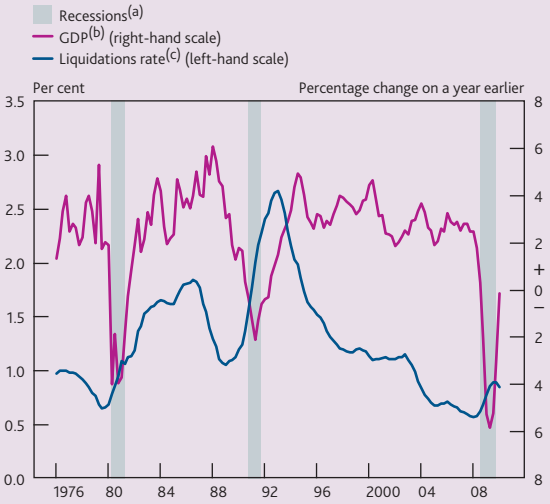


Source: The Insolvency Service.

(a) Figures for administrations, receiverships and company voluntary arrangements are not directly comparable to those for the 1990s due to changes introduced by the Enterprise Act 2002. In some cases companies moving from one insolvency procedure into another will appear twice in the chart. Administration figures for 2006 Q4 and 2008 Q4 exclude the failures of multiple separate companies for which a single administrator was appointed which distorted the official statistics. None of the figures are seasonally adjusted. 2010 Q1 figures are provisional.

The annual rate of liquidations, at 0.84% in 2010 Q1, remains less than a third of its peak in the early 1990s recession and below 2000–03 levels. The pickup in liquidations has looked particularly modest when viewed alongside falls in output (**Chart B**): in the six quarters to 2009 Q3 (inclusive), the longest period of contraction since quarterly records began in 1955, output fell by more than 6% — more than double the fall in the early 1990s.

Chart B Corporate liquidations rate in England and Wales and GDP



Sources: The Insolvency Service and ONS.

(a) Recessions are defined as two consecutive quarters of falling output (at constant market prices) estimated using the latest data. The recessions are assumed to end once output began to rise.
(b) Chained-volume measure at market prices.
(c) Calculated as the total number of liquidations in the previous four quarters divided by the average number of active registered companies. Since the Enterprise Act 2002 a number of administrations have subsequently converted to creditors' voluntary liquidations. These are not included in the chart.

Liquidations rates in the 1980s and early 1990s may have been pushed up by structural shake-outs in parts of the corporate sector. It is also possible that rapid growth in the number of (particularly very small) companies since 2001 — driven, in part, by changes in the incentives for firms to incorporate — may have distorted the recorded liquidations rate relative to the past. For example, very small companies may be less likely to enter formal insolvency procedures. Even so, the pickup in the liquidations rate appears small relative to the 1990s, even if all of the growth in the number of companies since end-2001 is removed.

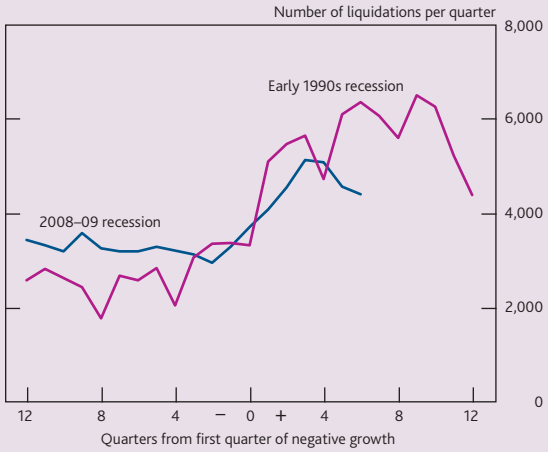
Explaining the data

Why has the corporate liquidations rate remained low? Using a simple econometric model (in which the corporate liquidations rate is estimated to depend on GDP growth, commercial property price growth, corporate lending growth and average interest rates facing corporates) two potential explanations can be identified. Low interest rates have been a key explanatory factor. By reducing the cost of servicing debt, accommodative monetary conditions have helped to offset the pressures from the sharp contraction in demand and tighter credit availability. By contrast, in the 1990s high interest rates added significantly to the pressure created by declining demand.

At the same time, the model suggests that the full effects of past deterioration in the economy may have not yet fully fed through. Significant lags between deterioration in the economy and rises in the insolvency rate would be consistent with the 1980s and 1990s. For example, the peak in

liquidations occurred in 1992 Q4, nine quarters after the first period of negative growth (**Chart C**) and significantly after the trough. Such lags may partly reflect the fact that businesses can survive for short periods by running down their financial reserves and are likely to enter liquidation only when these have been exhausted. Knock-on supply chain effects are likely to create persistence in liquidations, particularly if large companies enter insolvency procedures. So, although liquidations have fallen back over recent quarters, the effects of declining output and property prices in 2008 and 2009 may be yet fully to feed through.

Chart C Number of corporate liquidations in England and Wales



Sources: The Insolvency Service, ONS and Bank calculations.

Aside from these influences, a number of contacts have suggested that bank forbearance has played a role in limiting insolvencies. In the commercial property sector, banks have shown forbearance with respect to loan to value covenant breaches so long as income streams remain healthy. Banks have reportedly also made use of loan restructurings, sometimes involving debt-for-equity swaps or interest-only repayment, as an alternative to liquidation. Forbearance appears to have been at least in part strategic, with lenders hoping to enable some corporates to ride out the downturn or to increase expected recovery rates from repossessed properties or other assets by waiting until a later point in the cycle.

Lenders and other contacts of the Bank's Agents have also highlighted the impact of HMRC's Business Payment Support Service programme. By the time of the March 2010 *Budget*, over 200,000 businesses in temporary difficulty had postponed tax payments under this scheme. It is unclear, however, precisely how many of these firms would have entered insolvency procedures in the absence of this support.

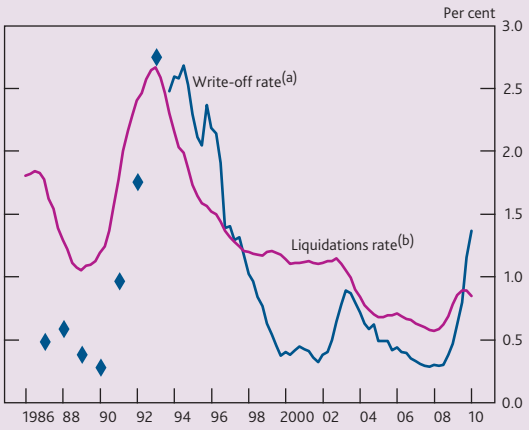
Prospects for liquidations

The liquidations rate may pick up over the next year as the full effects of past falls in activity, commercial property prices and tight credit conditions feed through. Assuming interest rates for companies are broadly in line with market expectations, the liquidations rate is likely to remain well below its 1990s' peak. There is, however, significant uncertainty surrounding the outlook. For example, a rise in borrowing costs could further aggravate corporate distress, particularly among the tail of companies with high levels of gearing.

Implications for UK banks

The low current corporate liquidations rate may suggest a benign outlook for banks in terms of losses on corporate exposures. However, the mapping between the liquidations rate and write-offs is imprecise. Indeed, write-off rates have picked up much more sharply than the liquidations rate (**Chart D**), with write-offs on lending to domestic private non-financial corporates by UK monetary financial institutions totalling nearly £10 billion in the eight quarters to end-2010 Q1. This might indicate that banks are facing a larger proportion of losses from companies that have not entered formal insolvency procedures. This explanation would be consistent with the use of corporate restructuring as an alternative to liquidation.

Chart D Corporate liquidations and write-off rates



Sources: Bank of England, The Insolvency Service and Bank calculations.

(a) Write-off rate on lending by UK monetary financial institutions to domestic private non-financial corporates. Figures are calculated by dividing write-offs in a quarter by the corresponding loans outstanding at the end of the previous quarter, with the figures chain-linked over the four most recent quarters to produce an annual rate. Quarterly write-off data are only available from 1993 Q4 onwards. The blue diamonds prior to this show estimated annual data.
(b) Corporate liquidations rate is calculated as in **Chart B** and relates only to England and Wales.

Corporate exposures are also likely to be lumpy. As a result, even if the corporate liquidations rate remains low, banks could face significant losses if a small number of companies with large amounts of debt outstanding were to fail. So although the major UK banks have already recorded substantial impairment charges on their banking book exposures to UK non-financial corporates, it is possible further significant charges could be required to cover future write-offs.

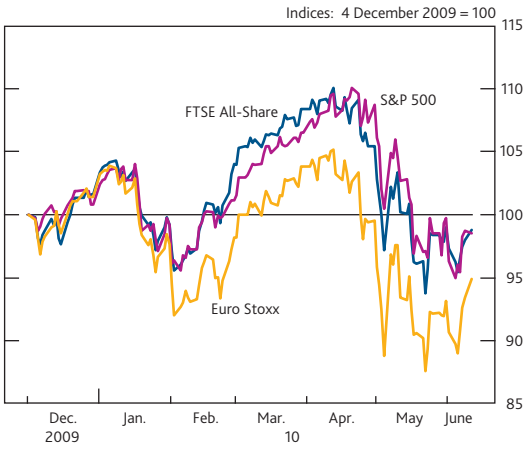
(1) Excluding the failures of multiple separate managed service companies — for which a single administrator was appointed — which distorted the official statistics in 2008 Q4.

3 Risks to UK banks from the international financial system

In recent months, developments in global financial markets have been dominated by sovereign risk concerns, as market participants have focused on the strains placed on fiscal positions from recession and public sector support for banking systems. This has re-exposed market fragilities and prompted a retreat of risk capital from some financial markets and institutions.

Going forward, banks face a number of risks from fragile international financial markets. Any sustained reappraisal of risk appetite would reduce the valuations of banks' risky assets, which could impact on solvency positions. Falls in market liquidity could reduce recent buoyant revenues from trading activities. And disruption to key funding markets could heighten the significant refinancing challenge facing banks internationally. But a crystallisation of these risks is not inevitable.

Chart 3.1 International equity indices(a)(b)



Sources: Thomson Reuters Datastream and Bank calculations.

(a) Data to close of business on 14 June 2010.
(b) Denominated in units of local currency.

UK banks are exposed to risks from the international financial system given their size, sophistication and international focus. These risks remain considerable and have heightened over the past six months. Respondents to the Bank's latest *Systemic Risk Survey* viewed funding and liquidity problems, and financial market dislocation, as among the most challenging risks for UK financial institutions to manage.

3.1 Market developments

Heightened financial market volatility…

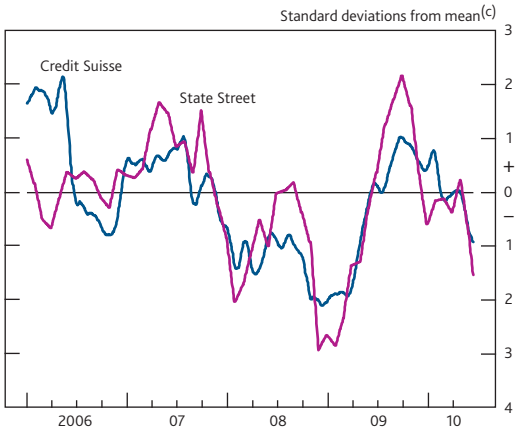
Since the December 2009 *Report*, developments in global financial markets have been dominated by rising concerns over sovereign risk. After rallying at the start of the year, asset prices have fallen in recent months (**Chart 3.1**) and risk appetite has reduced (**Chart 3.2**). Measures of market volatility, although still well below the levels at the height of the crisis, have increased substantially (**Chart 3.3**). Trading conditions in some core financial markets have deteriorated.

…due to sovereign risk concerns…

Sustained support for the global banking system by the authorities internationally, together with exceptional monetary policy measures, played a vital role in stabilising the financial system following the collapse of Lehman Brothers in September 2008. As discussed in the December 2009 *Report*, low risk-free interest rates and reduced uncertainty among investors led to a rebound in a range of asset prices during 2009. Activity in many capital markets returned to more normal levels.

During that period, market liquidity also improved, with increased competition between market makers resulting in

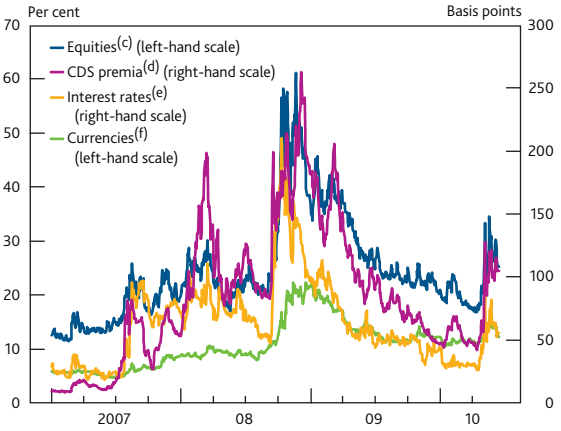
Chart 3.2 Indicators of risk appetite[a][b]



Sources: Bloomberg, Credit Suisse and Bank calculations.

(a) Indices are adjusted so that positive numbers in both series indicate increased risk-taking and negative numbers indicate reduced risk-taking.
(b) Data to close of business on 14 June 2010.
(c) Mean and standard deviation calculated from 28 July 2004.

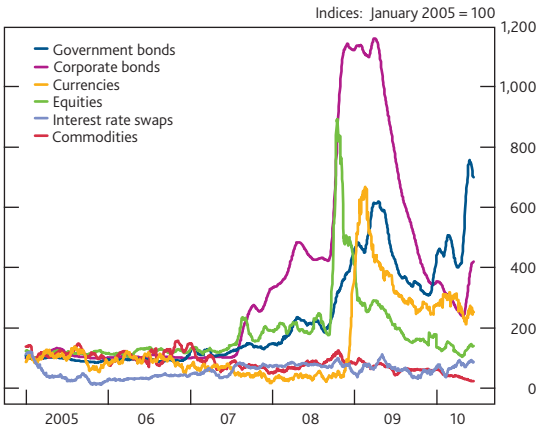
Chart 3.3 Implied volatilities[a][b]



Sources: Bloomberg, British Bankers' Association, Chicago Mercantile Exchange, Euronext.liffe, JPMorgan Chase & Co. and Bank calculations.

(a) Three-month option-implied volatilities.
(b) Data to close of business on 14 June 2010.
(c) Average of FTSE 100, S&P 500 and Euro Stoxx 50.
(d) Average of five-year on-the-run iTraxx Europe and CDX North America.
(e) Average of three-month short sterling, euro-dollar and Euribor.
(f) Average of USD/EUR, EUR/GBP and USD/GBP.

Chart 3.4 Bid-ask spreads on selected assets[a][b][c]



Sources: Bloomberg, UBS Delta and Bank calculations.

(a) Monthly moving averages of daily bid-ask spreads.
(b) iBoxx € Corporates for corporate bonds; S&P 500 for equities; iBoxx € Sovereigns for government bonds; sterling-dollar exchange rate for currencies; gold price for commodities; and euro five-year swaps for interest rate swaps.
(c) Data to close of business on 14 June 2010.

declining bid-ask spreads (**Chart 3.4**). While still impaired, markets through which banks have traditionally redistributed risk — such as markets for asset-backed securities (ABS) and commercial mortgage-backed securities — were slowly improving (**Chart 1.11** in Section 1). And there were signs of a return in appetite for some more illiquid securities — for example, a collateralised loan obligation was issued in March 2010 for the first time in more than a year.

But in recent months, markets have increasingly focused on the strains placed on fiscal positions by recession and public sector support for banking systems. Market participants have questioned the ability of some countries to solve their fiscal problems in a timely and credible way. These concerns led to an increase in sovereign credit default swap (CDS) premia (**Table 2.A** in Section 2) and had knock-on effects to a broader class of private sector assets (**Chart 3.5**). There has been a withdrawal of risk capital from some financial markets and institutions.

...has resulted in market fragilities being re-exposed...

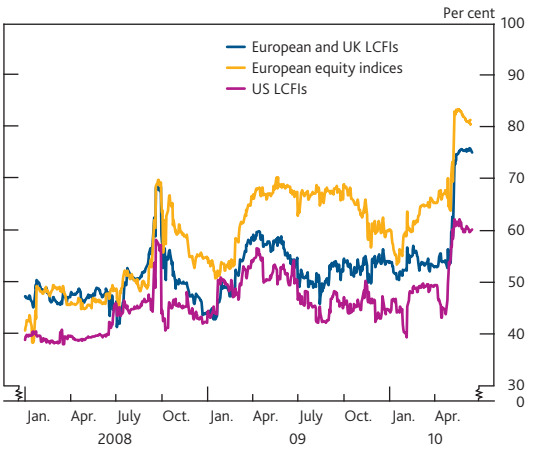
In late April and early May, government financing problems in Greece adversely affected sentiment in many other asset markets and countries. The yield spread of Greek government debt over German bunds increased markedly, with spillovers to sovereign debt markets in Portugal, Ireland, Spain and Italy (**Chart 3.6**). Increased market concerns about the possibility of a Greek sovereign debt restructuring severely restricted the access of Greek banks to wholesale funding markets.

Due to a lack of transparency on banks' sovereign debt exposures, concerns about counterparty credit risk led to dislocations in core funding markets. Although considerably lower than in Autumn 2008, Libor rates internationally rose and banks found it increasingly difficult to obtain funding at and beyond three-month maturities. Counterparty credit concerns were also reflected in an increasing amount of money being deposited with the ECB. In early June, banks deposited a record €350 billion overnight.

This episode highlighted the continued reliance of many European banks on short-term dollar funding to finance dollar-denominated assets. At the end of 2009, euro-area banks had dollar-denominated net international claims on non-bank borrowers of over US$200 billion (**Chart 3.7**). These dollar claims are normally funded by either borrowing dollars directly in the interbank market or by swapping local currency liabilities into dollars ('cross-currency funding').

Non-bank financial institutions are also an important source of dollar funding. The ten largest prime US money market mutual funds (MMMFs) provided European banks with approximately US$300 billion of short-term funding during 2009 (**Chart 3.8**) and the BIS estimates that MMMFs provide in total around one eighth of those euro-area banks' liabilities

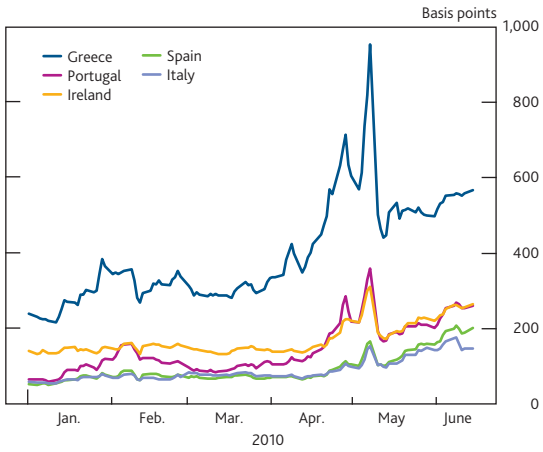
Chart 3.5 Comovements between equity returns and changes in sovereign CDS premia[a][b][c]



Sources: Bloomberg, Thomson Reuters Datastream and Bank calculations.

(a) Percentage of variation in daily equity price returns and daily changes in CDS premia explained by the first principal component over a three-month rolling window. Equity returns expressed in common currency terms.
(b) European equity indices include the CAC 40, DAX, FTSE MIB and IBEX 35, and sovereign CDS are of Greece, Ireland, Italy, Portugal and Spain.
(c) Data to close of business on 14 June 2010.

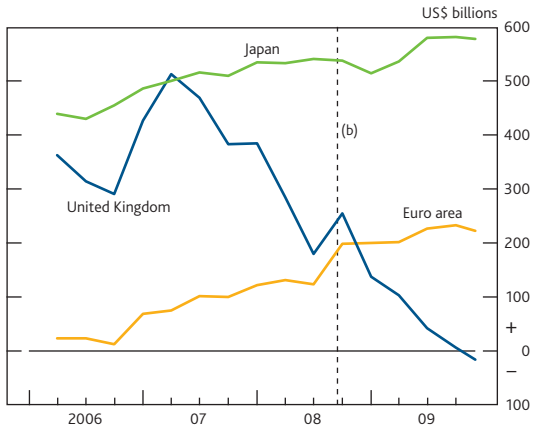
Chart 3.6 Selected government bond spreads[a][b]



Sources: Thomson Reuters Datastream and Bank calculations.

(a) Ten-year government bond spreads over German bunds.
(b) Data to close of business on 14 June 2010.

Chart 3.7 BIS reporting banks' net international claims[a] on non-banks in US dollars



Sources: BIS and Bank calculations.

(a) 'International claims' include cross-border claims and the local claims of banks' foreign affiliates in foreign currency.
(b) Lehman Brothers Holdings files for Chapter 11.

denominated in US dollars. The uncertainty about the outlook for European banks in late April led some US MMMFs to roll over maturing funding at shorter maturities and, in some cases, to stop rolling over completely. During May, new regulation came into effect, requiring funds to reduce the weighted average maturity of their portfolios. This may have further reduced the availability of MMMF deposits to euro-area banks. As following the collapse of Lehman Brothers, the withdrawal of MMMF funding increased pressures in dollar markets. The cross-currency basis swap market came under particular pressure — the level of the one-year euro-dollar basis swap rate reached -52 basis points on 7 May, falling 11 basis points in two days (**Chart 3.9**).

…eliciting an international policy response…

To alleviate funding pressures, some euro-area banks appeared to sell liquid assets, including equities. This contributed to declines of up to 10% in major equity indices during the first week of May. Asset price falls also appear to have triggered margin calls leading to repo-financed carry trades — in which funds are raised in one currency and invested in assets denominated in another — having to be unwound. Japanese yen, an important carry trade funding currency, appreciated by 3% on 7 May, one of the largest daily appreciations since October 2008.

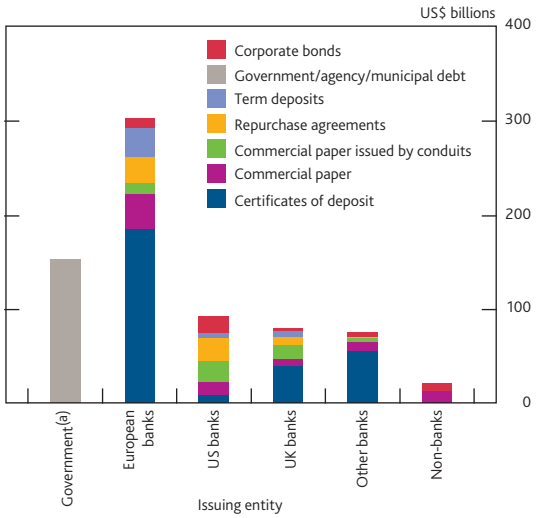
In response to deteriorating and broadening market disruption, authorities reacted internationally with a package of support measures. These measures appeared to stall the downward dynamics. But market uncertainty has remained high. Market participants continue to attach a high probability to Greece having to restructure its sovereign debt. And liquidity pressures in a number of financial markets and countries have persisted during June.

…and a redistribution of risk capital across the global financial system.

These events appear to have triggered a redistribution of risk capital across global financial markets. For most of the period since the December 2009 *Report*, there was a resumption of gross international capital flows, including large net private capital inflows into emerging market equity and debt funds (**Chart 3.10**). These flows were led predominantly by unleveraged investors, seeking higher-yielding assets from economies with stronger growth prospects. These investors do not rely on short-term money markets for funding and usually invest at longer horizons than leveraged investors.

But in recent months, as the risk appetite of unleveraged investors has reduced, some emerging market funds have experienced outflows. At the same time, capital has flowed away from riskier assets in the euro area into assets perceived as safe, particularly US Treasuries (**Chart 3.11**). The trade-weighted euro exchange rate index has depreciated substantially and in excess of the impact expected from

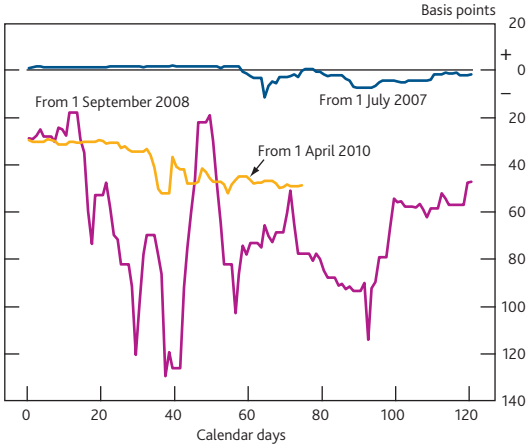
Chart 3.8 Assets held by top ten prime US money market mutual funds during 2009



Sources: SEC filings and Bank calculations.

(a) Includes agency and municipal issuers.

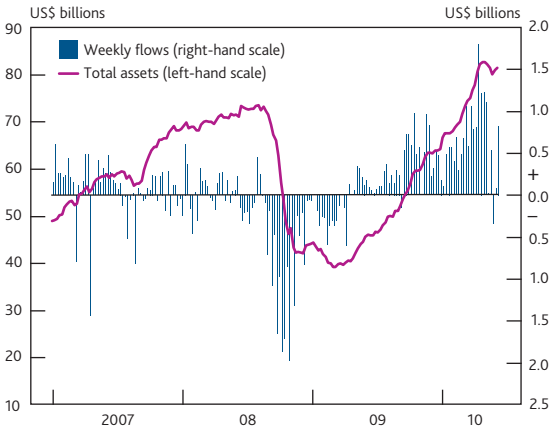
Chart 3.9 Euro-dollar basis swap rates(a)(b)



Sources: Bloomberg and Bank calculations.

(a) Additional rate over three-month Euribor to swap US dollars, which pay three-month dollar Libor, for euros for one year.
(b) Data to close of business on 14 June 2010.

Chart 3.10 Net inflows into emerging market debt mutual funds(a)(b)



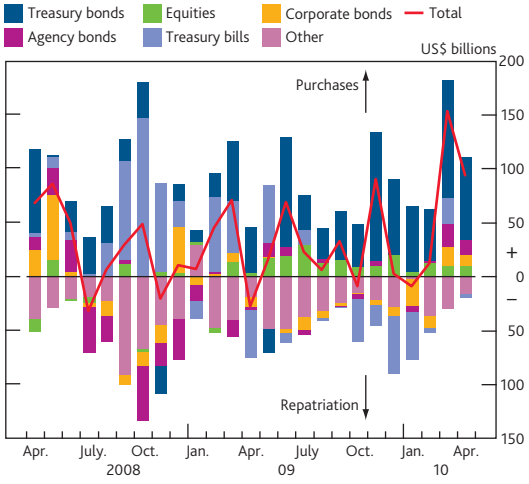
Source: Emerging Portfolio Fund Research.

(a) Flows into dedicated emerging market funds.
(b) Data to close of business on 9 June 2010.

changes in relative interest rates (**Chart 3.12**). This is consistent with a rise in the risk premium required to hold euro-denominated assets.

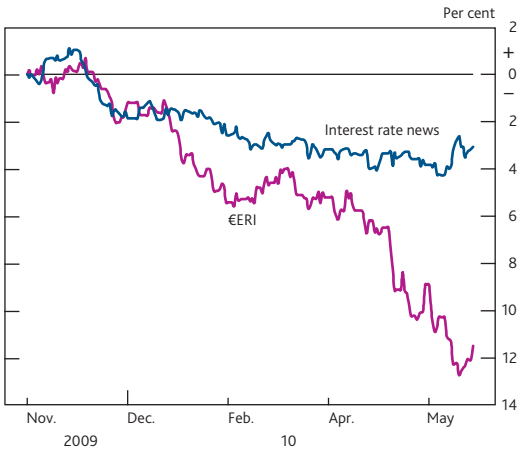
If sustained, the moderation of flows into emerging market funds could lower some of the risks associated with such inflows. But if they reverse, there is a risk of overheating and a rebuilding of global imbalances (see Box 3 on pages 26–27). The withdrawal of risk capital from euro-area assets carries its own risks. Euro weakness, combined with low growth in the euro area, is likely to lead to large current account surpluses in some European countries. This is likely to reduce the willingness of some surplus Asian countries to allow nominal appreciation of their currencies, thereby hindering global rebalancing. It exacerbates the risk of a two-speed global recovery, raising concerns over the exposures of UK banks to the weaker European economies (Section 2).

Chart 3.11 Foreign net purchases of US securities



Sources: Treasury International Capital (TIC) data reporting system US Treasury and Bank calculations.

Chart 3.12 €ERI and interest rate differentials(a)(b)



Sources: Bloomberg and Bank calculations.

(a) Interest rate 'news' is calculated from the uncovered interest parity (UIP) condition. Unanticipated movements in UK relative to international forward interest rate differentials are cumulated from the start point of 4 November 2009. For more information see Brigden, A, Martin, B and Salmon, C (1997), 'Decomposing exchange rate movements according to the uncovered interest rate parity condition', *Bank of England Quarterly Bulletin*, November, pages 377–89.
(b) Data to close of business on 14 June 2010.

Table 3.A Mark-to-market losses on selected financial assets[a][b]

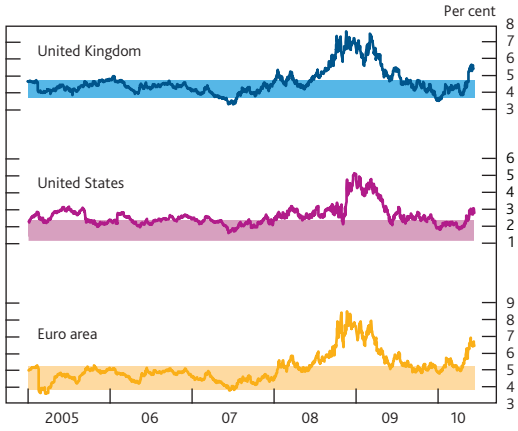
US$ trillions

	Outstanding amounts[c]	Mid-Mar. 2009[d]	Dec. 2009 *Report*[d]	End-Mar. 2010	June 2010 *Report*
Equities	35.3	20.2	5.9	4.6	7.7
Corporate bonds	15.4	2.0	-0.8	-1.0	-0.8
RMBS[e]	3.1	1.3	0.7	0.6	0.5
CDOs[f] and CLOs	0.7	0.5	0.3	0.3	0.3
CMBS	0.8	0.3	0.2	0.1	0.1
Memo: debt securities	19.9	4.1	0.4	-0.1	0.1
Total losses	–	**24.3**	**6.2**	**4.5**	**7.8**

Source: Bank calculations.

(a) Data to close of business on 14 June 2010.
(b) Estimated loss of market values 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.
(c) Outstanding face values, except for equities, which are market values.
(d) Updated to reflect new estimates of outstanding amounts since the December 2009 *Report*.
(e) 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.
(f) US high-grade and mezzanine home equity loan ABS CDOs.

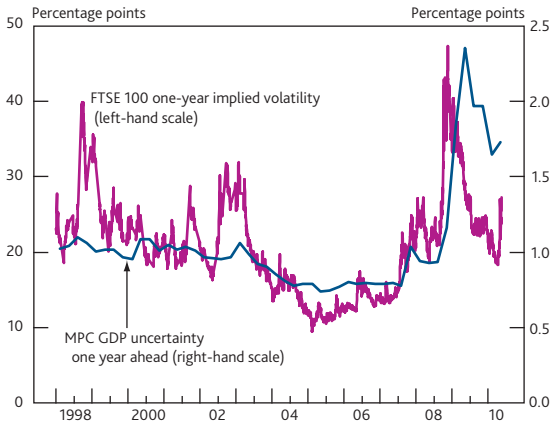
Chart 3.13 International equity risk premia[a]



Sources: Bloomberg, Thomson Reuters Datastream and Bank calculations.

(a) As implied by multi-stage dividend discount model. Shaded areas show interquartile ranges for implied risk premia since 1998 for United Kingdom, 1991 for United States and 2000 for euro area.

Chart 3.14 Market uncertainty measures



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

3.2 Sources of risk from the global financial system

Developments in global financial markets have important implications for the solvency and liquidity positions of UK banks, in particular through their trading and investment banking activities and through their reliance on wholesale funding markets. Through these channels, UK banks are at present exposed to three broad classes of risk:

- market risk through a fundamental reappraisal of asset valuations, or a sustained reversal in investor sentiment, adversely affecting risk pricing;
- business risk through the impact of reduced risk-taking, lower business activity and interest rate increases on financial market profits; and
- funding liquidity risk through reduced availability of funds in the interbank, swap and secured money markets arising from heightened sovereign risk concerns.

Asset valuations remain vulnerable to a fall in risk appetite…

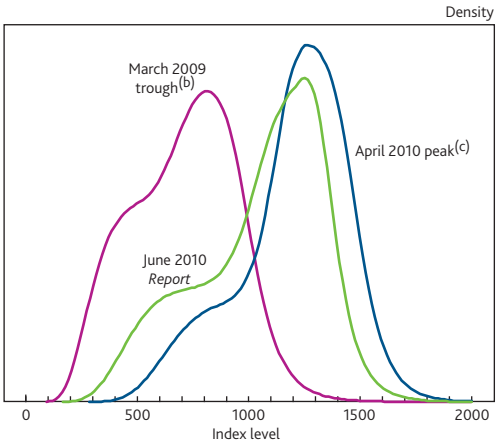
At end-2009, financial assets(1) and derivatives accounted for around 40% of UK banks' total assets. The sustained rise in risky asset prices since the trough of March 2009 has substantially reduced mark-to-market losses on a range of securities (**Table 3.A**). At their low point in March 2010, those mark-to-market losses had fallen to US$4.5 trillion from a peak of over US$24 trillion in March 2009. This has considerably improved the solvency position of holders of risky assets, including the major UK banks (Section 4).

But recent market developments have highlighted how quickly gains on traded assets can be reversed. Most equity indices now stand slightly below their end-of-year levels. And both investment and sub-investment grade corporate bond spreads have returned to December 2009 levels. In consequence, mark-to-market losses have risen to around US$8 trillion.

Valuation models provided little indication that equities or corporate bonds had become significantly overvalued. In March 2010, model-based estimates of equity risk premia looked to be within the ranges experienced over the course of the past two decades (**Chart 3.13**).(2) At the same time, market-based measures of uncertainty over equity prices decreased proportionately more than measures of uncertainty around economic activity during 2009 (**Chart 3.14**).

(1) Financial assets include: trading assets, assets held at fair value and available for sale financial investments.
(2) See Inkinen, M, Stringa, M and Voutsinou, K (2010), 'Interpreting equity price movements since the start of the financial crisis,' *Bank of England Quarterly Bulletin*, Vol. 50, No. 1, pages 24–33 for a discussion of the dividend discount model.

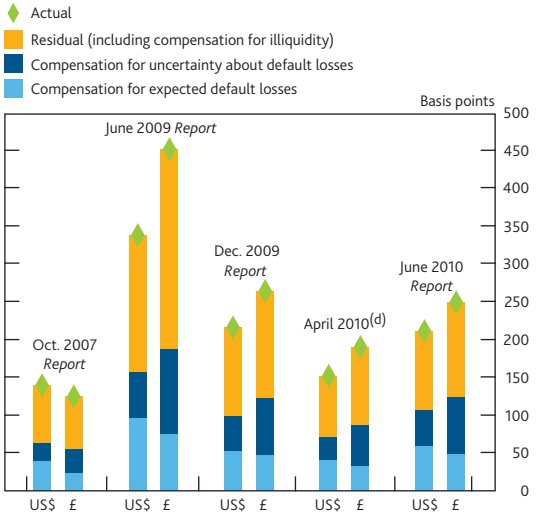
Chart 3.15 Market-implied probability distributions of S&P 500[a]



Sources: Chicago Mercantile Exchange and Bank calculations.

(a) One year ahead probability densities calculated using options data and assuming that investors are risk-neutral. For more details see Clews, R, Panigirtzoglou, N and Proudman, J (2000), 'Recent developments in extracting information from options markets', *Bank of England Quarterly Bulletin*, February, pages 50–60.
(b) Taken as 10 March 2009.
(c) Taken as 23 April 2010.

Chart 3.16 Decomposition of sterling and dollar investment-grade corporate bond spreads[a][b][c]



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

(a) Webber, L and Churm, R (2007), 'Decomposing corporate bond spreads', *Bank of England Quarterly Bulletin*, Vol. 47, No. 4, pages 533–41.
(b) Option-adjusted spreads over government bond yields.
(c) Data to close of business on 14 June 2010.
(d) Trough in spreads on 23 April 2010.

Falls in risk premia from their peak in March 2009 appeared to reflect reduced fears about tail outcomes for the real economy. But implied probability distributions for asset prices suggest that the market may now perceive a greater chance of a tail scenario (**Chart 3.15**), not least given the perceived constraints on government balance sheets. In corporate bond markets, this is reflected in an increase in the spread to compensate for uncertainty about future default losses (**Chart 3.16**). Model-based estimates of equity risk premia have also risen (**Chart 3.13**). If sovereign risk concerns rise or risk appetite continues to diminish, asset prices could fall further. This would have a significant impact on the solvency positions of holders of these assets, including both UK and global banks.

...with limited support provided by leveraged investors.
An increase in risk-taking by leveraged investors could provide one source of support for asset valuations, particularly in the event of declining risk appetite by unleveraged investors. Market contacts report that hedge fund leverage has recently picked up slightly. But it remains low relative to pre-crisis levels. And there are now fewer fixed-income and convertible arbitrage funds in existence that tended to have the highest leverage.

There are some tentative signs that particular sources of leverage may be re-emerging — for example, new UCITS hedge funds combining liquidity with leverage (Section 5). There may also be new sources of embedded leveraged activity in the system, including in the rapidly growing exchange-traded funds market (Box 5). While at present such innovations do not appear to be particularly widespread, they warrant watching going forward.

A significant source of leveraged risk-taking in the past came from the banking sector. Before the crisis, banks provided leverage not only through direct lending to households and companies but also through liquidity support to the shadow banking system, including structured investment vehicles, conduits and collateralised debt obligations. During the crisis, shadow banking activity collapsed while banks internationally reduced their own leverage through capital raising, retained earnings and, to a lesser extent, balance sheet reduction (**Chart 3.17**). At end-2009, median leverage of the US LCFIs[1] had fallen to 28 times, compared with 49 times at end-2008. Likewise, median leverage of the European LCFIs[2] was 31 times, compared with 51 times at end-2008. Results from 2010 Q1 suggest that deleveraging has stabilised at around current levels. But the concern is that risk-taking by leveraged investors may be too low to compensate for the loss of risk

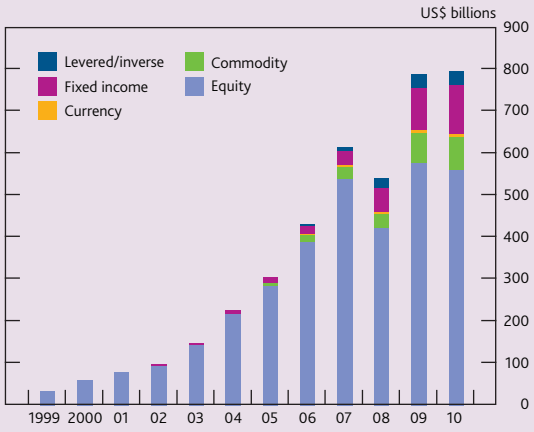
(1) US LCFIs are currently identified as Bank of America, Citigroup, Goldman Sachs, JPMorgan Chase & Co. and Morgan Stanley.
(2) European LCFIs are currently identified as BNP Paribas, Credit Suisse, Deutsche Bank, Société Générale and UBS.

Box 5
Exchange-traded funds

Exchange-traded funds (ETFs) are investment vehicles that provide exposure to pools of securities, often to an index. Investors can buy shares in funds through market makers who provide intraday liquidity in these shares. The ETF provider takes exposure to the underlying securities either through physical or swap-based investment. The provider can issue extra shares in the fund depending on investor demand. ETFs first appeared in the late 1980s, initially focused on equities, but have since branched out into commodities and fixed income investments.

ETF assets under management are reported to have grown rapidly in recent years and now exceed US$1 trillion, with around US$800 billion (**Chart A**) in US markets and over US$225 billion in Europe. Equity assets still dominate ETFs, but fixed income now accounts for over US$100 billion while commodity ETFs are more than US$75 billion.

Chart A Growth of US-listed ETF assets



Sources: Bloomberg, Goldman Sachs and Thomson Reuters Datastream.

In the United States, retail and institutional investors are the main investors and, perhaps more recently hedge funds, while in Europe it is institutional investors. In the United Kingdom, retail involvement is expected by some commentators to grow, as independent financial advisors are now permitted to recommend ETFs to clients.

Potential advantages of ETFs

ETFs can give a wider population of investors access to a wide range of instruments in a reasonably liquid form.

Many funds are low cost, have proved highly liquid so far and have tracked closely underlying indices. The broad range of funds available can sometimes make ETFs a more attractive hedging vehicle than futures, while their lower fees may help investors to achieve passive index returns at a lower cost than through traditional asset management products.

Potential risks to stability

While offering a number of benefits, ETFs also potentially bring some risks to the financial system, and these will need watching.

Intraday liquidity management

Market makers typically provide continuous intraday liquidity in ETFs so are exposed to changes in the value of the shares between trading with investors and closing out those positions with the fund. These exposures are hedged, often through high frequency trading, especially in equities. This hedging helps arbitrage price differences between the fund's share price and the underlying securities. Sizable deviations are possible where underlying securities are not highly liquid, however. Commodity ETFs are reported to be most prone to these deviations. And market makers are not obliged to make markets at all times, so may withdraw liquidity in volatile markets, exacerbating differences between the value of the fund and the underlying securities.

Leverage

ETFs offering leveraged returns represent only around 3% of the ETF market. But turnover is on average much higher than for funds offering unleveraged returns, with leveraged return funds accounting for around 20% of daily turnover according to contacts. Investors in ETFs offering leveraged returns include those not permitted to hold derivative positions in the underlying assets. The leverage offered may amplify dislocations between fund value and the underlying index. It is very important that this should be watched going forward. As in other areas, there would be potential for a basically good market to be undermined over time if it becomes dependent on leverage.

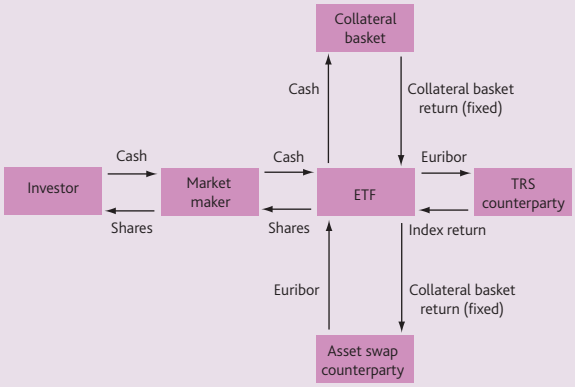
Securities lending

Physical ETF providers aim to replicate the returns of the underlying index by either purchasing the relevant securities or by using assets that are correlated with the index. Providers can then generate additional return through securities lending. Investors in the fund may benefit from such income through lower fees charged on the ETF, although the provider will often take a share. Some contacts have questioned the transparency over the securities lending part of some ETFs, including with regard to reinvestment guidelines and associated risks. One risk is that in the event of failure of the firm providing the ETF, the ETF investor could end up holding something other than the intended index exposure and possibly face liquidity constraints on exiting their investment. Given the unfortunate developments in the securities lending markets in the run up to the current crisis,(1) this should not be under emphasised.

Counterparty risks

Swap-based ETFs are more complex than physical funds, usually using total return swaps (TRS) to gain exposure to an index. The provider typically sells shares in the ETF for cash which is invested in a collateral basket containing securities of similar quality to those in the underlying index. The return on this basket of securities is then swapped for a floating rate which is then paid to the TRS counterparty against payments in line with the underlying index (**Chart B**).

Chart B Cash flows for a swap-based ETF



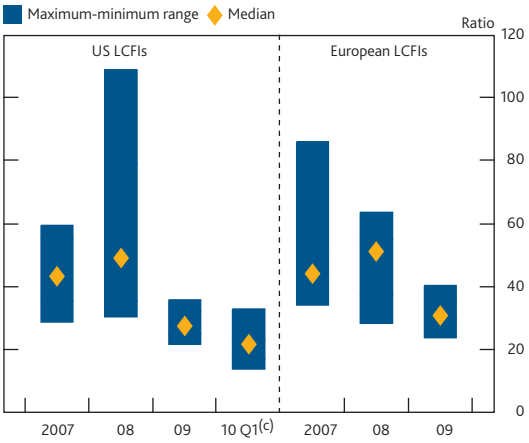
Swap-based funds would be expected to see lower transaction costs than physical funds, and according to some contacts, would expect to have smaller tracking errors. However, counterparty credit exposure is embedded in the funds through the various derivative transactions; and in complex ways.(2)

Conclusion

The growth of ETFs has been rapid and their use is broadening out across and within asset classes and new forms of the product are being offered. One risk is that the benefits of ETFs become outweighed by complexity, opacity and contingent risks. Swap-based ETFs have already come in for some criticism for their complexity, while a number of ETFs are not fully transparent about the risks arising from securities lending and counterparty risks from derivative exposures. It is important that the industry does not overreach when innovating in the ETF arena; the industry and regulators have an interest in the integrity and resilience of the market.

(1) See Tucker, P (2010), 'Shadow banking, financing markets and financial stability', available at www.bankofengland.co.uk/publications/speeches/2010/speech420.pdf.
(2) The SEC announced that it would evaluate the use of derivatives by exchange traded funds, see www.sec.gov/news/press/2010/2010-45.htm

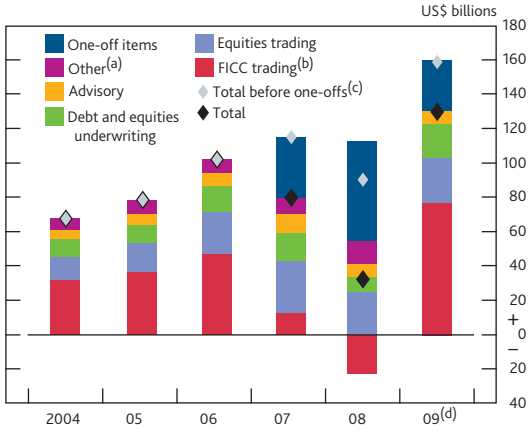
Chart 3.17 LCFIs' leverage[a][b]



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 until 31 December 2009. See footnote (c).
(b) Assets adjusted for cash items, deferred tax assets, 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, goodwill and intangibles.
(c) Revision to US GAAP accounting rules on consolidation.

Chart 3.18 Decomposition of US LCFIs' investment banking revenues



Sources: Published accounts and Bank calculations.

(a) Other includes prime brokerage and securities services.
(b) FICC includes fixed income, currency and commodities.
(c) Adjusted for write-downs and changes in fair value on FICC and equities trading revenues.
(d) Revenues adjusted to reflect change in reporting cycle for US securities houses.

Chart 3.19 Slope of the sterling yield curve[a]

Source: Bloomberg and Bank calculations.

(a) Spread between ten-year and two-year UK government bond yields. Chart shows only end-of-month data.
(b) Derived from the UK government bond forward yield curve.

appetite among unleveraged investors. In that event, financial market valuations may fall below fundamentals in some markets.

Low levels of activity may affect non-interest income…

In the run-up to the financial crisis, leverage became an important means of generating income for most international banks. Over recent quarters, institutions have been able to generate revenues from alternative sources that require lower leverage, such as market making. This involves more modest risk-taking, but is based on strong financial market activity, including by unleveraged investors. LCFIs benefited from buoyant trading revenues during 2009 and 2010 Q1, particularly in fixed income, currency and commodities trading (**Chart 3.18**).

It is not clear, however, that the recent strength in trading revenues is sustainable. Recent increases in market volatility have reduced trading and issuance activity, particularly in certain financial markets. An increase in market uncertainty could dampen other forms of investment banking activities, such as underwriting and advisory services. As discussed in Section 1, although corporate bond issuance picked up in 2009, issuance during 2010 has been more subdued. Equity issuance shows a similar picture. Given the importance of strong revenues from 'flow' trading and investment banking activities over the past 18 months, global LCFIs are vulnerable to the risk of these revenues subsiding at a time when banking books remain under pressure.

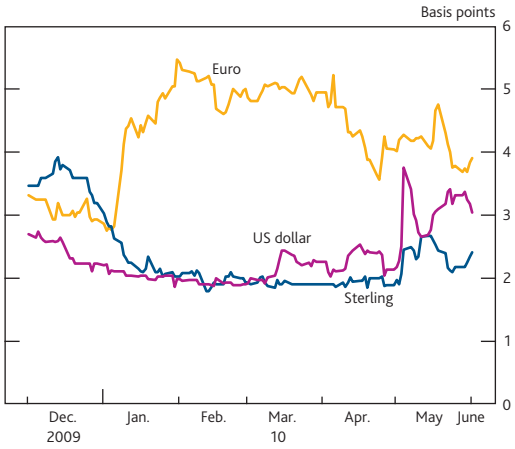
…alongside the prospect of a flattening yield curve.

In the current low interest rate environment, banks internationally are able to generate substantial interest income within their trading books through a carry trade on the yield curve, borrowing at low short-term interest rates and trading in assets that yield higher long-term rates. Over recent months, the slope of the sterling nominal yield curve has been at its highest level since the late 1970s (**Chart 3.19**). But market-implied forward rates point to a sharp flattening in the yield curve over the next one to five years. This could have a negative effect on trading profits and, for banks that are not fully hedged, on net interest margins in their banking books. Moreover, if the expected flattening were driven by higher short-term rates, that may coincide with higher credit risk for banks, as borrowers' debt-servicing costs rose (Section 2). It would also increase funding costs for those banks with funding concentrated at shorter maturities.

Funding conditions have become more fragile…

At end-2009, wholesale funding represented over a third of UK banks' total liabilities. Over the first quarter of 2010, greater confidence in institutions' resilience due to capital raising contributed to some recovery in bank funding markets (**Chart 1.11** in Section 1). But sovereign risk concerns have more recently led to deterioration in funding markets.

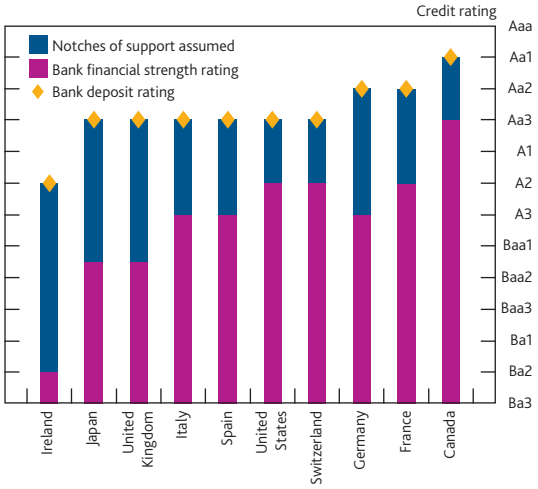
Chart 3.20 Deviation of three-month Libor submissions[a]



Sources: Bloomberg and Bank calculations.

(a) Average absolute deviation of submissions from Libor panel banks from Libor.

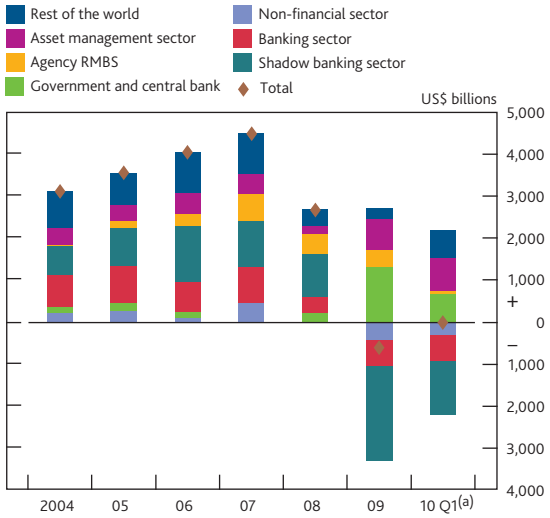
Chart 3.21 Standalone and support ratings for major banking systems[a]



Source: Moody's.

(a) Ratings are averages of individual bank ratings weighted by assets, as published in Moody's most recent *Banking System Outlook* for the relevant financial system.

Chart 3.22 Flow of lending in the United States



Sources: Federal Reserve and Bank calculations.

(a) 2010 Q1 data are seasonally adjusted and annualised.

In interbank markets, while short-term spreads are now close to pre-crisis levels, tiering across banks persists, particularly for euro-area banks. The extent of such tiering can be seen in the deviation of three-month Libor submissions — that is, the average absolute difference of individual submissions from the final fixing. This deviation had traditionally been around 1 basis point and increased only slightly prior to the collapse of Lehman Brothers. It then reached a maximum of 28 basis points in dollars, 13 basis points in euros and 11 basis points in sterling, before gradually narrowing throughout 2009. More recent data suggest that, although the deviation in sterling and dollar rates remains quite low at around 2 basis points, it increased sharply to over 5 basis points in euro rates (**Chart 3.20**). Tiering is desirable to the extent it signals that investors are rationally differentiating between banks. But it also illustrates that funding vulnerabilities persist for some institutions, heightening the challenge they face as they seek to refinance substantial private and government-supported funding (Section 4).

Banks' long-term credit ratings benefit from the implicit support given by governments. A broad-based rise in sovereign risk concerns would reduce the perceived value of such support to banking systems. This would tend to put downward pressure on banks' credit ratings. UK banks are among those vulnerable to these pressures. Moody's ratings suggest expectations of government support improve their bank ratings by up to five notches (**Chart 3.21**). A reduction in these support ratings could increase banks' costs of funding and hit growth prospects if banks were to attempt to preserve margins through a pull-back in bank lending.

…and there is little evidence of a return of alternative sources of funding.

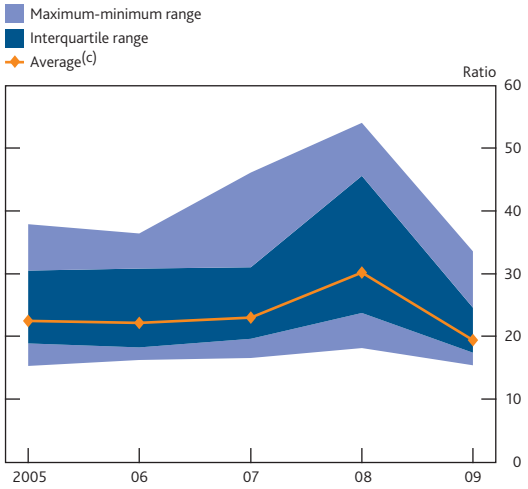
Pre-crisis, elements of the shadow banking system had become important contributors to global credit provision. This included MMMFs, government-sponsored entities, non-agency ABS, finance companies, real estate investment trusts, securities brokers and dealers and funding corporations. In the United States, shadow banks provided around a quarter of total lending.

Many of these sources of finance were severely affected by the crisis and they remain fragile. Shadow banks, including non-agency ABS, have become a much-reduced source of lending to the real economy (**Chart 3.22**). The shadow banking system remains an important funding vehicle for banks, but such finance can be unstable. As demonstrated by recent events, any unexpected deterioration in the outlook for banks could lead US MMMFs to stop rolling over funding. This intensifies the challenge banks face internationally to tackle current funding issues.

4 The resilience of UK banks

UK banks' resilience has continued to improve since the December 2009 *Report*. Leverage has fallen and the quantity and quality of liquid assets and capital has improved. But UK banks' profitability remains constrained. Loan impairments remain at elevated levels and credit quality sensitive to the economic outlook. Trading revenues recovered strongly in 2009, but may be less buoyant in the future. And the need to refinance maturing funding and to extend funding maturities remain key challenges. There is a risk that, in aggregate, banks' funding plans make optimistic assumptions about system-wide deposit growth and envisage reductions in lending that suggest tight credit conditions. Increased efforts to retain higher capital, by limiting discretionary distributions to shareholders and staff while profits are stronger, would help banks to build resilience and prepare for Basel III while sustaining lending to companies and households.

Chart 4.1 Major UK banks' leverage ratio[a][b]



Sources: Published accounts and Bank calculations.

(a) Gross leverage is calculated as total assets divided by total equity. Total reserves are used as total equity where appropriate.
(b) Excludes Northern Rock.
(c) Asset weighted.

The previous two sections discussed the challenges facing the UK banks in the present fragile environment. This section discusses the longer-term challenges they face in building capital to sustain resilience and lending, while replacing and extending the term of maturing debt. Like their overseas counterparts, the major UK banks have faced a more challenging environment in recent weeks. But their success in continuing to obtain finance, albeit generally at shorter maturities, suggests that they are generally more robust than six months ago.

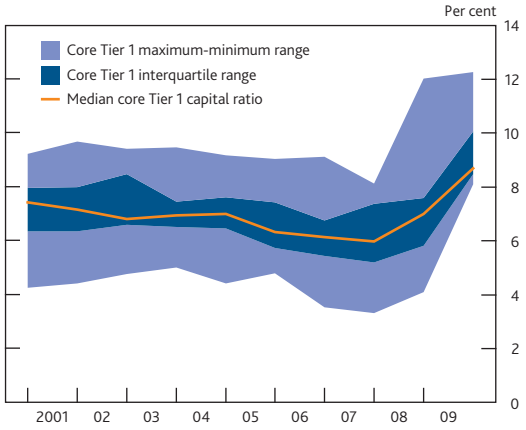
Leverage continues to fall…

The average leverage ratio of the major UK banks[1] fell further in 2009 H2, with assets now around 19 times capital, down from 30 times at the end of 2008 (**Chart 4.1**). The dispersion of leverage also continued to decline, with most banks in a narrow band around 20 times capital. As noted in Section 3, this is a global phenomenon, with similarly large falls at the US and continental European LCFIs over the period.

Accounting for derivatives positions on a gross basis — which best captures the risks around the associated counterparty exposures — the reduction in UK banks' leverage has been the result of an increase in capital and a reduction in assets in roughly equal measure, with a fall in intrafinancial sector

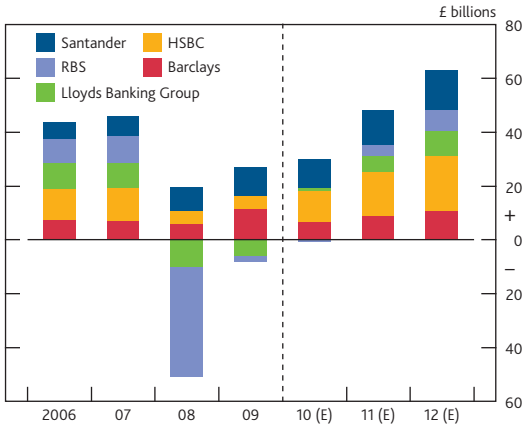
(1) Membership of the major UK banks peer group is based on the provision of customer services in the United Kingdom, regardless of the country of ownership. The following financial groups, in alphabetical order, are currently members: Banco Santander, Bank of Ireland, Barclays, Co-operative Financial 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 4.2 Major UK banks' core Tier 1 capital ratios



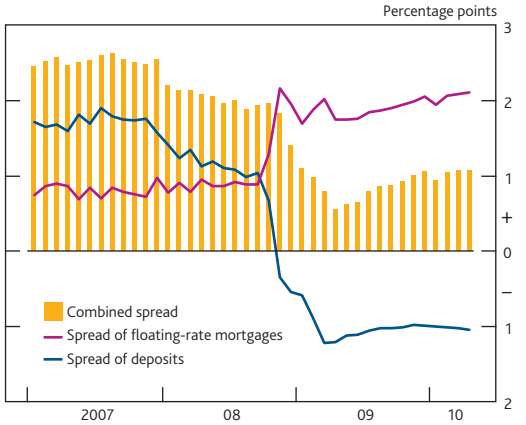
Sources: Published accounts and Bank calculations.

Chart 4.3 Major UK banks' profits and consensus profit forecasts



Sources: 2006 to 2009 data are from published accounts. 2010 to 2012 are Bloomberg consensus forecasts.

Chart 4.4 Major UK banks' spreads on floating-rate mortgages and deposits[a][b]



Sources: Bank of England and Bank calculations.

(a) Excludes Bank of Ireland. Includes Britannia and Nationwide from 2008.
(b) Spreads calculated as effective stock mortgage rate less monthly average of Bank Rate; and monthly average of Bank Rate less effective rate on sight (excluding non-interest bearing) and time deposits.

exposures (including derivatives) accounting for around three quarters of the latter.

…as more capital is raised.

Over the course of 2009, major UK banks increased core Tier 1 ('CT1') capital by £71 billion (net of impairments and trading losses). They now hold £273 billion of core capital against unexpected losses. This has increased the sector's CT1 ratio from 6.3% to 9.2% from end-2008 to end-2009. The majority of capital issuance was raised via public and private issuance and by debt conversion. The quality of capital also improved, with the CT1 share of total capital rising from 47% to 61%. This is a strong capital platform.

Among the major UK banks, there remains a considerable range of CT1 ratios (**Chart 4.2**). Close to 40% of lending to UK households and corporates by the major UK banks is currently provided by banks in the bottom quartile of the distribution of CT1 capital. That suggests future lending growth is vulnerable to capital constraints at the less well-capitalised banks.

But impairments largely offset rising profits.

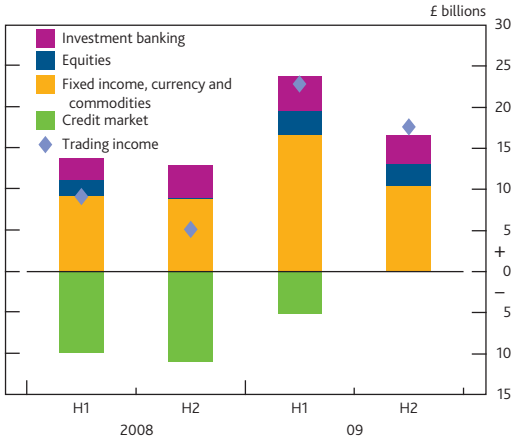
UK bank profitability recovered in 2009. The median UK bank's return on equity rose from 0.5% to 2.5%. Overall, revenues were 30% higher in 2009 than in 2008. Results were, however, heavily tiered between profitable and loss-making banks (**Chart 4.3**).

Profits from traditional banking activities, such as lending, were subdued. Average net interest margins remain compressed. This was particularly true for banks whose business is focused on UK lending. While spreads on new UK lending have increased, the repricing of existing loans has not yet been completed. This leaves banks with a stock of assets paying low interest rates. Competition for deposits has also pushed funding costs up significantly, so margins remain tight (**Chart 4.4**).

Set against that, non-interest income was significantly higher in 2009 than in 2008, driven by buoyant fixed-income, currency and commodities activity, as markets rallied. Trading revenues contributed almost £40 billion to full-year revenues — an increase of £26 billion (**Chart 4.5**).

Supporting the increase in revenues, write-downs on credit market instruments held in the four largest UK banks' trading books fell from £20 billion in 2008 to £9 billion in 2009. In 2009 H2, they totalled just £2 billion (**Chart 4.6**). Overall, the largest four UK banks' exposures to credit market instruments fell by 21% to £207 billion during 2009 (**Chart 4.7**). This suggests that the future threat posed by write-downs on those exposures has diminished. More broadly, non-derivative assets held at fair value reduced from seven times to five times CT1 capital during 2009. In part, this reflects the reclassification of

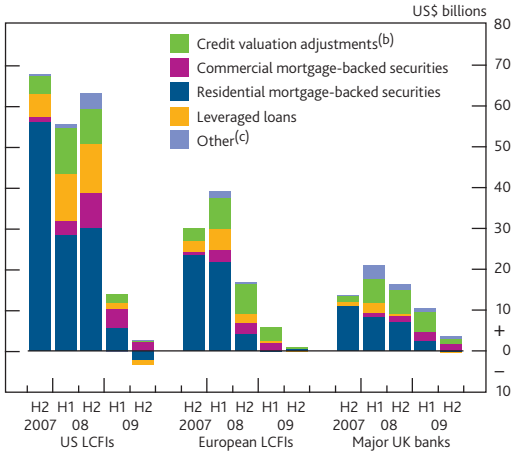
Chart 4.5 Major UK banks'[a] trading revenues



Source: Published accounts.

(a) Chart shows data for a subset of the major UK banks peer group — Banco Santander, Barclays, HSBC and RBS.

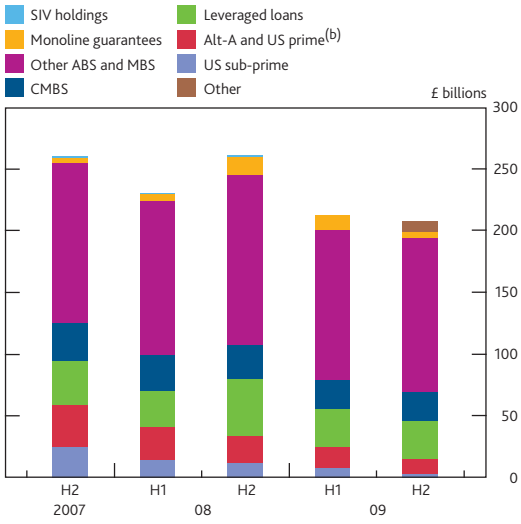
Chart 4.6 Major UK banks' and LCFIs' write-downs[a]



Sources: Published accounts and Bank calculations.

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

Chart 4.7 Major UK banks' net credit market exposures[a]



Sources: Published accounts and Bank calculations.

(a) Includes banking book and trading book exposures.
(b) Includes private label RMBS only. RMBS issued by government-sponsored entities is included in 'Other ABS and MBS'.

over £65 billion of assets from trading to banking book between 2008 and 2009. It suggests that UK banks' capital ratios are now less vulnerable than they were, but are certainly not immune to short-term fluctuations in market prices.

Despite this, UK banks' pre-tax, pre-provision profits of £98 billion in 2009 (versus £37 billion in 2008) were largely offset by loan impairments (**Chart 4.8**). Impairment charges were £80 billion in 2009, up from £52 billion in 2008. This offset three quarters of pre-provision profits and reached an historic high as a proportion of net interest income. This meant that only a small share (£2.6 billion) of the increase in capital during 2009 came through profit retention.

Assets were reduced further.

Between 2008 and 2009 H2, major UK banks' assets fell by £1.9 trillion, to £7.4 trillion (**Chart 4.9**). Three quarters (£1.4 trillion) of the fall reflected a reduction in derivatives portfolios. Overall, exposures within the financial sector (derivatives exposures, loans to banks and holdings of securities) declined by £1.6 trillion. Customer lending was also reduced. UK bank lending to non-UK customers fell by £270 billion (14%) and to UK PNFCs and households by £34 billion (3%). Foreign banks' cross-border lending to the United Kingdom also fell by 11% (or US$557 billion) between 2008 Q4 and 2009 Q4 (see Section 1). This reflected a generalised scaling back of cross-border credit provision by internationally active banks. This global retrenchment means that economies, including the United Kingdom, are highly dependent on the stability of their home institutions for the provision of credit.

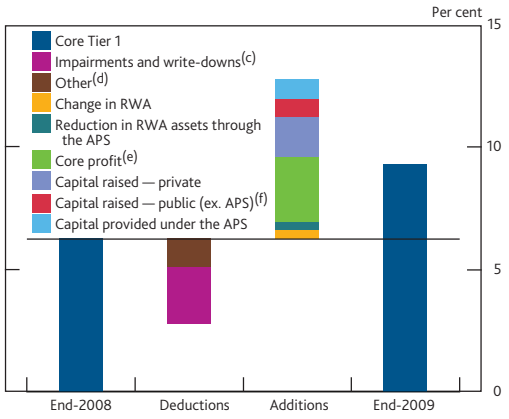
There was a slight improvement in funding structures…

UK banks have reduced their dependence on wholesale markets for funding. The UK banks' customer funding gap fell to £475 billion at end-2009, close to its 2005 level and a fall of over £360 billion from its peak in 2008 H2. Just 15% of customer loans are now funded through the wholesale markets, a level not seen since 2003 (**Chart 4.10**).

A customer funding gap is less of a concern to the extent that it is funded from long-term and stable wholesale funding sources. But there has been little improvement on this front over the past year. Banks remain heavy users of short-term funding: 60% of wholesale funding has a maturity of less than a year, 44% of less than three months (**Chart 4.11**). This maturity structure leaves banks vulnerable to refinancing risk driven by changes in market sentiment, as seen recently.

The major UK banks have increased their holdings of liquid assets, such as high-quality government bonds and central bank reserves, from around £175 billion to around £425 billion over the course of 2009. A significant proportion reflects the impact of Bank of England intervention. Much of the remainder was financed through the Bank's Special Liquidity

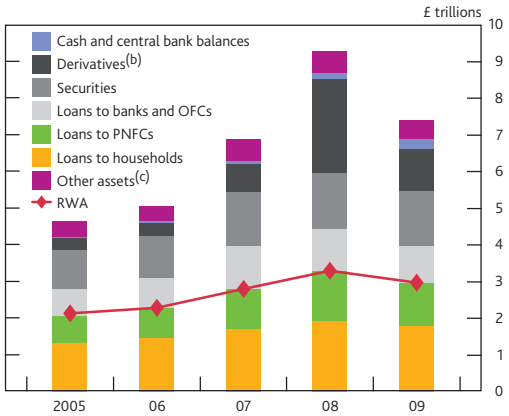
Chart 4.8 Major UK banks' core Tier 1 capital ratios in 2009[a][b]



Sources: Published accounts and Bank calculations.

(a) Additions and end-2009 figure include significant completed or announced capital raisings, asset disposals and buybacks/exchanges since end-2009.
(b) Average core Tier 1 capital, defined as common shareholders' equity adjusted for goodwill and intangibles and regulatory reductions. Excludes contingent capital.
(c) Includes banking book impairments, trading book write-downs and other adjustments.
(d) Negative contribution to core Tier 1 reflects currency movements, dividends, taxes, and other movements in reserves.
(e) Based on pre-provision profit before trading book write-downs.
(f) Includes Lloyds Banking Groups' capital raising during the acquisition of HBOS in January 2009 and the public sector share in Lloyds' rights issue in November–December 2009.

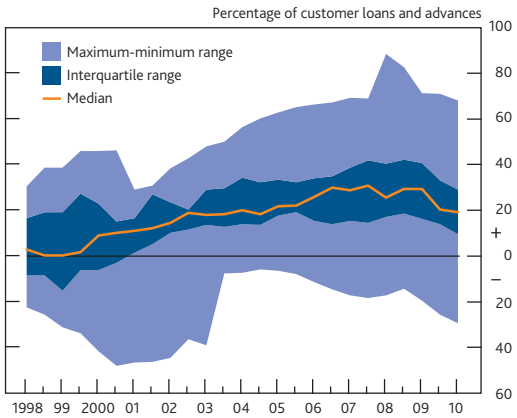
Chart 4.9 Major UK banks' total assets[a]



Sources: Published accounts and Bank calculations.

(a) Assets converted at year-end exchange rates.
(b) Derivatives are presented on a gross basis.
(c) Includes intangible property, investment and tax assets.

Chart 4.10 Major UK banks' customer funding gap[a]



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.

Scheme (SLS) and HM Treasury's Credit Guarantee Scheme (CGS) and will need to be refinanced as these facilities are withdrawn.

…to which markets initially responded favourably.

Short-term funding markets were, until recently, relatively calm. Market intelligence suggested that unsecured funding was beginning to extend beyond the six-month horizon. The major UK banks continued to access term debt markets. Investor perceptions of an improvement in UK banks' resilience were reflected in a rise in bank equity prices (**Chart 4.12**) and a fall in CDS premia over the course of 2009 and the first quarter of 2010. UK banks have taken advantage of this, including through issuance of around £41 billion of senior debt and medium-term notes in 2010 to date, as well as £22 billion of covered bonds and RMBS.

More recently, however, funding conditions deteriorated significantly. As concerns over sovereign risk surfaced, UK banks' CDS spreads widened, their funding spreads over Libor increased and the maturity of their wholesale financing contracted. There was negligible issuance of senior term debt in May, although June has seen a modest recovery.

The challenges ahead are little changed.

Looking ahead, the challenges facing the UK banks remain much the same as those identified in the December 2009 *Report*. They need to build capital through issuance and retention of profits to maintain resilience, while sustaining the supply of credit to support the recovery. And they need to refinance the significant concentration of funding falling due over the coming years, while reducing reliance on, and extending the term of, their wholesale funding. There remain a number of potential headwinds to the achievement of those objectives.

Income is constrained…

Taken as a whole, banks' margins remain under pressure (**Chart 4.4**). As discussed in Section 1, competition for retail deposits has pushed up spreads over Bank Rate. Margins are likely to remain depressed as long as interest rates remain low and demand for credit constrained. The impact of low margins has been particularly pronounced on the building society sector (see Box 6).

UK banks, like their counterparts overseas, have relied heavily on non-interest income, and particularly on income derived from activities in the fixed-income markets, to support earnings. As discussed in Section 3, this may not prove sustainable, particularly if market volatility or heightened economic uncertainty reduce activity levels in financial markets.

Box 6
The building society sector

The building society sector has assets of £314 billion. It accounts for 15% of the stock of the UK mortgage market, and 20% of the retail deposit market. Taken as a whole, the sector's resilience matters for the provision of financial services to the UK economy. It also plays a role in maintaining a competitive and diverse banking sector. Average core Tier 1 capital ratios in the sector of 15% at end-2009 provide societies with a buffer against shocks. But they have limited options for replenishing capital in the event of balance sheet stress. This box discusses challenges to the sector and highlights actions that might improve resilience.

Structural and cyclical vulnerabilities

The capital structure of building societies is different from that of banks. As mutual organisations, societies are owned by members rather than by external shareholders. But as depositors, member shareholders benefit from depositor protection and so face little risk of loss.

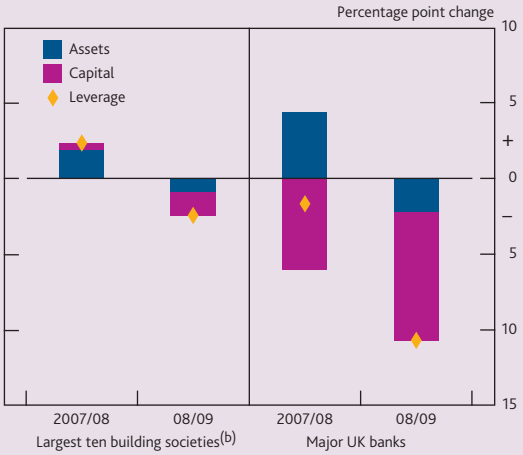
Each member has one vote, regardless of how much they have invested. This dilutes the incentive for larger investors to monitor management and makes it hard for active shareholders to exert any influence. Wholesale creditors' incentive to exercise market discipline on management is also diminished because, unlike in banks, they rank above retail depositors in the capital structure.

In a number of cases, the incentives created by this capital structure seem to have resulted in societies taking risks without appropriate controls being in place. For example, in the run-up to the crisis several societies expanded into risky lending activities, such as commercial property and sub-prime lending, without understanding the risks involved and holding too little capital to cope with the resulting losses.

Such behaviour was not exclusive to building societies. But societies' mutual structure means that their options for replenishing core Tier 1 capital are very limited in the event of balance sheet stress. They lack a viable core Tier 1 capital instrument: demand for equity-like capital issued by non-profit maximising firms will inevitably be limited. Work is under way within the sector to try to design an instrument. In the meantime, however, societies are reliant, to a much higher degree than banks, on retained earnings. This is an inflexible form of capital at times of stress, as it takes time to accumulate. Partly as a consequence, societies have found it harder to reduce leverage than the major UK banks (**Chart A**).

Cyclical challenges have put further downward pressure on building societies' earnings during the course of the crisis. Interest income accounts for over 70% of the sector's earnings. The low interest rate environment has squeezed interest margins, an effect exacerbated, in some cases, by contractual limits on societies' ability to raise interest rates on existing loans. This has eaten into building societies' profitability (**Chart B**).

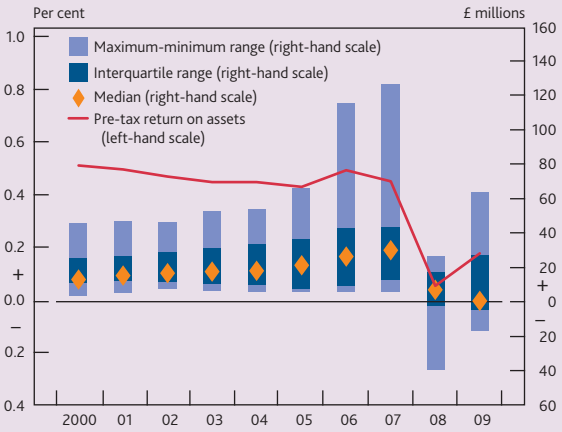
Chart A Changes in UK bank and building society leverage[a]



Sources: Published accounts and Bank calculations.

(a) See footnotes (a) and (b) in **Chart 3.17**.
(b) Largest ten building societies as at April 2010 excluding Nationwide, measured by balance sheet size.

Chart B Largest ten building societies'[a] pre-tax profits



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

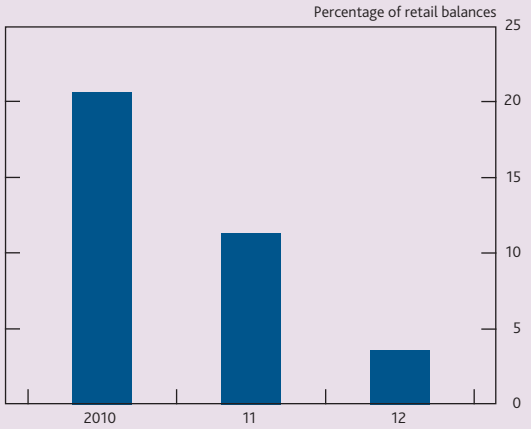
(a) Largest ten building societies as at April 2010 excluding Nationwide, measured by balance sheet size.

Societies depend less heavily on wholesale markets for funding than banks, and have further reduced their reliance in recent months. Nevertheless, in 2009, rising impairments and credit rating downgrades caused creditors to reassess building society risk, cutting credit lines and/or demanding higher rates of return. This raised the cost of wholesale funding for building societies.

Pressures on margins are likely to persist so long as interest rates remain low. In addition, like the banks, the sector faces a

refinancing challenge (**Chart C**). In 2010 the sector (excluding Nationwide) needs to refinance £22 billion of fixed-rate bonds, around 16% of total liabilities. Banks are competing intensively for retail deposits so it is possible that the building society sector will either face further pressure on profits or need to reduce balance sheet size, tightening credit conditions. Most societies have already cut back on lending sharply: net lending flows by building societies to households fell by 61% in 2008 and were negative throughout 2009.

Chart C Fixed-rate retail bond maturities[a][b]



Sources: FSA and Bank calculations.

(a) Excludes Nationwide.
(b) Percentage figures represent cumulative refinancing requirements each year as a percentage of end-2009 retail balances.

What might improve the resilience of the sector?

There are a number of measures that societies could take to improve their resilience and provision of financial services to the UK economy.

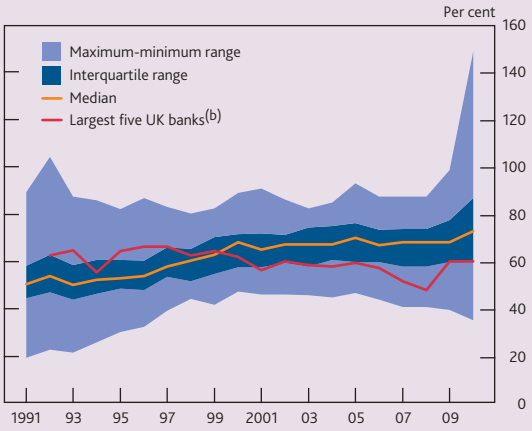
1. Capital retention. The sector needs to continue to work on the design of other viable core Tier 1 capital instruments. In their absence societies will need to continue to build up retained earnings. Given the rigidity of their capital structure and the incentives created by their governance structure, societies should be required to hold higher levels of capital and/or face tighter limits on the range of activities they can undertake than banks.

2. Strengthened governance. Eliminating wholesale creditors' preferential status, by implementing the relevant provisions of the Building Societies (Funding) and Mutual Societies (Transfers) Act 2007, could help to reinforce market discipline on societies' management. The Walker Review identified a number of other lessons which could be applied in tackling shortcomings in building society governance.(1) The previous Government's *Pre-Budget Report 2009* proposed a new governance code for building societies and other financial mutuals.

3. Use of pooled securitisation for funding. One means by which societies could, in principle, diversify funding sources is through further RMBS or covered bond issuance. For smaller societies, however, this may require collective action through the use of pooled funding vehicles to achieve the scale required for marketable issuance. Any such vehicle would need to be bankruptcy remote to prevent contagion in the event of default.

4. Cost efficiency. The sector has traditionally had a high cost base (**Chart D**), partly reflecting high customer service but in some cases weaker cost control. In 2009, the sector's average cost to income ratio was 73% compared with the average for the larger UK banks of 61%. The stronger societies have tended to be those that maintain cost-income ratios below 50%. There may be scope for societies to contain costs through increased co-operation, for example by sharing back-office services.(2)

Chart D Building societies' cost to income ratios[a]



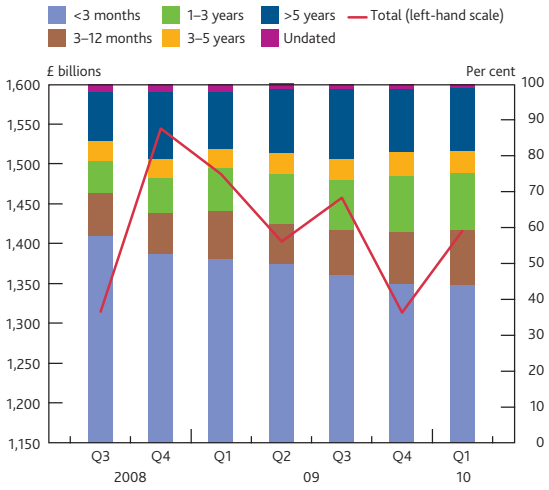
Sources: Capital IQ, KPMG Building Societies Database, published accounts and Bank calculations.

(a) Non-interest expense over revenues.
(b) As measured by total assets at 2009 H2. Chart shows data for a subset of the major UK banks peer group — Barclays, HSBC, Lloyds Banking Group, RBS and Santander.

5. Consolidation. This offers another means of achieving lower costs through economies of scale. In 1990, there were 101 building societies. This number had fallen to 67 by 2000 and there are now just 50. In the long term, it is possible the industry could coalesce around a small number of stronger, larger societies. But in the near term cyclical pressures and the fact that most large societies have recently been involved in mergers are likely to limit the scope for further consolidation somewhat.

(1) Walker, D (2009), *A review of corporate governance in UK banks and other financial industry entities*.
(2) Precedents for co-operation exist with Mutual One, Newcastle Intermediary Services and Yorkshire Key Services.

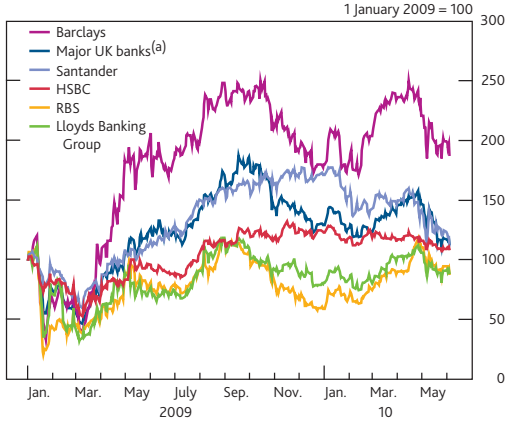
Chart 4.11 Term structure of major UK banks' wholesale funding[a]



Sources: FSA regulatory returns and Bank calculations.

(a) Chart shows data for a subset of the major UK banks peer group — Banco Santander (Santander UK only), Barclays, HSBC, Lloyds Banking Group, National Australia Bank (Clydesdale only) and RBS. Includes bank deposits, OFC deposits, debt securities and subordinated liabilities. Excludes repos.

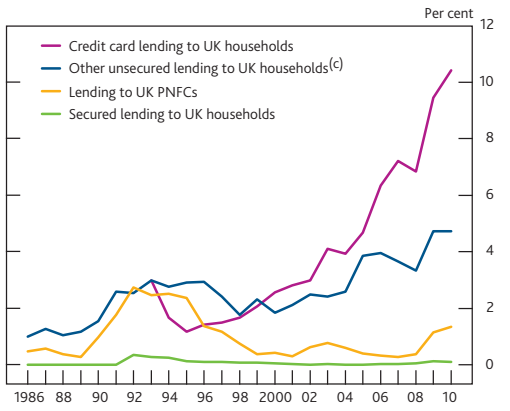
Chart 4.12 Major UK banks' equity prices



Sources: Bloomberg, Thomson Reuters Datastream and Bank calculations.

(a) Series represents an average of the entire major UK banks peer group.

Chart 4.13 UK banks' and building societies' annual write-off rates[a][b]



Sources: Bank of England and Bank calculations.

(a) Building societies are included from 2008 onwards.
(b) Write-offs of unsecured lending to UK households and lending to UK PNFCs series were estimated from 1986–92, and for secured lending to UK households from 1992–96. See Cattermole, A (2004), 'UK banks' write-offs of bad debt', Bank of England Monetary and Financial Statistics.
(c) Prior to 1992, all write-offs to individuals were allocated to 'other unsecured lending'.

…and impairments remain a headwind to profitability.

Non-performing loans (NPLs) amount to two thirds of banks' CT1 capital. Write-off rates are high and continue to rise (**Chart 4.13**). There is substantial tiering across institutions: the range in NPLs between the strongest and weakest bank is around 140 percentage points of CT1 capital. At an aggregate level, UK banks' coverage ratio — provisions relative to NPLs — fell from 60% in 2008 to 54% in 2009. The December 2009 *Report* highlighted how UK banks' coverage ratios are systematically lower than their continental European or US counterparts. Most banks believe that the level of impairments has peaked, but that it will remain at around the current high level for at least the remainder of 2010. Impaired assets are likely to continue to act as a brake on profitability (**Chart 4.14**).

Although banks are well placed to absorb further losses…

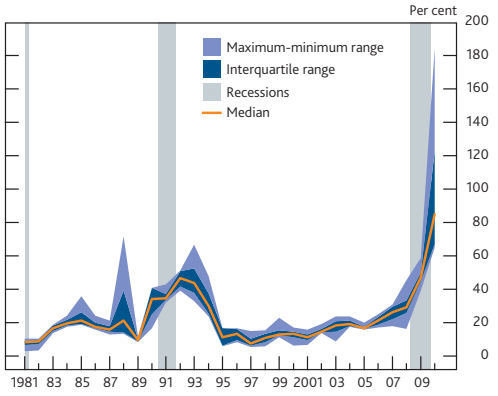
Impairments and write-downs seem unlikely, of themselves, to threaten major UK banks' solvency. Ignoring future profits (on the upside) and the impact of new lending and impairments (on the downside), UK banks currently hold enough capital to be able to sustain over £150 billion of further losses, while remaining above the FSA's current 4% CT1 minimum. That compares with the £175 billion of banking book provisions and trading book write-downs over the crisis to date. Stress tests undertaken in 2008–09 subjected UK banks to a scenario with a severe and prolonged recession, high unemployment rates, and substantial house and commercial property price falls.[1] This provides some assurance that UK banks should be adequately capitalised against plausible downside risks in the current environment, although not necessarily against a conflagration of risk associated with a collapse of confidence in sovereign debt solvency around the world. More recently, the Committee of European Banking Supervisors has undertaken an EU wide macroeconomic stress-testing exercise with major EU banks. The results of this exercise will be released in July.

…replacing maturing funding remains a substantial challenge.

The December 2009 *Report* highlighted the refinancing challenge the major UK banks face over coming years. They are estimated to have around £480 billion of unsecured senior debt, subordinated debt, covered bonds and securitisations maturing or callable over the period to end 2012 (**Chart 4.15**). The withdrawal of extraordinary public support means that over the same period £165 billion of high-quality collateral supplied under the SLS will be repaid.[2] All of the £120 billion in remaining guarantees issued under the CGS will also expire, but banks have the option to roll over up to one third of their

(1) The scenario featured a peak to trough fall in GDP of 6.9%, a rise in unemployment to a peak of 12.5%, a peak to trough fall in residential property prices of 50%, and in commercial property prices of 60%. See FSA, *Financial Risk Outlook 2010*, pages 22–24.
(2) See Bank of England *Annual Report*, page 17.

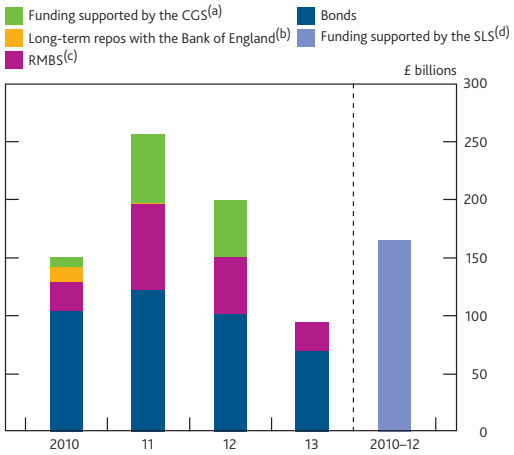
Chart 4.14 Major UK banks' impairment charges as a percentage of net interest income[a]



Sources: ONS, published accounts and Bank calculations.

(a) Chart shows data for a subset of the major UK banks peer group — Barclays, HSBC (from 1993), Lloyds TSB (until 2008), Lloyds Banking Group (2009), Midland (until 1992), Natwest (until 1999) and RBS (from 2000).

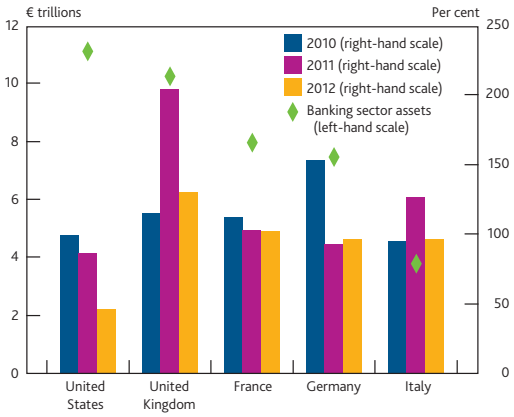
Chart 4.15 Major UK banks' maturing funding



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

(a) Based on publicly known issuance for the major UK banks from the DMO's list of liabilities guaranteed under the scheme.
(b) Allocation of long-term repos across all counterparties accessing the scheme.
(c) Shows the date at which markets expect the residential mortgage-backed securities to be called. Excludes Britannia, Co-operative Financial Services and HSBC.
(d) Shows the total SLS drawings for all 32 counterparties as per the Bank of England's *Annual Report* from 2 June 2010.

Chart 4.16 Banking system refinancing requirements[a]



Sources: Bank of England, Dealogic, ECB, FDIC, Fitch, SoFFin, UK DMO and Bank calculations.

(a) Calculated as a percentage of average issuance between 2005 and 2007. Only senior unsecured debt, subordinated debt, covered bonds, RMBS (public and retained) and official sector support (government-guaranteed debt issuance and asset swap facilities) have been included in the calculations. RMBS issued in the United States and EU have been assumed to mature, on average, around four and five years respectively, following origination. Only issuance to end-2009 is included in calculations.

initial limit of CGS drawings (as fixed at the inception of the scheme) until April 2014.(1)

This means that the major UK banks will need to refinance or replace around £750 billion to £800 billion of term funding and liquid assets by end-2012.(2) On a straight-line basis, that would imply over £25 billion would need to be raised every month for the next two and a half years. This is significantly ahead of the £12 billion average monthly public issuance so far this year, or the monthly run-rate between 2001 and 2007 (around £15 billion).

UK banks are not alone in facing a significant refinancing challenge. Global banks(3) are estimated to have around US$5 trillion of medium to long-term funding maturing over the next three years, with the Italian, French and German banking systems facing large maturities relative to historic issuance (**Chart 4.16**). Issuance this year has been relatively lower in the United States, with banks issuing US$230 billion (61% of the required run-rate) in the first five months of 2010, than in the euro area where banks have issued US$133 billion (71% of the required run-rate) over the same period. At over US$363 billion, total issuance by US and euro-area banks dwarfs UK issuance (of around $60 billion), underlining the scale of competition for funds in global markets that banks face.

The banks are developing strategies for addressing this challenge.

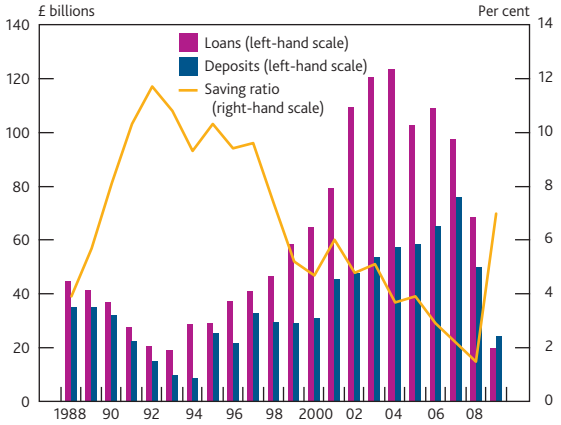
The UK authorities are working with the UK banks to assess the individual and collective credibility of their strategies for meeting the refinancing challenge. And internationally they have been actively encouraging the FSB and Basel authorities to co-ordinate exchanges of information between countries.

There is a risk that UK banks collectively assume strong growth in retail deposits relative to lending growth to meeting funding needs. That would rely on a higher savings ratio generating increased deposits, whereas past experience suggests that growth in lending is the main driver of higher deposits. Even when the savings ratio has risen, deposit growth has rarely exceeded loan growth. For example, following the early 1990s recession, the increase in household deposits was smaller than the increase in household loans, despite the savings ratio averaging 11% for three years (**Chart 4.17**).

Moreover, households and companies have a choice over where to invest their savings. Recent data show that competition for retail deposits is fierce, not only among banks but from alternative instruments such as mutual funds, which

(1) See Debt Management Office market notice 'European Commission State Aid Approval for Extension of the Drawdown Window and Rules Amendments for the UK Government's 2008 Credit Guarantee Scheme', 17 December 2009.
(2) This excludes privately issued debt.
(3) Figures here are for the US, UK, German, French and Italian banks.

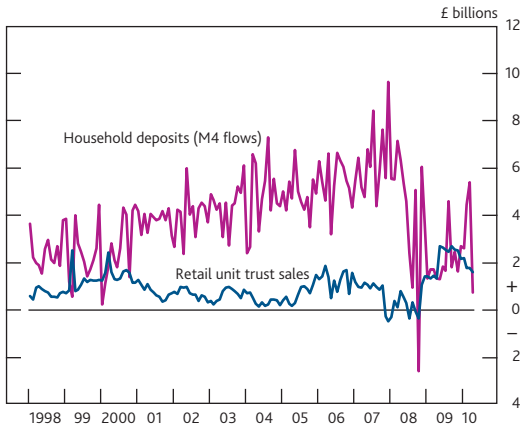
Chart 4.17 UK historical saving ratio[a]



Sources: Bank of England, ONS and Bank calculations.

(a) Chart shows annual household sector sterling deposits with UK-resident banks, and sterling loans to the household sector from UK banks.

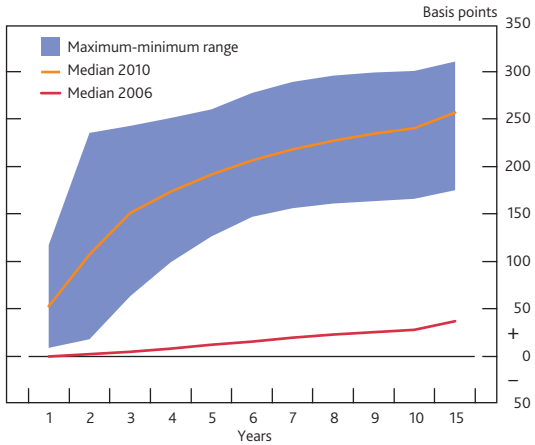
Chart 4.18 Retail flows to UK unit trusts[a]



Source: Bank of England.

(a) Data are seasonally adjusted.

Chart 4.19 Spread curve for senior debt of the six largest UK banks[a][b][c]



Sources: British Bankers' Association data obtained from Bloomberg, UBS Delta and Bank calculations.

(a) Spreads to maturity-matched swap rates.
(a) Six largest banks as at end-2009: Barclays, HSBC, Lloyds Banking Group, Nationwide, RBS and Banco Santander.
(c) One-year spread calculated as the average between bank specific six-month Libor quotes minus six-month Libor and two-year debt spreads. Nationwide was assumed to obtain six-month funding at Libor.

have seen strong inflows in 2010 (**Chart 4.18**). Aggregate funding plans are also predicated on sizable asset disposals which rest on the assumption that these assets could be sold outside of the UK banking sector, to foreign banks or non-banks, if they are to reduce the UK banks' funding burden.

The impact on banks' margins is likely to be material…

If, in aggregate, banks' assumptions about retail deposit growth and asset disposals were to prove optimistic, larger amounts of wholesale funding would be needed, potentially at a higher cost. Term funds are far costlier, relative to short-term funding, than was the case prior to the crisis (**Chart 4.19**). Those costs are likely to mount the longer banks are perceived to be taking to develop and implement credible funding strategies. This underlines the importance of prompt and determined action by banks to term out their funding. The alternative of banks relying increasingly on short-term wholesale markets for funding is undesirable. It would perpetuate the structural fragilities in funding profiles that have caused disruption over the past three years.

…and issuance plans are sensitive to shocks.

To meet their refinancing challenge, banks will need to maintain a steady flow of issuance of term funding. In practice the pattern of issuance in 2010 has been lumpy. January saw strong public issuance of around £25 billion of unsecured, secured and securitised term debt by the major UK banks. Issuance was also strong in March at around £20 billion. But total public issuance was around £18 billion for February, April and May combined. The lack of issuance in May largely reflected the emergence of concerns over euro-area sovereign risk. This illustrated the vulnerability of banks' issuance plans to disruption by wider events and the importance of banks taking a far-sighted and strategic approach to treasury management.

Any broadening of sovereign concerns to non euro-area economies could further affect international banks' funding costs. Past correlations suggest that the cost of bank debt rises by around 80 basis points for every 100 basis points rise in government bond yields. And any fall in banks' debt ratings, for example as a consequence of a sovereign downgrade, may increase banks' debt costs by around 30 basis points for every notch lost, judging from past relationships.

UK banks remain reliant on dollar funding…

As discussed in Section 3, recent events also reinforced concerns over global banks' reliance on dollar funding. These concerns were reduced by the reintroduction of swap lines with the Federal Reserve which, in the event, have not been intensively used. But large UK banks — like their counterparts overseas — remain vulnerable to loss of access to dollar funding markets. Around 40% of UK banks' international claims are dollar denominated. In aggregate, those assets are fully funded by dollar liabilities. But some of those liabilities —

such as the US$80 billion (£50 billion) of deposits and other instruments held by the top ten prime US money market mutual funds (MMMFs) — have proved to be unstable at times of financial market stress. Recent changes to MMMF regulation, noted in Section 3, could reduce the maturity of deposits and other investments they provide to banks. That would tend to heighten fragilities in dollar funding of the international banking system.

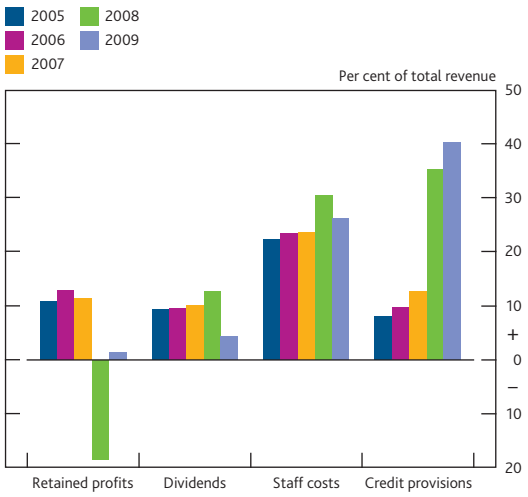
…and planned changes in capital regulation remain a challenge…

On top of funding challenges, banks will need to hold materially more high-quality capital in future due to the effects of tighter regulation. Changes to the regulatory framework for market risk agreed by the Basel Committee on Banking Supervision (BCBS) in July 2009 will require UK banks to hold more capital against trading activities, particularly securitisations. All the elements of this trading book package will need to be implemented by 31 December 2011.

…that an extended transition period would help.

Further improvements to capital and liquidity standards are planned by the BCBS as part of a package of reforms known as Basel III. The period over which these new requirements will be introduced has yet to be agreed. Section 5 discusses work under way in more detail. It is unlikely that all the major UK banks will be able to acquire the capital needed through retention of profits alone, other than over an extended transition period. The December 2009 *Report* urged banks to add to capital, both through issuance and by reducing discretionary distributions to staff and shareholders, to ease the transition to higher regulatory standards.

Chart 4.20 Major UK banks' use of total revenue(a)



Source: Published accounts.

(a) Retained profits are calculated as profit attributable to group minus ordinary dividends.

Discretionary distributions are little changed…

Since the December 2009 *Report*, UK banks have made some progress towards raising capital through increased retention of income. Excluding loss-making banks, the dividend payout ratio of UK banks was 39% in 2009, compared with an average of 50% between 2005 and 2008. This allowed profitable banks to retain an extra £2 billion of earnings. The average staff cost to revenue ('compensation') ratio was 26% in 2009 — down from 30% in 2008 (**Chart 4.20**). This was driven by higher revenue rather than reduced costs, with costs rising by 14% to £52 billion. Between 2005 and 2007, the average compensation ratio was only 23%.

…and should be contained as maintaining lending remains important for banks' risks.

The December 2009 *Report* also emphasised the importance of an adequate supply of credit to the UK economy. Other things being equal, stronger lending should support recovery, bolstering banks' balance sheets and improving access to capital and funding. With unleveraged investors withdrawing risk capital, the need for supportive lending by the banking sector has, if anything, increased since the December *Report*.

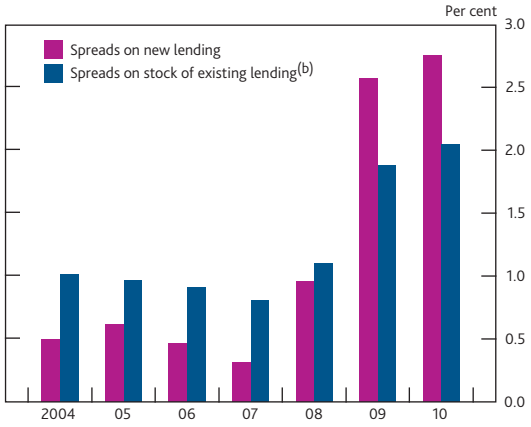
Table 4.A Banks' CDS premia in 2010[a]

	Current level	Change in 2010	Percentage change in 2010
Germany	144	43	43
United States	157	57	56
Italy	182	103	130
United Kingdom	183	82	81
France	202	95	88
Spain	359	190	112
Ireland	397	77	24
Portugal	497	407	453
Greece	582	299	106

Sources: Thomson Reuters Datastream and Bank calculations.

(a) Average senior five-year CDS premia of banks with assets exceeding US$100 billion, in basis points.

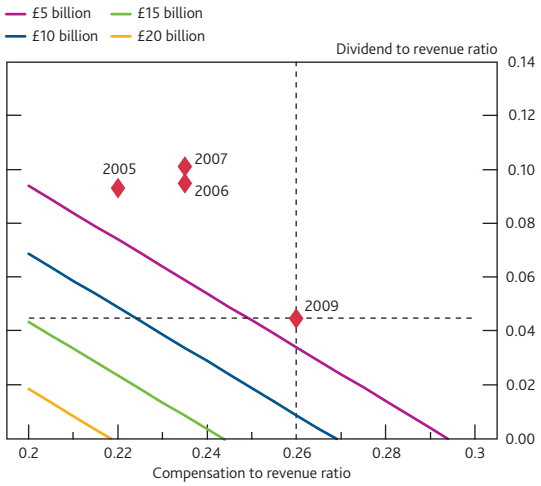
Chart 4.21 Spreads on floating-rate mortgage lending by the major UK banks[a]



Sources: Bank of England and Bank calculations.

(a) Excludes Bank of Ireland. Includes Britannia and Nationwide from 2008.
(b) Spreads calculated as the average of the monthly observations of the effective mortgage rate less Bank Rate. 2010 data are to end-April.

Chart 4.22 Capital accumulation achievable through variations in compensation and dividend expense[a][b]



Sources: Published accounts and Bank calculations.

(a) Lines indicate staff compensation and dividend ratios that would generate various levels of retained capital, and are based on major UK banks' 2009 results. Diamonds indicate compensation to revenue and dividend to revenue ratios for the major UK banks in various years. Diamonds for 2005–08 are not indicative of capital retained in 2005–08, as results in these years differ from the 2009 results used to calibrate the lines.
(b) Compensation to revenue and dividend to revenue ratios were high in 2008, partly due to lower revenue in that year. Though the 2008 ratios are outside the limits of this chart, they are presented in **Chart 4.20**.

While future financing and regulatory challenges exist, the UK banks are well capitalised by recent historical standards and relative to plausible stresses short of a conflagration. Significantly, UK banks have not been singled out during recent turbulence as potential sources of weakness (**Table 4.A**). This suggests that progress in bolstering their capital position is recognised by market participants.

But despite appearing profitable (**Chart 4.21**), lending has remained weak. There is a risk that banks' funding strategies could constrain lending to the household and, in particular, the corporate sector in 2010 and 2011. The effect might well sustain tight credit conditions and temper economic growth. That could imply lower income and higher levels of impairments — and so lower levels of capital — for the UK banking sector.

There remains scope for banks to build capital while sustaining lending to the real economy. This would require banks to increase their efforts to contain discretionary distributions to shareholders and staff. The benefits from more concerted action are potentially considerable. **Chart 4.22** illustrates the capital which could be created through different combinations of dividend and compensation ratios, assuming current revenue levels for the largest UK banks. Based on 2009 results, it suggests that constraining compensation ratios to pre-crisis levels, while limiting dividend payouts to 2009 levels, could enable the major UK banks to generate around £10 billion of additional capital over 2010. There is considerable scope to increase capital further by constraining dividends below 2009 levels (or paying them in equity).

Based on average risk weights on domestic lending derived from 2009 balance sheets, if the UK banks were to use that £10 billion of additional capital, then around £50 billion of new UK lending could be sustained. This would help offset any reduction in lending that could otherwise be necessary if banks are to meet the funding challenges set out above.

5 Preserving financial stability

In the current environment, a balance needs to be struck between maintaining bank resilience, encouraging lending to support economic recovery and gradually moving towards higher levels of capital and liquidity in the banking system. There is an emerging international consensus that more stringent regulatory requirements are necessary over the medium term. But from a macroprudential perspective, it is important that the transition allows banks to maintain lending to the real economy.

Regulatory reform is part of a wider package of policy measures intended to ensure the stable supply of financial services to the real economy. To be effective, the policy framework needs to guard against cyclical build-ups of risk as well as removing the problem of banks that are too important to fail. Imposing restrictions on banks' activities will be considered by the Independent Commission on Banking established by the Government. Higher capital requirements, improved resolution arrangements, stronger market discipline and robust market infrastructure also have a role to play.

Table 5.A Regulatory milestones

Date	Event
Mid 2010	Comprehensive impact assessment of the capital and liquidity measures proposed in the December 2009 BCBS consultation document.
September 2010	EMIL (European Market Infrastructure Legislation) legislative proposal from the European Commission, including moving OTC derivatives onto exchanges and strengthening market infrastructure standards.
October 2010	European Commission to set out proposals for the development of a new crisis management framework.
October 2010	FSB report on systemic institutions.
Q4 2010	FSA to make further announcement on implementation of new liquidity regime.
Late 2010	Agreement on Basel III.
2011	All major G20 financial centres to have adopted the Basel II capital framework.
Q1 2011	CPSS-IOSCO report on the general review of standards for financial market infrastructure to go to consultation.
June 2011	International accounting bodies to have completed convergence project.
Mid 2011	BCBS proposals on trading book fundamental review.
September 2011	Independent Commission on Banking to produce a final report on banking system reform.
End 2011	Implementation of July 2009 revisions to the Basel II market risk framework.
End 2012	All standardised OTC derivative contracts to be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties.

Sources: BIS, European Commission, FSA and G20.

Previous *Reports* have described reforms required to preserve financial stability over the medium term. This Section provides an update on a subset of these reforms (**Table 5.A**).

5.1 The transition to new regulatory requirements

Banks are concerned that regulatory reform is constraining lending…

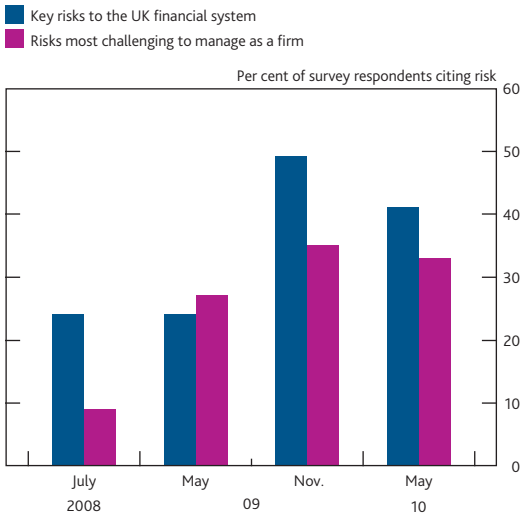
The Basel Committee on Banking Supervision (BCBS) is currently working towards agreement on a comprehensive package of reforms to international capital and liquidity standards by late 2010. Calibration of these new standards ('Basel III') should aim for materially higher levels of capital and liquidity in the banking system.

Banks have reported that uncertainty over the future shape of financial regulation is having a significant influence on their lending decisions. Recent surveys of banking sector opinion, and responses to the Bank's *Systemic Risk Survey*, paint a similar picture (**Chart 5.1**).

…with significant increases in capital and liquidity requirements in the pipeline…

As noted in Section 4, the BCBS agreed in July 2009 revisions to the regulatory framework for market risk that will require banks to hold additional capital against tradable assets. These

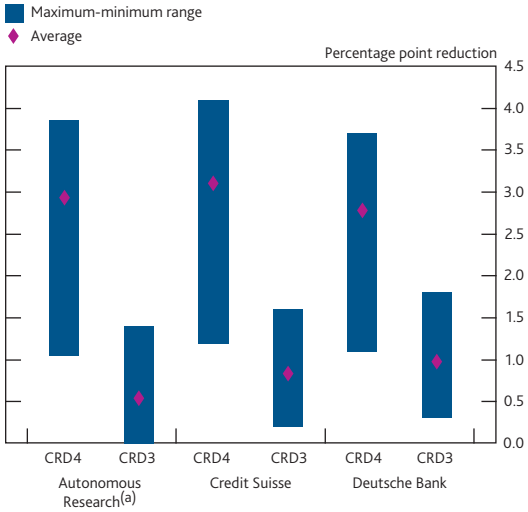
Chart 5.1 *Systemic Risk Survey* results: regulation and taxes as a key risk[a]



Sources: Bank of England *Systemic Risk Survey* (July 2008, May 2009, November 2009 and May 2010) and Bank calculations.

(a) Per cent of respondents citing regulation and taxes as a 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. Risks cited in previous surveys have been regrouped into the categories used to describe the latest data.

Chart 5.2 Estimates of the impact of CRD3 and CRD4 on core Tier 1 capital ratios of the five largest UK banks



Sources: Autonomous Research, Credit Suisse, Deutsche Bank and Bank calculations.

(a) Where an assessment of the impact of CRD3 is described as 'not material' it has been assumed to be zero.

revisions are being implemented in the EU through amendments to the Capital Requirements Directive (CRD3). According to FSA estimates, the overall effect of CRD3 on UK banks' core capital ratios is likely to be relatively modest. The BCBS has also decided to delay implementation of the package until the end of 2011. This should limit the overall economic impact by giving banks more time to adjust their balance sheets without reducing lending to the real economy.

But further planned changes to regulatory standards as part of the Basel III package are likely to have a materially larger effect on UK banks' capital positions . Market participants estimate that preliminary European Commission proposals for further revisions to the Capital Requirements Directive (CRD4) to implement Basel III would, if implemented immediately, reduce the major UK banks' core Tier 1 capital ratios by up to 4 percentage points, compared to less than 2 percentage points for CRD3 (**Chart 5.2**).

…so it is important that the transition allows banks to maintain lending.

Finalisation of the Basel III package will take place this year. This should provide banks and other market participants with a clearer view on future regulatory requirements, thereby reducing uncertainty. But it is important that policymakers also provide clarity over the implementation timetable for the new requirements.

Although higher levels of capital will ultimately be needed, it would not be appropriate for banks to be increasing their capital buffers immediately if this were at the expense of a reduction in lending to the real economy. Work is under way internationally to gauge these transitional costs. The transition to new regulatory standards does not need to be rushed and should, in principle, be contingent on the economic environment. Consistent with this approach, the FSA announced in March that it would postpone introduction of the quantitative elements of its new liquidity regime until macroeconomic conditions have improved.

5.2 Constraining excessive risk-taking by the banking system

A suitably designed and calibrated regulatory framework can help to constrain the financial system from taking on excessive risk during the upswing of the credit cycle, while cushioning the effects of excessive caution during the downswing.

New regulatory requirements should be based on analysis of the long-run costs and benefits…

As part of the Basel III package, the BCBS is currently undertaking a calibration exercise to determine appropriate 'steady-state' requirements for banks' capital and liquidity.

The calibration of regulatory capital requirements should reflect two key judgements:

- First, a view on the 'cycle-neutral' level of capital — the amount of capital banks would be expected to hold on average over the economic cycle.

- Second, an allocation of the cycle-neutral level of capital between a buffer of usable capital and a 'hard minimum' capital requirement (below which a bank would typically be subject to regulatory action, such as entry into the resolution regime).

Calibration of the cycle-neutral level of capital should weigh the economic costs and the stability benefits of higher regulatory requirements. As discussed in Box 7, requiring banks to hold larger capital buffers could increase the cost of credit, leading to a slightly lower steady-state level of economic activity. But it would also reduce the frequency and severity of future financial crises and the output losses these crises entail.

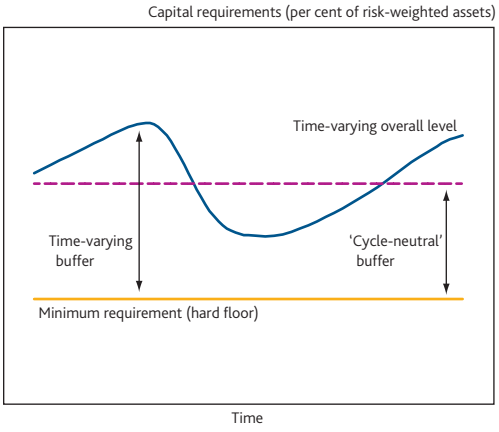
The hard minimum would be a backstop measure to capture uncertainty over the value of a bank's assets and hence its solvency. But it would not be a usable source of capital for banks; it would need to be complemented by an additional buffer of capital that banks can use to absorb unexpected losses and maintain lending to the real economy. This buffer should vary over time, rising in periods of credit exuberance and falling during the subsequent downturn (**Chart 5.3**). As set out in the Governor's Mansion House speech, this countercyclical role for capital ratios is one possible macroprudential tool.(1)

...and tackle fault lines in the regulatory treatment of trading activities.

It is also important that relative risks across the spectrum of banks' activities are properly measured. The most evident fault line in the current regulatory framework has been the treatment of banks' trading activities, where capital held against trading assets is much smaller than their share of total assets (**Chart 5.4**).

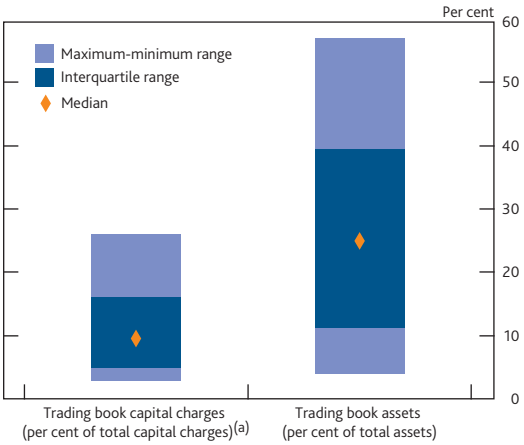
The current definition of the regulatory trading book is based on the concept of 'trading intent'. From a prudential perspective, however, a firm's intention to trade is less relevant than its ability to trade, which may be constrained by a lack of market liquidity. The current regime is also inconsistent in the treatment of risk either side of the trading/banking book boundary. Broadly, the banking book captures default risk, while the trading book focuses on market risk. And the assumption underlying the trading book regime is that positions can be liquidated or hedged in a short time period.

Chart 5.3 Schematic representation of a future regulatory capital framework



Source: Bank of England.

Chart 5.4 Relative importance of the trading book in overall capital requirements and total assets



Sources: FSA and Bank calculations.

(a) Trading book capital charges are defined as the sum of capital requirements against market risk and counterparty credit risk. This likely overestimates the amount of capital banks hold against trading book exposures. Some market risk and counterparty credit risk capital charges relate to positions booked in the banking book.

(1) King, M (2010), Speech at Mansion House, available at www.bankofengland.co.uk/publications/speeches/2010/speech437.pdf.

Box 7
The long-term economic impact of higher capital levels

Higher prudential capital levels for banks can have both costs and benefits for the economy. Costs may arise if banks pass any increase in their funding costs onto firms who then reduce investment. But there may also be benefits if higher capital levels make the banking system more resilient, reducing the probability or severity of financial crises. This box discusses these costs and benefits and outlines a simple cost-benefit framework that may be helpful for thinking about these issues.(1) It applies the framework to produce some illustrative estimates of the long-term macroeconomic impact of higher capital levels.

Cost-benefit framework

A key factor determining banks' response to a higher required capital ratio is the length of the transition period during which these requirements are phased in. If the transition period is short, banks might choose to shrink their assets by rationing credit. With a longer transition, banks have more time to meet the requirements by retaining earnings and issuing equity. In such circumstances, banks are unlikely to risk losing market share by rationing credit and so macroeconomic costs are likely to be smaller. Since regulatory changes should be assessed by their long-run impact, this box assumes a lengthy transition period.

In the long run, banks are likely to respond to higher marginal funding costs by attempting to restore their profit margins, including by increasing interest rates on lending. If so, and assuming no offsetting factors, non-financial firms might reduce their investment, the long-run level of productive capital in the economy might decline and steady-state GDP might fall.

But there are offsetting factors which might limit the steady-state increase in banks' funding costs, other things being equal. Given their reduced leverage, the cost of bank debt should fall. And investors in bank equity may demand lower risk premia due to a reduction in the likelihood of extreme events.(2)

Turning to the benefits, it is difficult to assess the relationship between capital levels and the probability and severity of systemic crises. History suggests, however, that financial crises have often been extremely costly, with significant output losses and scarring effects that permanently reduce the level of output. For example, the IMF estimate that output remains 10% below its pre-crisis trend seven years after the start of a typical systemic crisis.(3) So even if the probability of crises can be reduced slightly, the potential gains would be large. And there might be additional welfare benefits deriving from greater stability in a regime with less frequent crises.

This box considers a simple example which attempts to place rough bounds on the steady-state costs and benefits of higher capital levels. The analysis assumes that the costs and benefits only affect the level of GDP, not its long-term trend growth rate. The estimates are subject to considerable uncertainty.

The economic costs of higher capital

Assume that all capital is fully loss-absorbing, that the definition of risk-weighted assets remains unchanged compared to Basel II and that banks respond to higher capital requirements by replacing debt with equity and leaving the asset side of their balance sheet unchanged.

Total assets of the UK banking sector — here proxied by a group of major banks in the United Kingdom — were about £9 trillion in 2008 and risk-weighted assets were about £3 trillion. An increase in the capital ratio by 1 percentage point would imply that, in aggregate, banks would have to raise an additional £30 billion in equity. If remunerated at 10%, this would cost banks £3 billion per year.(4) But, at the same time, banks could retire debt worth £30 billion. Assuming a typical cost of wholesale debt of 5% and a tax rate of 28%, this would result in an after-tax saving of about £1 billion.(5) This would leave banks with an annual increase in funding costs of around £2 billion to recoup. If this were recovered solely from global lending to non-bank customers, the lending spread after accounting for taxes would have to increase by about 7 basis points. This cost estimate rises linearly with increases in capital levels. For example, if the capital ratio was increased by 2 percentage points, lending spreads would rise by twice that amount.

The long-run impact of higher bank lending spreads on GDP can be assessed using a simple production function. In this framework, an increase in non-financial firms' cost of capital reduces their investment and, ultimately, the level of GDP. Using a Cobb-Douglas production function, the elasticity of output with respect to firms' cost of capital is $\alpha / (\alpha - 1)$, where α, the output elasticity of capital, is taken to be 0.3.(6) As bank lending represents only part of firms' total external financing, firms' overall cost of capital is likely to rise by only about a third of the increase in banks' lending spreads. On this assumption, a 7 basis point increase in lending spreads maps into a 0.1% permanent decline in the level of GDP.(7) **Table 1** contains cost estimates for larger increases in capital requirements.

Assuming a discount rate of 2.5%, this would suggest that the present value costs of increasing the capital ratio by 1 percentage point would be around 4% of 2008 UK GDP.(8)

Table 1 Estimated permanent decline in the level of GDP

Increase in level of capital, per cent of risk-weighted assets (percentage points)	4	6	8
Estimated decline in the long-run level of GDP (per cent)	-0.4	-0.6	-0.8

Source: Bank calculations.

This calibration assumes that there is no impact of lower leverage on the cost of debt or equity and all of the adjustment falls on customer lending rates rather than through lower operating costs, increased non-interest income, or lower retail deposit rates. Relaxing these assumptions would reduce the impact on GDP. In addition, empirical evidence suggests that, for the United Kingdom, the Cobb-Douglas production function tends to overestimate the reaction of output to changes in firms' cost of capital. In that sense, these long-run cost estimates are probably an upper bound.

The economic benefits of higher capital

To assess the benefits of higher capital levels, consider a 1 percentage point reduction in the probability of financial crises. Suppose that the initial output loss in a systemic crisis is 10%, with three quarters of this lasting for five years, while the remainder is permanent.(9) Using the same discount rate, the present value benefit of reducing the likelihood of systemic crises by 1 percentage point is around 55% of 2008 GDP.(10) If there were no permanent scarring effect, this would reduce to 20% of GDP.

Several techniques can be used to try to assess the relationship between capital requirements and the probability and severity of systemic crises.(11) This box takes a structural approach. The banking sector is modelled as a portfolio of banks whose default risks are correlated.(12) A bank is assumed to fail if its capital ratio approaches the current Basel 4% minimum; for purposes of illustration only, a 2 percentage point buffer is used. The model is calibrated using data for the five largest UK banks, with a systemic crisis defined as the joint default of at least two of these banks.

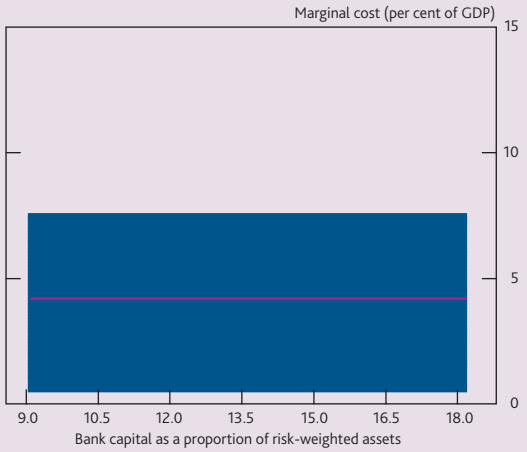
The model predicts that small increases in capital above the viability threshold can reduce the likelihood of systemic crises substantially. On the basis of this illustrative modelling, the additional reduction in the probability of crises appears to be small for capital thresholds above 13%.(13)

Implications for capital requirements

A simple way to compare the costs and benefits of higher capital levels is to ask by how much the probability of a crisis would have to fall to offset the costs of higher capital levels. If, for example, the capital ratio was increased by 5 percentage points and the crisis probability fell from 4% to 2%, the costs would amount to 20% of GDP and the benefits to 110% of GDP.(14)

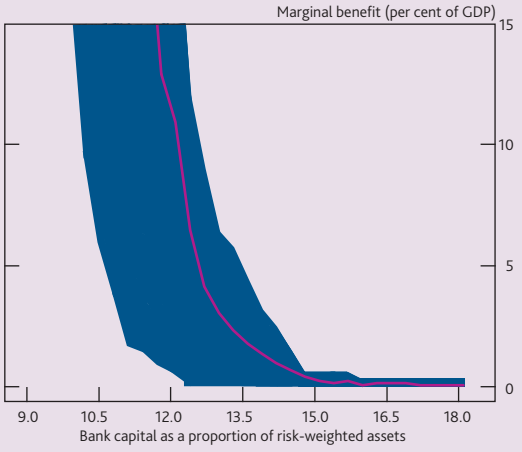
Estimates from the structural model can be used to compare the marginal benefits and costs of higher capital levels. **Chart A** shows that marginal costs are roughly linear in the capital ratio. Marginal benefits decline sharply as capital levels rise, reflecting the decreasing likelihood of shocks that are large enough to cause a bank's default (**Chart B**). Confidence intervals around the central estimates (magenta lines) are also shown.(15) Although only illustrative, these estimates suggest marginal costs and benefits are equated at capital ratios between 10% and 15%.

Chart A Marginal cost from higher capital levels



Source: Bank calculations.

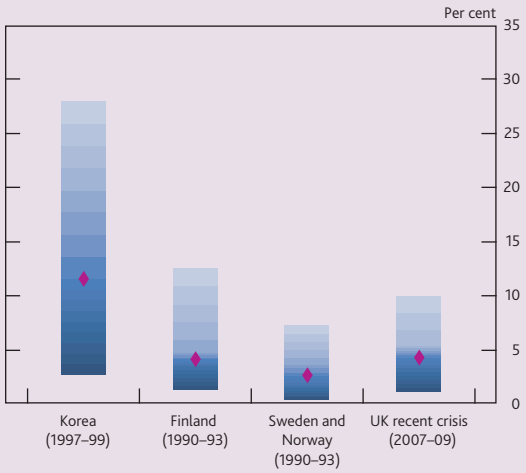
Chart B Marginal benefit from higher capital levels



Source: Bank calculations.

One method of double-checking the plausibility of these results is to evaluate banks' losses during past systemic banking crises. Evidence from such crises suggests that banks typically make losses equivalent to 4% to 5% of risk-weighted assets (**Chart C**).(16)

Chart C Cumulative peak losses as a percentage of risk-weighted assets at the start of the crisis(a)



Sources: Capital IQ, Bankscope published by Bureau van Dijk, Korean FSS, published accounts, and Bank calculations.

(a) The chart includes only those banks that incurred losses. Each shaded band shows 5% (between the 5th and 95th percentiles) of the support of the interpolated distribution across banks. The diamond shows the median. Start of crisis defined as a year before a bank incurred a loss (defined as net income after tax and before distributions). UK figures based on the major loss-making UK banks.

In addition, banks are likely to need additional capital to maintain a reasonable growth of lending. For example, to maintain growth in risk-weighted assets of 8% per year for five years after the start of a crisis, banks would need an additional buffer of about 3% of risk-weighted assets.(17)

Taken together, and for illustration, this particular model suggests a cycle-neutral capital requirement in a broad range around 10-15%. The robustness of this would depend on the results of alternative models and calibrations.(18) This analysis is consistent with banks holding more capital at the height of the credit cycle to be resilient and able to continue lending. This framework is complementary and reaches broadly similar conclusions to FSA analysis.

(1) In a complementary cost-benefit analysis, Barrell *et al* (2009) find that there are substantial net benefits from higher levels of capital and liquidity. See Barrell, R, Davis, E, Fic, T, Holland, D, Kirby, S and Liadze, I (2009), 'Optimal regulation of bank capital and liquidity: how to calibrate new international standards', *FSA Occasional Paper No. 38*.

(2) Modigliani and Miller (1958) argue that either the cost of equity or the cost of debt (or both) need to fall when more expensive equity funding substitutes for cheaper debt funding. Barro (2006) argues that the cost of equity includes a premium to compensate for the risk of extreme events/high volatility — this risk should fall when banks are better capitalised. See Modigliani, F and Miller, M (1958), 'The cost of capital, corporation finance and the theory of investment', *American Economic Review*, Vol. 48, pages 261–97; and Barro, R (2006), 'Rare disasters and asset markets in the twentieth century', *The Quarterly Journal of Economics*, Vol. 121(3), pages 823–66.

(3) IMF (2009), *World Economic Outlook*, October.

(4) Academic studies place the cost of equity for banks at slightly below 10%. See, for example, Zimmer, S A and R N McCauley (1991), 'Bank cost of capital and international competition', *FRBNY Quarterly Review*, Winter, pages 33–59; King, M (2009), 'The cost of equity for global banks: a CAPM perspective from 1990 to 2009', *BIS Quarterly Review*; and Capie, F and Billings, M (2004), 'Evidence on competition in English commercial banking, 1920–70', *Financial History Review*, Vol. 11(1), pages 69–104.

(5) The effective marginal tax rate is approximated by the current corporate tax rate, and the marginal pre-tax cost of debt by the average bank sterling 5–7 year senior debt yields over the past seven years.

(6) The formula assumes that labour supply does not change in response to higher interest rates.

(7) A 7 basis point (bp) increase in bank funding costs raises firms' cost of capital — here taken to be 10% — by 7 bp / 3, approximately equal to 2 bp or about 0.2%. This suggests that output might fall by about 0.2% x α / (α – 1), or 0.1%.

(8) HM Treasury (2003) suggest that the discount rate should depend on the time during which the regulatory reform yields benefits. A range between 1% and 3.5% appears to be an appropriate choice. See HM Treasury (2003), *The Green Book: appraisal and evaluation in central government*, London.

(9) This is broadly consistent with the IMF evidence mentioned above. But estimates of the long-run impact of banking crises on GDP are rare and fraught with uncertainty. For example, Furceri and Mourougane (2009) argue that the permanent decline is about 2% of GDP; Cerra and Saxena (2008) find evidence of a permanent 7.5% decline. Barrell *et al* (2009) argue that in the majority of crises, there is no permanent effect on output. See Furceri, D and Mourougane, A (2009), 'Taking stock of existing structural policy and outcome indicators', *OECD Economics Department Working Paper No. 668*; and Cerra, V and Saxena, S (2008), 'Growth dynamics: the myth of economic recovery', *American Economic Review*, Vol. 98, pages 439–57.

(10) This is computed as the product of the cost per crisis per year (10% of 2008 GDP), and the probability-weighted sum of the discount factors, 1% *(¼ x 1 / (1 – δ) + ¾ x (1 – δ^5) / (1 – δ)) / (1 – δ), where δ, the discount factor, is 1 / (1 + 2.5%). For a similar approach, see Haldane, A (2010), 'The $100 billion question', available at www.bankofengland.co.uk/publications/speeches/2010/speech433.pdf.

(11) For a reduced-form approach, see Barrell *et al* (2009).

(12) The model is based on Elsinger, H, Lehar, A and Summer, M (2006), 'Using market information for banking system risk assessment', *International Journal of Central Banking*, Vol. 2(1), pages 137–65; and Merton, R (1974), 'On the pricing of corporate debt: the risk structure of interest rates', *Journal of Finance*, Vol. 29(2), pages 449–70. The volatility of each bank's assets is inferred from the volatility of the market value of its equity. Losses arising from defaults are transmitted via a network of interbank exposures and can lead to contagious defaults. As with any structural model of credit losses, some of its assumptions may lack realism.

(13) The results are sensitive to the period over which it is calibrated. The more volatile equity prices over the period, the greater the inferred volatility of the bank's assets, and the greater the chance that the asset value falls sufficiently to push a bank's equity below the viability threshold. The inferred volatility of banks' assets might be too low if government intervention reduces the volatility of bank equity prices.

(14) The frequency of crises since 1973 suggests that on average, one banking crisis occurs every 25 years in industrialised countries.

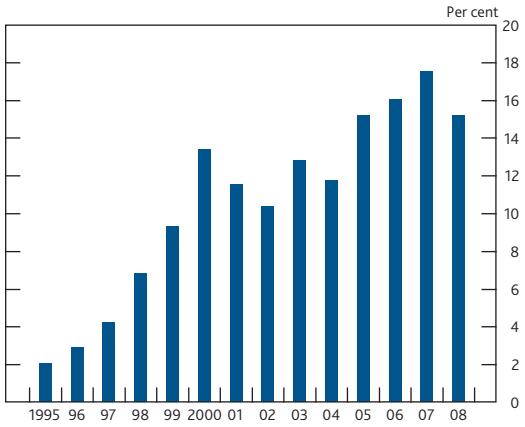
(15) For the costs, the confidence intervals comprise three additional scenarios: one in which differences in the tax treatment of interest payments and dividends are the only deviation from Modigliani/Miller's theorem; another in which the unit cost of equity is 15% instead of 10%; and a third in which banks offset a third of the increase in funding costs by a reduction in their operating costs. For the benefits, the swathe includes the case in which a quarter of the output losses of crises are permanent and the case in which there is no permanent effect.

(16) See Box 5 in the December 2009 *Financial Stability Report* for details on this approach. Losses are defined as (negative) net income after tax and before distributions.

(17) Over five years, loans would grow by $(1 + 0.08)^5 - 1 = 45\%$ of risk-weighted assets. If 6% of this is funded with capital, the required additional capital is about 3% of risk-weighted assets.

(18) The effect of using new risk weights would be to increase somewhat the marginal costs of higher capital, but the impact on the benefits is unclear. It would be unlikely to alter materially the choice of capital ratio.

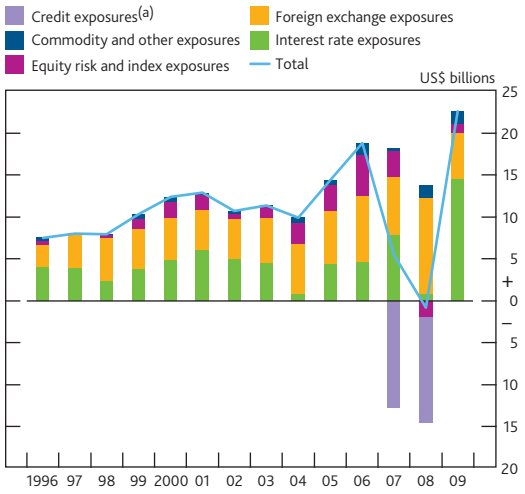
Chart 5.5 Mortgage-backed securities, per cent of total trading assets, top 20 US bank holding companies[a]



Sources: Federal Reserve Bank of Chicago and Bank calculations.

(a) Top 20 US bank holding companies (BHCs) by total assets. The composition of the sample of BHCs changes through time and includes foreign-owned BHCs.

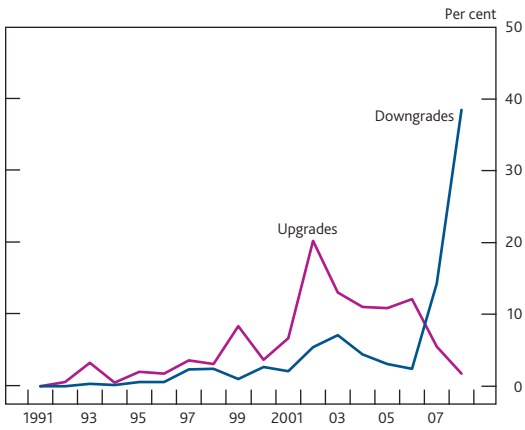
Chart 5.6 Trading revenues of US commercial banks, 1996–2009



Sources: Office of the Comptroller of the Currency and Bank calculations.

(a) The category 'credit exposures' was introduced as a separate revenue category in 2007. Prior to that, most of these exposures would have been measured as interest rate exposures.

Chart 5.7 Global structured finance ratings changes[a]



Source: Fitch Ratings.

(a) Data compare beginning-of-the-year rating with end-of-the-year rating. This does not account for multiple rating actions throughout the year.

This treatment of risk renders the framework susceptible to regulatory arbitrage, as banks have an incentive to classify assets as 'tradable' in order to benefit from lower capital charges.

This arbitrage opportunity was reflected in the accumulation of increasingly large volumes of illiquid credit-related products in banks' trading books prior to the crisis (**Chart 5.5**). During the crisis, a large proportion of trading losses were linked to these credit positions (**Chart 5.6**).

The July 2009 revisions to the regulatory framework for market risk move in the right direction. But it is important that a wider, more fundamental review of the trading book has also been initiated by the BCBS. In the Bank's view, two broad principles should underlie the future capital treatment of trading activities:

- First, to minimise the risk of arbitrage, any future framework should treat similar types of risk consistently across banks' balance sheets.

- Second, any future framework needs to account explicitly for market liquidity risk, as well as credit risk, and in particular for the risk that shifts in liquidity premia will affect positions that are marked-to-market for accounting purposes.

Banks should reduce their reliance on external ratings…
Banks should not hold assets with risks they cannot understand or manage. In part, this might be achieved by reducing the reliance of capital regulation on external credit ratings.

There has been considerable criticism of credit rating agencies (CRAs) following the crisis, particularly their assessments of structured credit products (**Chart 5.7**). But improving the performance of CRAs is a separate issue from the role of external ratings in the regulatory framework. Recognition for regulatory purposes can alter the market perception of a rating; it may cease to be seen as an opinion but instead as a point of fact. Moreover, banks' dependence on the same small set of CRAs may reduce diversity in the financial system, leading to concentrated exposures. The 'cliff-edge' effects of ratings downgrades can also amplify procyclicality.

There are various ways of reducing the role of external ratings in the regulatory framework. As discussed in the December 2009 *Report*, capital incentives could be provided to firms that use both internal and external ratings. Similarly, firms could be offered a capital incentive to carry out enhanced due diligence. It is also important for supervisors to focus on banks' understanding of their portfolios.

…and strengthen internal treasury management.
There is scope for banks to strengthen their internal risk management practices — for example, by ensuring that

liability management has a more significant influence on balance sheet growth than prior to the crisis. Recent instability in funding markets underlines the need for further improvements to banks' treasury management functions. These functions should not seek to be independent profit centres. Rather, their role should be to support, and to some extent constrain, banks' business units.

In that connection, the crisis revealed shortcomings in banks' internal transfer pricing — the process of allocating central treasury funding to different business lines. Margins on new business often did not appropriately reflect the level of risk. This may have contributed to excessive cross-border credit growth by affiliates of international banks, including in emerging markets (**Chart 5.8**). It is important that banks continue to upgrade their internal transfer pricing policies, in order to align better the behaviour of business units with the risk appetite and strategy of the entire firm, and also that supervisors include these policies in their reviews.

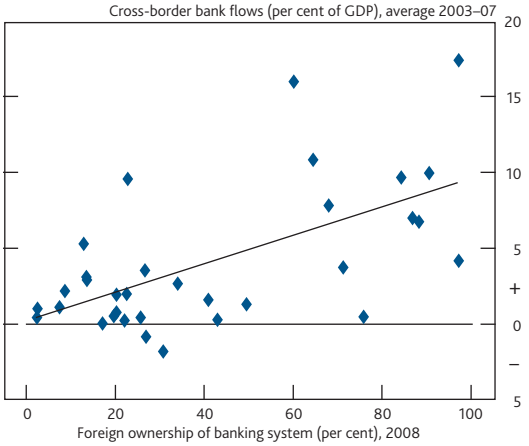
Market discipline requires improved disclosure…

Market discipline depends on reliable, timely and granular information, which is comparable across institutions and jurisdictions. Market participants have been critical of the standard of disclosure by banks during the crisis. The market has, for example, been unable to quantify accurately individual banks' exposures to European sovereign risk over recent months. This lack of transparency has probably compounded problems in bank funding markets.

Previous *Reports* have flagged the need to improve banks' disclosure practices in a number of areas, including reporting of intraperiod averages and highs and lows (Box 8). Recent disclosures, including of Lehman Brothers' use of 'Repo 105', underline the importance of improved information for investors.

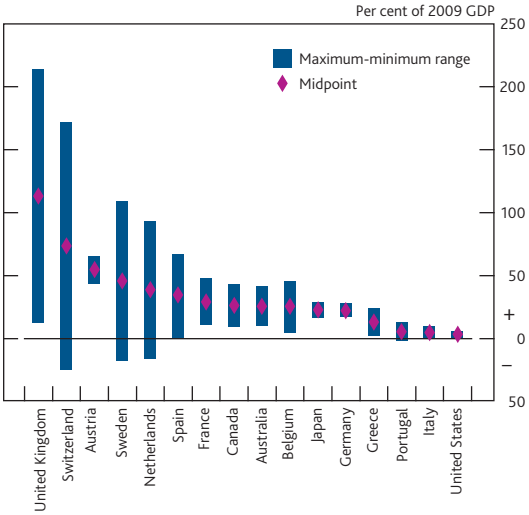
Better aggregate information is also needed, including on the maturity profile of national banking systems' foreign currency assets and liabilities. The crisis revealed that some international banking systems had accumulated large maturity mismatches in foreign currency. But a lack of published data means that it is not possible to quantify accurately the scale of these mismatches (**Chart 5.9**). So further steps are necessary to help policymakers and market participants gauge risks from international capital flows. This, and the need to monitor vulnerabilities in national balance sheets, was previously identified as a lesson from the emerging market crises of the 1990s.(1)

Chart 5.8 Foreign bank ownership and cross-border bank lending flows in emerging market economies



Sources: BIS, Federal Reserve Bank of New York, IMF *World Economic Outlook* (Spring 2010) and Bank calculations.

Chart 5.9 Estimates of the foreign currency maturity mismatch in different countries' banking systems, 2009 Q4(a)



Sources: BIS, IMF *World Economic Outlook* (Autumn 2009) and Bank calculations.

(a) The estimates assume that banks' claims on non-banks are all long term and claims on other banks are all short term. The lower bound estimate additionally assumes that non-banks' liabilities are exclusively long term, while the upper bound also assumes that all liabilities to non-banks are short term.

(1) The Financial Stability Forum (the forerunner to the Financial Stability Board (FSB)) published a report in 2000 identifying a number of areas where better data on aggregate external positions was required — see Financial Stability Forum (2000), 'Report of the Working Group on Capital Flows'.

Box 8
Disclosure of intraperiod information in financial reporting

Reliable, timely and granular information is essential for banks' own internal risk management and for market discipline to work as an effective restraint on banks' behaviour. One area where better disclosure is required is on the variation in banks' balance sheets during the course of a reporting period.

Currently, quantitative disclosures by UK banks focus on end-period figures. Where intraperiod information is reported in annual reports, it is mostly restricted to average values of basic balance sheet items. No information on intraperiod highs and lows is provided on a regular basis. In addition, these disclosures are not sufficient to allow comparison across institutions or jurisdictions.

End-period information can be unrepresentative of banks' behaviour during a reporting period for two reasons. First, due to intraperiod volatility in banks' normal business activity. Second, because of deliberate actions by banks to tailor financial reports at period end.

Intraperiod fluctuations

End-period data record the balance sheet position of firms at a specific point in time. In isolation, such data can potentially be unrepresentative of the risks a bank is running through the reporting period. For example, **Chart A** suggests that over the past ten years end-year and half-year figures on the major UK banks' short-term sale and repurchase (repo) liabilities have underestimated the typical volume of transactions throughout the year.

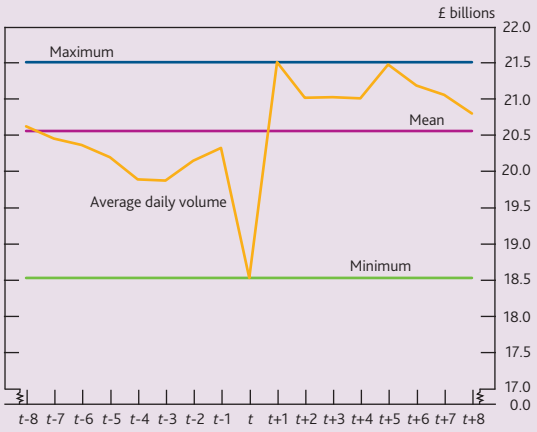
Chart A Liabilities under repo for major UK banks: average end-month position(a)

Sources: Bank of England and Bank calculations.

(a) Average end-month stock between January 1999 and December 2009.

Intraperiod information is particularly important in understanding risks where exposures are held for only a short period of time — for example, market making, underwriting, syndicating loans and money market activity. **Chart B** shows how activity in the overnight sterling market fluctuates sharply around the end of the month.

Chart B Average daily activity in the overnight sterling market(a)(b)



Sources: Wholesale Market Brokers' Association and Bank calculations.

(a) Average daily activity between January 2006 and June 2010.
(b) 't' represents last trading day of month.

Some of the funding techniques used in the years leading up to the crisis demonstrate clearly how point-in-time data can be unrepresentative in practice. For example, Northern Rock made extensive use of short-term wholesale liabilities to fund expansion of its mortgage book ahead of a securitisation. Such strategies could lead to wide variations in liability profiles over short periods of time. There is nothing wrong with that in itself but it should be apparent to investors, creditors and regulators.

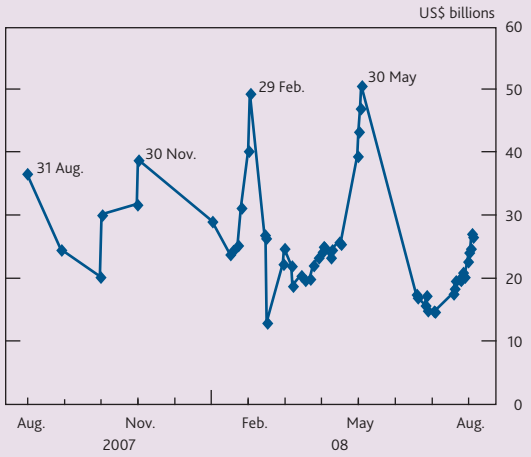
Avoiding window dressing

Reliance on end-period information can also provide incentives for banks to 'window dress' their accounts.(1) Window dressing involves the use of short-term financial transactions to change accounting values around end-of-period reporting dates. This can lead to a lack of confidence in institutions' balance sheet disclosures and, equally importantly, to higher system-wide risks as activity is concentrated in particular markets and infrastructures around period ends.

Lehman Brothers provides an example of window dressing in practice. The Lehman Brothers Examiner's Report highlighted the use of an accounting device known as Repo 105. This device exploited a difference between New York and English law to allow Lehman Brothers to achieve an advantageous treatment under the US accounting rules, moving securities off its consolidated balance sheet and using the cash received to temporarily pay down liabilities.

Lehman Brothers entered into high volumes of such Repo 105 transactions near quarter end to 'window dress' its balance sheet (**Chart C**). This lowered net leverage ratios, which had become an important focus for credit rating agencies, markets and regulators, even though the obligation to repurchase the securities remained. The repo transactions were unwound shortly after each reporting date.

Chart C Lehman Brothers' use of 'Repo 105' transactions[a][b]



Source: United States Bankruptcy Court Southern District of New York, Report of Anton R Valukas, Examiner, Vol. 8, 11 March 2010.

(a) Dates highlighted are end-quarters within fiscal years.
(b) Diamonds denote data points collected by the Examiner on archived Lehman Brothers Global Consolidated Balance Sheets.

Current initiatives

International Financial Reporting Standards (IFRS) and Pillar 3 of Basel II currently require banks to disclose period averages where end-period information is unrepresentative of intraperiod positions. Two recent papers consider this issue. An FSA 2009 *Discussion Paper* considers period averages and highs and lows in a section on the comparability and complexity of financial reports.[2] The paper presents two approaches to improve disclosures: a template approach and a principles-based approach (an industry code of practice). A recent paper by the Committee of European Banking Supervisors (CEBS) provides a set of high-level principles for public disclosures during times of stress.[3] Disclosure of intraperiod averages and highs and lows is in line with the principles proposed in both the FSA and CEBS papers.

These initiatives are welcome. But the current scarcity of quantitative intraperiod information, the lack of comparability across institutions and the need to enforce a minimum standard suggest that principles may need to be complemented with a more prescriptive approach.

Necessary improvements

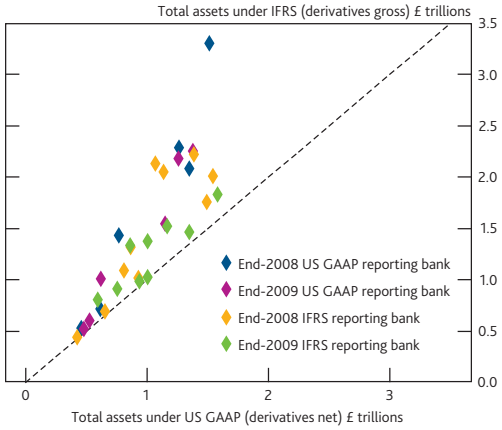
A sensible starting place for the disclosure of period averages and ranges (highs and lows) would be a breakdown of assets and liabilities. But basic balance sheet information on period averages is already published in the United States and the case of Lehman Brothers shows that it is not sufficient. So additional detail might be provided on short-term activities undertaken by banks — for example, loans to and deposits from other banks and financial corporations, repo activity, funding via securities lending, derivative positions and trading activity, both on and off balance sheet. Improvements to Pillar 3 requirements within the Basel framework would usefully take these issues into account.

Some firms may be wary of publishing data on averages if those numbers are influenced heavily by exceptional highs and lows caused by one-off intraperiod transactions. But this situation is one that would seem to warrant more disclosure rather than less. Qualitative information on those exceptional positions could also be disclosed.

Regardless of any minimum regulatory guidance, it is in banks' longer term interest to ensure that they provide sufficient information for investors to understand risk positions throughout the period. More radically, auditors could be given an explicit responsibility to check for and report on signs of window-dressing actions. If it becomes clear that disclosure repeatedly does not comply with accounting and regulatory standards, or banks are undertaking actions that distort their financial reports, explicit sanctions on banks, and their boards, could be considered by regulators.

(1) Basel Committee on Banking Supervision Multidisciplinary Working Group on Enhanced Disclosure (2001), *Final report*.
(2) FSA (2009), 'Enhancing financial reporting disclosures by UK credit institutions', *Discussion Paper 09/5*.
(3) Committee of European Banking Supervisors (2010), 'Principles for disclosures in times of stress (lessons learned from the financial crisis)'.

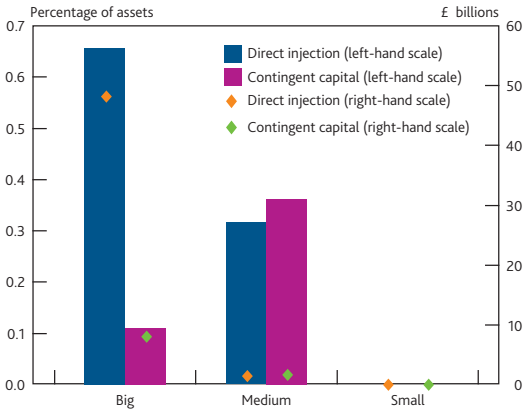
Chart 5.10 Total assets of international banking groups under US GAAP and IFRS[a]



Sources: Published accounts and Bank calculations.

(a) Deviation from the dashed line shows that the total assets of the banking group differ when calculated under IFRS and US GAAP due to different treatment of derivative positions under the two accounting standards.

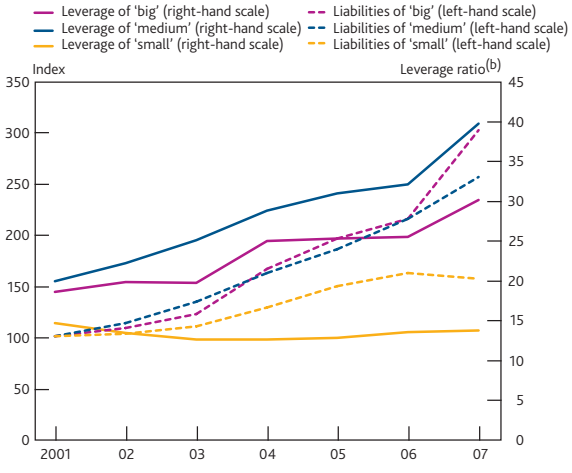
Chart 5.11 Government capital injections into UK banks and building societies, 2007–10[a][b][c]



Sources: HM Treasury, published accounts and Bank calculations.

(a) 'Big' includes Barclays, HSBC, Lloyds Banking Group, RBS; 'medium' includes Alliance & Leicester, Bradford & Bingley, Nationwide, Northern Rock; 'small' includes all building societies except Nationwide.
(b) Total assets as of end-2008.
(c) The Asset Protection Scheme is not included in contingent capital.

Chart 5.12 Liabilities (2001 = 100) and leverage of banks and building societies by size[a]



Sources: Building Societies Association, published accounts and Bank calculations.

(a) 'Big' includes Barclays, HBOS, HSBC, Lloyds TSB and RBS; 'medium' includes Alliance & Leicester, Bradford & Bingley, Nationwide, and Northern Rock; 'small' includes all current building societies except Nationwide.
(b) Leverage ratio is calculated as total assets divided by equity.

…and reforms to accounting standards.

Reported accounts do not always provide a clear indication of the true risk profile of banks, even when all legal and professional requirements are satisfied. The independent accounting standard-setters are currently undertaking fundamental reviews of their existing standards, including on the classification and measurement of financial instruments. Revised impairment rules are likely to lead to a more forward-looking approach to provisioning.

Differences between international accounting standards make comparisons of global banks' balance sheets problematic, hindering risk assessment by both investors and supervisors. For example, the overall size of banks' balance sheets can appear significantly different under the two main international accounting standards — the International Financial Reporting Standards (IFRS) and the US Generally Accepted Accounting Principles (GAAP) — partly due to differences in the treatment of derivative positions (**Chart 5.10**). So initiatives to achieve convergence between IFRS and GAAP are crucial. The International Accounting Standards Board (IASB) has also proposed the introduction of a Regulatory Income Statement, which could include, for example, a breakdown of gains/losses on holdings of illiquid and hard-to-value assets. The Bank supports this proposal.

5.3 Reducing structural vulnerabilities

A robust regulatory framework and enhanced transparency will improve the financial system's resilience to fluctuations over the credit cycle. But it is also important that policymakers tackle deeper, structural vulnerabilities exposed by the recent crisis.

Policy measures are required to remove implicit government guarantees for large banks…

In the current crisis, the vast majority of Government capital support to the UK banking system was provided to larger institutions (**Chart 5.11**). This underlines the problem of banks that are too important to fail (TITF) — a major public policy issue that entails a substantial implicit subsidy to the banking system, mostly centred on the largest banks.(1)

The implicit guarantee undermines market discipline and has the effect, by reducing the cost of debt finance, of incentivising TITF banks to take on additional risk. The rapid growth of the largest UK banks relative to smaller institutions prior to the crisis is consistent with this hypothesis (**Chart 5.12**), suggesting that the TITF problem may have exacerbated the credit boom that ultimately led to the crisis. Correcting this

(1) One possible method for estimating the scale of the subsidy is suggested in Haldane, A (2010), 'The $100 billion question', available at www.bankofengland.co.uk/publications/speeches/2010/speech433.pdf. This method estimates the aggregate subsidy for UK banks at £100 billion in 2009 alone, almost all of which was concentrated among larger banks.

distortion may require significant changes to the rules of the game for the financial system. The Financial Stability Board (FSB) is currently co-ordinating international work on possible policy responses and will present recommendations to the G20 later in the year.

…potentially including restrictions on banks' business activities…

As discussed in the December 2009 *Report*, restrictions on banks' activities, either by business line or by geography, could contribute to tackling the TITF problem. These restrictions could include regulatory limits on the use of insured retail deposits to fund risky assets. For example, in the United States there is an active debate on proposals to prohibit deposit-taking banks from engaging in proprietary trading — the so-called 'Volcker Rule'.

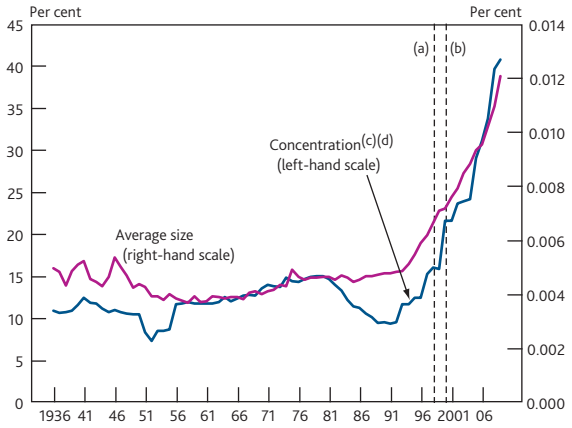
More broadly, there is a debate over the case for wider activity restrictions on the financial system with the objective of making it less prone to systemic risk. In the United States, between the 1930s and the early 1990s, geographical and business line restrictions constrained the size of individual banks and the concentration of the banking industry (**Chart 5.13**). Over that period, the United States did not experience a fully systemic crisis, although there were several regional banking crises. More than 200 small banks have failed in the United States since 2008, with minimal systemic disruption given the safety net established by the Federal Deposit Insurance Corporation (FDIC).

In the United Kingdom, the Government has announced that the Independent Commission on Banking will consider the future structure of the UK banking industry. The Commission will be chaired by Sir John Vickers and is due to report by September 2011. The Bank strongly supports this initiative.

…or by increasing the cost of actions that generate systemic risk.

An alternative (and not mutually exclusive) policy option is to increase the cost of banking activities that create systemic risk — for example, by imposing tighter regulatory capital requirements on larger and more complex banks. The FSB and the BCBS are currently exploring that possibility. As well as enhancing resilience, such capital add-ons would create an incentive for banks to adjust their balance sheets to reduce the systemic impact of their distress or failure. Levies on the banking system could, in principle, encourage similar balance sheet adjustment. The Government has recently announced that a levy will be introduced in the United Kingdom from January 2011 and will apply to all UK-resident banks above a certain threshold level of liabilities.(1)

Chart 5.13 Concentration of US banking system and average assets relative to GDP of US commercial banks, 1935–2008



Sources: FDIC and Bank calculations.

(a) Removal of inter-state branching restrictions.
(b) Removal of Glass-Steagall restrictions on commercial and investment banking.
(c) Top three banks by total assets as a percentage of total banking sector assets.
(d) Data include only insured depository subsidiaries.

(1) The French and German Governments have announced their intention to introduce similar levies.

Improvements to resolution arrangements are necessary...
Robust resolution arrangements could also help tackle the TITF problem. Ensuring uninsured creditors face a credible threat of incurring losses would remove the implicit subsidy and sharpen market discipline. The United Kingdom's Special Resolution Regime (SRR), introduced in 2009, provides the Bank with a range of tools to resolve a failing bank while maintaining continuity of critical financial services. But, as internationally, it is apparent that there are practical barriers to resolving large and complex financial institutions using standard resolution tools such as the SRR.

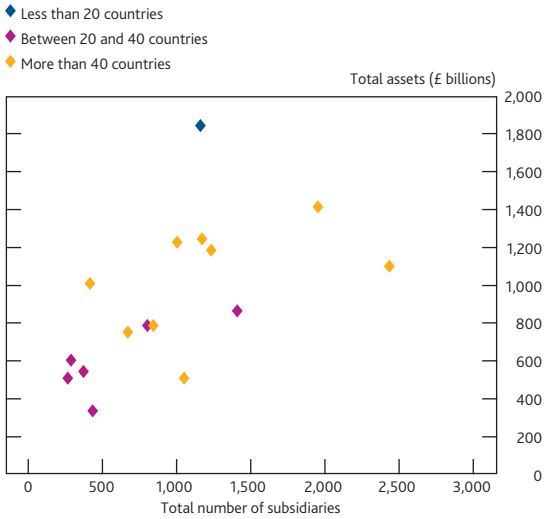
International work to prepare recovery and resolution plans for the largest international banks is an important step towards identifying barriers to orderly resolution. Lowering these barriers may require changes to banks' legal and organisational structures. For example, it is currently not uncommon for large banking groups to comprise more than 1,000 separate legal entities and to operate in at least 40 countries (**Chart 5.14**). These institutions are unresolvable with their current structures. Harmonisation of national resolution regimes, while desirable, will not be sufficient to prevent divergent national interests from obstructing co-ordinated resolution of a cross-border bank during a crisis.

...including new tools for recapitalisation by creditors.
Given these challenges, and the deadweight costs of bankruptcy, an international debate is under way on the possibility of introducing new tools that could help ensure that uninsured creditors provide capital support to a bank to allow it to continue as a going concern — creditor recapitalisation.

Creditor recapitalisation could, in principle, be achieved through a statutory regime that allows the resolution authority to impose haircuts on uninsured creditors and then convert part of their residual claims into common equity in the event of failure.(1)

A related initiative would involve introducing contractual clauses into banks' debt liabilities that require some of the debt to convert into equity once a specified trigger event, or set of trigger events, occurs. These clauses could be mandated by regulation or could become market practice. They would allow prompt and sequential recapitalisation of a bank by its uninsured creditors, without the need for regulatory intervention. This is related to ongoing work by the BCBS on the role of contingent capital instruments in the regulatory framework. These instruments might be used to meet capital add-ons for systemically important banks.

Chart 5.14 Complexity of international banking groups(a)(b)

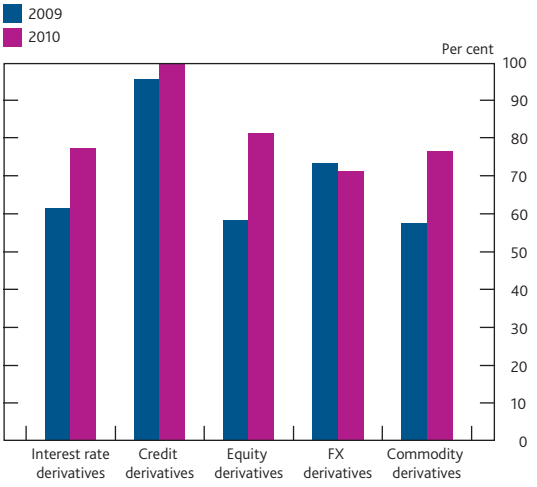


Sources: Capital IQ, Herring, R and Carmassi, J (2010), 'The corporate structure of international financial conglomerates', in Berger *et al* (eds), *The Oxford Handbook of Banking*, Oxford University Press and Bank calculations.

(a) Each diamond represents an international banking group.
(b) Number of countries in which the banking group has at least one majority-owned subsidiary.

(1) As discussed in Tucker, P M W (2010), 'Resolution of large and complex financial institutions: the big issues', available at www.bankofengland.co.uk/publications/speeches/2010/speech431.pdf.

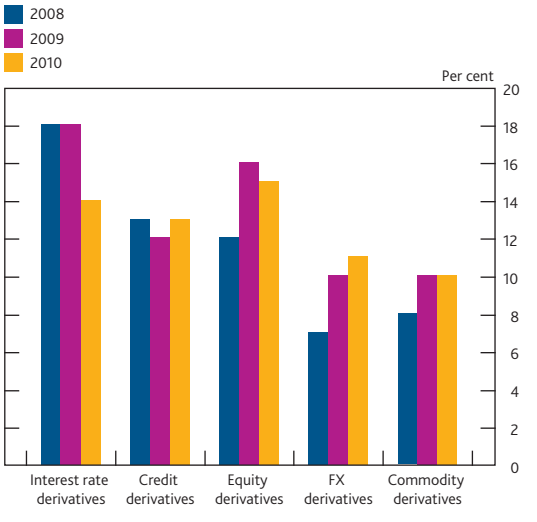
Chart 5.15 Proportion of eligible OTC derivative event volume subject to electronic confirmation(a)



Source: *ISDA Operations Benchmarking Survey 2010.*

(a) OTC derivative events include new trades, novations and terminations.

Chart 5.16 Proportion of OTC derivative trade records containing errors



Source: *ISDA Operations Benchmarking Survey 2010.*

Robust infrastructure also reduces the systemic impact of bank failures…

Previous *Reports* have argued that extending central counterparty (CCP) clearing can help to address structural vulnerabilities within the financial sector, particularly in over-the-counter (OTC) derivatives markets. Further progress has been made in extending CCP clearing in the interest rate swaps market. Around 45% of the total notional market value is centrally cleared. Index and liquid single-name CDS clearing is also provided by a number of CCPs, with around 25% of the market centrally cleared. The FSB is currently investigating ways to increase product standardisation and further extend CCP clearing in OTC derivative markets.

…including rigorous global standards for CCP risk management…

The contribution central clearing can make to overall financial stability is critically dependent upon the adequacy of CCP risk management. Guidelines on how existing standards should be applied to OTC derivatives have already been issued by central banks and securities commissions, and a major review of global standards for CCPs is also under way.

This review is an important opportunity to improve standards in key areas (Box 9). These standards can help to limit the room for CCPs to lower risk controls in response to competitive pressures, which may arise, for instance, when some CCPs are for-profit organisations or part of exchanges. The review will also examine risks arising from arrangements that allow members of different CCPs to trade on the same trading platform but clear through different CCPs — so-called 'interoperability'. This can create exposures between CCPs and potentially diminishes some of the systemic benefits of central clearing. Where interoperability of this kind is permitted, it is important that CCPs hold additional resources against the default of another CCP.

…sound bilateral clearing arrangements and robust trading platforms.

Derivatives transactions that remain outside of CCP clearing houses will continue to be subject to bilaterally agreed risk management arrangements. It is critical that these arrangements allow market participants to measure and manage their counterparty risks effectively.

While the industry has made progress, more is needed. For example, less than 75% of eligible FX derivative trades are electronically confirmed, compared with more than 90% for CDS trades (**Chart 5.15**). Similarly, there is scope to reduce trade input errors, particularly for interest rate, credit and equity derivatives (**Chart 5.16**).

The use of portfolio reconciliation across market participants is also variable. Reconciliations allow counterparties to confirm their respective trade obligations, providing a more accurate

Box 9
Strengthening CCP risk management

Previous *Reports* have set out some of the systemic risk benefits of central counterparty (CCP) clearing — particularly for OTC derivatives markets. If these benefits are to be fully realised, standards for CCP risk management need to be strengthened.

The need for strengthening is partly driven by lessons from the recent crisis, notably the fragility of market liquidity and the extent to which markets and participants are interlinked. But it is also driven by the additional risks arising from the expansion of CCP clearing into new products. These products — including some OTC derivatives — can be long dated, less frequently traded than exchange-traded products, and may also have non-linear pay-off features that present particular risk management challenges. New clearing participants — such as smaller banks, dealers, and buy-side firms — also present new credit and operational risks that a CCP needs to manage.

A further driver for more robust standards is the scope for competition between new and incumbent CCPs. In such circumstances, CCPs may be tempted to water down risk controls to reduce upfront costs for market participants and attract market share. This is particularly problematic in global markets like those for OTC derivatives, where the intrinsic complexity of the product may make comparisons of risk management structures difficult.

To address these issues, central banks and securities commissions are currently revising the *Recommendations for Central Counterparties*, as part of a broader exercise to consolidate and strengthen international standards for financial market infrastructures. This box highlights some key areas where strengthening is required.

Counterparty credit risk management

A key risk faced by a CCP is counterparty credit risk — the risk that its member counterparties fail to perform on contracts to which the CCP is principal. A crucial means of managing this risk is collateral. In contrast to bilateral arrangements, which often only collateralise mark-to-market exposures, a CCP collateralises potential future exposures too through initial margin. This helps protect the CCP against market movements between the time of a member's default and the CCP closing out the defaulter's positions. The current standard calls for a CCP to be able to withstand the failure of its largest member in 'extreme but plausible' market conditions.

Recent events have shown that the probability of coincident defaults among financial institutions may be higher than previously considered. Holding sufficient resources to meet the default of at least the two largest members — in extreme but plausible market conditions — would reduce systemic risk.

Current standards are largely indifferent to the mix of a CCP's risk resources. In practice, CCPs rely on a mix of defaulter-pays margin and a survivors-pay default fund. But margin should be strongly preferred for covering all but the most extreme potential exposures (which may be more appropriately co-insured through the default fund). Margins also allow a CCP to respond rapidly to changes in market conditions, and help ensure that participants face the full cost of the risks they present to the CCP.

High minimum benchmarks for margining are needed. CCPs should be transparent about how they meet such benchmarks, allowing agents to compare robustness between CCPs and across markets. Other controls like concentration limits can also help to constrain participants' risk-taking *ex ante*.

Default management

Successful handling of a member default requires the CCP to manage down its credit exposure rapidly and comprehensively. This is done by closing out or transferring the defaulter's positions to other members and using collateral held (margin and default fund) to cover any market losses incurred through doing so.

Closing out positions requires surviving market participants to transact with the CCP. This process is reliant on a functional, liquid market, and participants having the requisite balance sheet strength. This is likely to be particularly problematic where the underlying products have become illiquid.

The importance of robust default processes was highlighted following the failure of Lehman Brothers. Some CCPs were able to auction portfolios off rather than rely on closing out the defaulter's portfolio on a contract-by-contract basis. This underlines the importance of carefully considered default procedures such as auctions or, as a last resort, compulsory allocations. These mechanisms limit the risk of fire sales by dealing with defaulters' positions on a portfolio basis.

Default arrangements can force potentially significant risks back on to a CCP's members. They should be clearly and transparently set out and be regularly tested. These arrangements should also be reflected in access requirements, ensuring that participants have the balance sheet and operational abilities to deal with them.

Payments and liquidity risk management

Given the importance of collateral to a CCP's risk management, the way that it collects and holds that collateral is of critical importance.

Where the settlement of cash collateral payments occurs across the accounts of private banks (as opposed to a central bank), a CCP must ensure that the resulting settlement risks are managed appropriately. This requires adequate diversification across settlement banks, active monitoring and management of intraday payment flows — including the enforcement of payment deadlines — and rapid investment of cash into secured investments or high-quality assets to limit credit risk.

Cash held by the CCP should only be invested in liquid and secure assets. These include high-quality government bonds traded in liquid markets, short-term secured investments held in a segregated manner with reputable custodians, and deposits with central banks. Collateral accepted by the CCP should also be liquid and secure and subject to prudent haircuts. Given the sharp reductions in liquidity even in some core markets during the crisis, CCPs ought to subject their arrangements to stress testing based on conservative assumptions regarding liquidity, including the failure of a custodian or settlement bank.

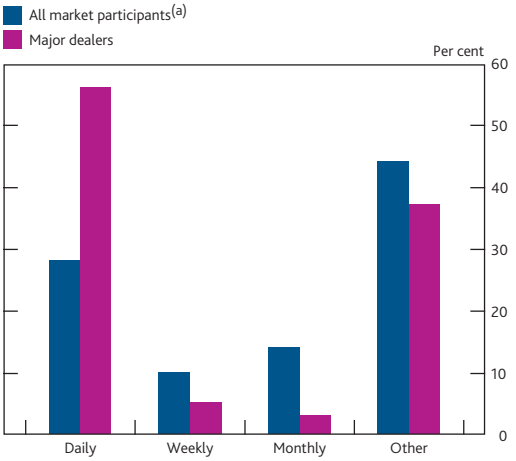
Broader considerations

Another lesson from the default of Lehman Brothers was the treatment of client positions. Agreements between clients and their banks allowed client trades to be treated as house trades at the CCP, thus reducing margin requirements. They also allowed for margin to be held away from the CCP (and in some cases rehypothecated), enabling clearing members to invest client margin themselves. While market participants should generally be free to negotiate terms commensurate with their risk appetites, it is clear that these risks were mispriced and potential losses underestimated. It was also the case that, in some cases, CCPs did not have processes in place to offer further segregation of positions and assets.

Requiring CCPs to offer gross, segregated accounts is a necessary step in tackling these problems. However, it may not always be clear to the market who has taken up such segregation arrangements and who has not. Even where a market participant is fully segregated, its counterparties may not know this is the case. Their rational response could be to minimise their risk by seeking to reduce rapidly exposures to that participant. From a broader financial stability perspective, there is a case for more transparent as well as more certain segregation requirements between market participants.

Finally, despite best efforts to strengthen risk management standards, there remains the residual risk that a CCP may itself default. This could occur because of inadequate counterparty credit risk management or because of investment, business or operational risks. CCPs should set out how they would replenish resources following a default, and CCPs should hold capital against their broader business risks. Authorities also need to consider appropriate resolution arrangements in the event of a CCP's failure. These arrangements need to be robust in the growing number of cases where CCPs operate across jurisdictions.

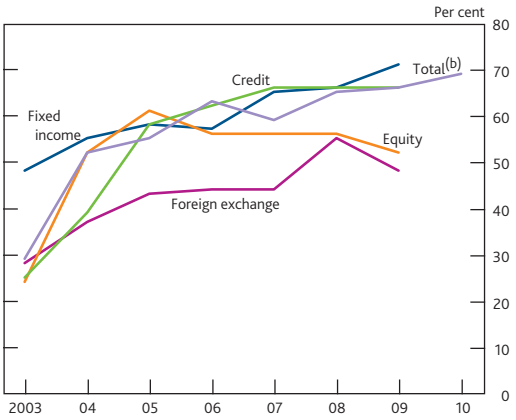
Chart 5.17 Reconciliation frequency of OTC derivative portfolios



Source: *ISDA Margin Survey 2010.*

(a) Percentages do not sum to 100 due to incomplete survey responses.

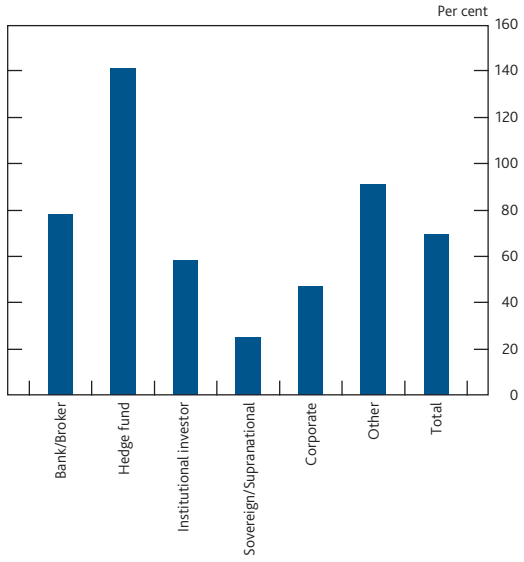
Chart 5.18 Degree of collateralisation of OTC derivative counterparty credit exposures, by type of contract(a)



Source: *ISDA Margin Survey 2009* and *2010.*

(a) Data for individual derivative types in 2010 are unavailable.
(b) Data for 2010 are preliminary as at 22 April 2010.

Chart 5.19 Degree of collateralisation of OTC derivative counterparty credit exposures, by counterparty type



Source: *ISDA Margin Survey 2010.*

measure of risk and facilitating risk management processes. Major dealers now reconcile large interdealer portfolios daily, but other reconciliations are generally far less comprehensive (**Chart 5.17**). Regular reconciliation should be standard market practice, so that disputes over the terms or value of particular trades are not the only trigger for reconciliations.

Collateralisation of positions has continued to increase overall. But growth has slowed and coverage is variable across market segments (**Chart 5.18**) and by counterparty type (**Chart 5.19**). Operational and legal arrangements should be strengthened to ensure that posted collateral can be made bankruptcy remote. The use of rating-related credit triggers in margin agreements should be minimised since they can result in large margin calls that add to procyclicality in the financial system. Proposed increases in capital charges on counterparty credit exposures, as part of the Basel III package, are also welcome, particularly in light of the large mark-to-market losses incurred by banks due to credit valuation adjustments (CVA) during the crisis.(1)

The dislocation in US equity markets on 6 May demonstrates the risks to proper market functioning from trading infrastructure. Fragmentation of trading venues, and the growing importance of high-frequency trading, add to the complexity of the trading landscape. The relevant authorities, infrastructures and market participants need to ensure that the risks arising from changing trading infrastructures are properly understood. Further analysis of recent 'near misses' is required to understand these emerging risks.

Initiatives to reduce borrowers' dependence on bank credit are also needed.

The December 2009 *Report* noted that some UK borrowers are heavily dependent on bank credit, with limited access to alternative sources of finance. The recent deterioration in capital market conditions has increased this dependence, at least in the short term, by reducing issuance opportunities for potential borrowers.

Developing alternative sources of finance would make the overall supply of credit to the real economy more robust to banking system distress. For example, borrowers' access to non-bank finance could be improved by enhancing documentation and information flows in public corporate bond markets and deepening private placement markets.(2)

Regulatory arrangements could help encourage development of non-bank finance, while also avoiding new systemic risks. Box 5 on pages 40–41 discusses some of the potential benefits

(1) The role of banks' CVA desks in managing counterparty credit risk is discussed in the Bank's *Quarterly Bulletin*, Vol.50, No. 2, page 81.
(2) The Bank and the ECB have recently launched separate consultation exercises on requiring greater transparency of information relating to asset-backed securities which are eligible collateral in their market operations.

and risks from rapidly emerging exchange traded funds (ETFs). Improvements in liquidity management in the hedge fund sector since the late 1990s (such as the introduction of notice periods and 'gates' to limit investors' access to funds) have helped reduce risk. Current EU legislation on Undertakings for Collective Investments in Transferable Securities (UCITS) allows compliant hedge funds to create leverage while also offering investors daily liquidity — a combination that could require fund managers to sell assets rapidly to meet redemption orders. Regulation should aim to discourage structures that could destabilise markets, at the same time as protecting the interests of investors.

Index of charts and tables

Charts

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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 December 2009 *Report*.

Regular publications

Markets and operations article, *Bank of England Quarterly Bulletin*, 2010 Q1.

This article reviews recent developments in sterling financial markets since the 2009 Q4 *Quarterly Bulletin* up to 19 February 2010. The article also reviews the Bank's official operations.

www.bankofengland.co.uk/publications/quarterlybulletin/qb1001.pdf

Markets and operations article, *Bank of England Quarterly Bulletin*, 2010 Q2.

This article reviews recent developments in sterling financial markets since the 2010 Q1 *Quarterly Bulletin* up to 21 May 2010. The article also reviews the Bank's official operations.

www.bankofengland.co.uk/publications/quarterlybulletin/qb1002.pdf

Speeches

The debt hangover.

Andrew Haldane, Executive Director for Financial Stability, January 2010.

www.bankofengland.co.uk/publications/speeches/2010/speech422.pdf

In this speech, Andrew Haldane discussed the implications of the stocks of debt held by agents across the economy — the 'debt hangover'. This debt hangover is affecting households, financial and non-financial companies and sovereign states to varying degrees, but is perhaps greatest in the financial system. In terms of possible remedial actions, first, banks should take advantage of the profits they have achieved this year to bolster their balance sheets and, second, debt claims could be restructured into equity to benefit both lenders and borrowers, of which there have already been some examples. In order to moderate the frequency and scale of crises going forward, two policy reforms are proposed — macroprudential policies designed to curb the credit cycle and redesign of debt contracts such that they become state contingent.

Shadow banking, financing markets and financial stability.

Paul Tucker, Deputy Governor, January 2010.

www.bankofengland.co.uk/publications/speeches/2010/speech420.pdf

In this speech, Paul Tucker discussed one aspect of the financial sector 'structure' debate: the role of shadow banking. Shadow banking can be thought of as the collection of instruments, structures, firms or markets which, alone or in combination, and to a greater or lesser extent, replicate the core features of commercial banks: liquidity services, maturity mismatch and leverage. They are often considered a product of 'regulatory arbitrage' and can be problematic if the resulting non-bank forms of financial intermediation replicate the systemic risks posed by banking itself without being subject to equivalent oversight and safety nets.

He discussed a number of examples that developed prior to the recent financial crisis. Those include: money market mutual funds; finance companies; structured investment vehicles and asset-backed commercial paper; the prime brokerage services of securities dealers; the use of securities lending as a financing market; and the repo-financing of mortgage-backed securities.

With the 'regulation and structure' debate focused on how to make the core banking system safe and sound, he emphasised the need to think through what might comprise shadow banking and how the regulatory system should respond. In particular, it is important to think through how to avoid the problems of the past few years replicating themselves beyond the perimeter of the regulated banking sector in the future. Where shadow banking provides an alternative home for liquid savings, offering *de facto* deposit and monetary services, he argued that the authorities should be ready to bring them into the banking world itself. In the latest episode, constant net asset value, instant-access money funds and the prime brokerage units of the dealers seem to have been examples of that.

Resolution of large and complex financial institutions: the big issues.

Paul Tucker, Deputy Governor, March 2010.

www.bankofengland.co.uk/publications/speeches/2010/speech431.pdf

In this speech, Paul Tucker — Deputy Governor for Financial Stability and chair of the Financial Stability Board's Working Group on Cross-Border Crisis Management — discussed issues around resolving large, complex financial institutions in an orderly way without injecting public money.

Drawing on the international debate, he considered the two biggest issues that effective resolution regimes will have to address. First, whether there should be the ability to make adjustments to unsecured creditors' claims in the form of haircuts and/or equity conversions in a going concern, rather than incurring large losses as creditors in a gone concern bank insolvency process. Such an approach would in effect combine features of standard regimes for resolving commercial banks (rapidity, public policy objectives) with some features of the US Chapter 11 for non-financial companies (haircuts for creditors in a continuing business).

And second, how to address the obstacles to handling the resolution of internationally active institutions and the associated big issues about how insolvency and resolution laws are applied to internationally active financial companies. In particular, the differences between 'territorial' and 'universal' principles governing resolution and a possible intermediate course that could be described as 'modified universalism'. That would be based on a principle of equitable treatment of worldwide creditors which would be consistent with the imposition of losses on unsecured creditors. It might be agreed on a firm-by-firm basis.

In terms of the international debate around Too Big To Fail, this would involve changing our sense of what 'Fail' involves. Perhaps it would not have to involve liquidation or administration. Perhaps it would not have to involve a binary shift from 'going concern' to 'gone concern'. But it would have to involve loss for equity holders and uninsured creditors. It would have to rekindle market discipline. It would have to preserve the flow of financial services. Individual countries or economic areas such as the EU can get only so far on their own. To cope with distress in global banking, the highest reaches of the authorities need to decide whether or not they want international collaboration in the resolution of cross-border banking groups.

Fair value in foul weather.

Andrew Haldane, Executive Director for Financial Stability, March 2010.

www.bankofengland.co.uk/publications/speeches/2010/speech427.pdf

In this paper, Andrew Haldane discussed the history of accountancy and valuation and how the recent crisis has renewed the debate around the use of fair value. At the heart of this is the question of whether the Efficient Markets Hypothesis holds and whether market prices are a full and fair reflection of the present value of future cash flows on an asset. In practice, particularly during times of crisis, evidence suggests they may not be. Against this background, Andrew discussed the main arguments for and against the use of marking to market and proposed some broad principles which could help frame accounting standards: (1) the importance of a common measuring rod; (2) a failure of efficient markets is not of itself a failure of fair value; (3) better accounting for expected losses; and (4) business models matter, especially for banks.

The $100 billion question.

Andrew Haldane, Executive Director for Financial Stability, March 2010.

www.bankofengland.co.uk/publications/speeches/2010/speech433.pdf

In this speech, Andrew Haldane discussed the costs and benefits of structural reform to the banking system. In order to regulate banks to reflect the costs of the crisis, a measure of banks' contribution to systemic risk is needed. Estimates based on output foregone or implicit subsidies are large and mainly accounted for by institutions perceived as being 'too big to fail'. The public policy response to date has focused on the role of prudential regulation. As an alternative, Andrew considered the benefits of prohibition for financial system resilience (in terms of modularity, robustness and incentives) and the costs of prohibition (in terms of economies of scale and scope that might be lost as a result of restricting bank functions). The costs appear to be exhausted at fairly modest ranges of banking assets and activities.

The Governor's speech at the Mansion House.

Mervyn King, Governor, June 2010.

www.bankofengland.co.uk/publications/speeches/2010/speech437.pdf

For details please see the box on page 5.

Financial Stability Papers

Liquidity saving in real-time gross settlement systems — an overview.

Ben Norman, May 2010.

www.bankofengland.co.uk/publications/fsr/fs_paper07.pdf

During the past two decades, Large Value Payment Systems (LVPSs) in many countries have been redesigned so that the payments they process are settled on a 'Real-Time Gross Settlement' (RTGS) basis. Such systems eliminate interbank credit risk in the payment system — which, from the perspective of the Bank of England, is a key feature of the United Kingdom's LVPS, CHAPS, and one which cannot be compromised by any future design changes. But such RTGS systems can require relatively large amounts of liquidity to be available. So some of the more recent RTGS system designs —

for instance, TARGET2 (for euro payments); or Japan's BOJ-Net — have incorporated sophisticated 'liquidity saving mechanisms'. These mechanisms have allowed participants in the payment system to save on liquidity needs without reintroducing interbank credit risk. To support discussions among participants in CHAPS on possible liquidity saving mechanisms, this article sets out a conceptual framework for thinking about the drivers of liquidity needs in RTGS systems. It then discusses a number of practical liquidity saving measures, which can meet the good of greater liquidity efficiency without reintroducing credit risk.

Working papers

Contagion in financial networks.
Prasanna Gai and Sujit Kapadia, March 2010.

www.bankofengland.co.uk/publications/workingpapers/wp383.pdf

The geographical composition of national external balance sheets: 1980–2005.
Chris Kubelec and Filipa Sá, March 2010.

www.bankofengland.co.uk/publications/workingpapers/wp384.pdf

Shocks to bank capital: evidence from UK banks at home and away.
Nada Mora and Andrew Logan, March 2010.

www.bankofengland.co.uk/publications/workingpapers/wp387.pdf

An economic capital model integrating credit and interest rate risk in the banking book.
Piergiorgio Alessandri and Mathias Drehmann, June 2010.

www.bankofengland.co.uk/publications/workingpapers/wp388.pdf

Liquidity-saving mechanisms in collateral-based RTGS payment systems.
Marius Jurgilas and Antoine Martin, June 2010.

www.bankofengland.co.uk/publications/workingpapers/wp389.pdf

Glossary and other information

Glossary of selected data and instruments

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.
Euribor – euro interbank offered rate.
FICC – fixed income, currency and commodities.
GDP – gross domestic product.
Libor – London interbank offered rate.
M4 – UK non-bank, non-building society private sector's holdings of sterling notes and coin, and their sterling deposits (including certificates of deposit, holdings of commercial paper and other short-term instruments and claims arising from repos) held at UK banks and building societies.
MBS – mortgage-backed security.
RMBS – residential mortgage-backed security.
SIV – structured investment vehicle.
TRS – total return swap.

Abbreviations

APS – Asset Protection Scheme.
BCBS – Basel Committee on Banking Supervision.
BHC – bank holding company.
BHPS – British Household Panel Survey.
BIS – Bank for International Settlements.
CBI – Confederation of British Industry.
CCP – central counterparty.
CEBS – Committee of European Banking Supervisors.
CEE – Central and Eastern Europe.
CGFS – Committee on the Global Financial System.
CGS – Credit Guarantee Scheme.
CIS – Commonwealth of Independent States.
CLS – Continuous Linked Settlement.
CPMA – Consumer Protection and Markets Authority.
CRA – credit rating agency.
CRD – Capital Requirements Directive.
CRE – commercial real estate.
CT1 – core Tier 1.
CVA – credit valuation adjustment.
DMO – Debt Management Office.
ECB – European Central Bank.
EME – emerging market economy.
ETF – exchange-traded fund.
EU – European Union.
FDIC – Federal Deposit Insurance Corporation.
FPC – Financial Policy Committee.
FPS – Faster Payments Service.
FSA – Financial Services Authority.
FSB – Financial Stability Board.
FTB – first-time buyer.
FTSE – Financial Times Stock Exchange.
G20 – The Group of Twenty Finance Ministers and Central Bank Governors.
GAAP – generally accepted accounting principles.
HMRC – Her Majesty's Revenue and Customs.
HMT – Her Majesty's Treasury.
IASB – International Accounting Standards Board.
IFRS – International Financial Reporting Standard.
IMF – International Monetary Fund.
IPD – Investment Property Databank.
ISDA – International Swaps and Derivatives Association.
LCFI – large complex financial institution.
LTV – loan to value.
MMMF – money market mutual funds.
MoU – Memorandum of Understanding.
MPC – Monetary Policy Committee.
NPL – non-performing loan.
NYSE – New York Stock Exchange.
OECD – Organisation for Economic Co-operation and Development.
OFC – other financial corporation.
ONS – Office for National Statistics.
OTC – over the counter.
PNFC – private non-financial corporation.
PRA – Prudential Regulation Authority.
RBS – Royal Bank of Scotland.
RWA – risk-weighted asset.
SCAP – Supervisory Capital Assessment Program.
SEC – Securities and Exchange Commission.
SLS – Special Liquidity Scheme.
SRR – Special Resolution Regime.
S&P – Standard & Poor's.
TITF – too important to fail.
UCITS – Undertakings for Collective Investment in Transferable Securities.

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