

Financial Stability Report

June 2013 | Issue No. 33



BANK OF ENGLAND





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The Financial Policy Committee (FPC) was established under the Bank of England Act 1998, through amendments made in the Financial Services Act 2012. The legislation establishing the FPC came into force on 1 April 2013. The objectives of the Committee are to exercise its functions with a view to contributing to the achievement by the Bank of England of its Financial Stability Objective and, subject to that, supporting the economic policy of Her Majesty's Government, including its objectives for growth and employment. The responsibility of the Committee, with regard to the Financial Stability Objective, relates primarily to the identification of, monitoring of, and taking of action to remove or reduce, systemic risks with a view to protecting and enhancing the resilience of the UK financial system.

The FPC is established as a sub-committee of the Bank of England's Court of Directors. An interim FPC operated from 2011 until March 2013, holding its first policy meeting in June 2011, with the aim of shadowing as far as possible the future statutory FPC's macroprudential role.

The legislation requires the FPC to prepare and publish a *Financial Stability Report* twice per calendar year. The *Report* covers the Committee's view of the current stability of the UK financial system at the time of preparation of the *Report* and an assessment of developments that have influenced this view; an assessment of the strengths and weaknesses of the system and the risks to stability; and the Committee's view on the outlook for the stability of the UK financial system. The *Report* also summarises the activities of the Committee over the reporting period and the extent to which policy actions taken have succeeded in meeting the Committee's objectives.

The *Report* includes the policy decisions of the Committee by way of recommendations and directions. In making the recommendations recorded in this *Report*, the Committee has considered its duties under the Bank of England Act 1998. Section 5 of the *Report* sets out an explanation of the reasons for the Committee deciding to exercise its powers in the way they are being exercised, together with the Committee's reasons for believing that the use of its powers are compatible with such duties. Save as set out in that section, it is the opinion of the Committee that it is not reasonably practicable to include in its explanations estimates of the costs and benefits arising from these recommendations.

The Financial Policy Committee:

Mervyn King, Governor

Paul Tucker, Deputy Governor responsible for financial stability

Charles Bean, Deputy Governor responsible for monetary policy

Andrew Bailey, Deputy Governor responsible for prudential regulation

Andrew Haldane, Executive Director responsible for financial stability

Martin Wheatley, Chief Executive of the Financial Conduct Authority

Dame Clara Furse, external member

Donald Kohn, external member

Richard Sharp, external member

Martin Taylor, external member

Charles Roxburgh attends as the Treasury member in a non-voting capacity.

This document was delivered to the printers on 25 June 2013 and, unless otherwise stated, uses data available as at 17 June 2013.

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

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Executive summary

For much of the period since the previous *Report*, prices of risky assets rose and balance sheets across the financial system strengthened. More recently, however, asset prices have fallen and financial markets have been volatile, reflecting shifting expectations of the path of monetary policy in some of the major advanced economies. The outlook for financial stability is still clouded by risks from a weak and uneven global recovery, and imbalances in the euro area. In the near term, risks could crystallise if global long-term interest rates were to rise abruptly from current still historically low levels, or if credit spreads were to widen. Further out, risks could accumulate if a search for yield intensifies and assets become progressively mispriced. Market participants have increasingly highlighted concerns about operational risk, including threats of cyber attack. And confidence in the financial system remains fragile with weak credit growth.

In light of the outlook for financial stability and the actions under way to enhance the capital adequacy of the UK banking system, at its June meeting the Financial Policy Committee (FPC) agreed the following new recommendations:

- The Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA), with other Bank staff, should provide an assessment to the FPC of the vulnerability of borrowers and financial institutions to sharp upward movements in long-term interest rates and credit spreads in the current low interest rate environment. They should each report back to the FPC in September 2013.
- In assessing the liquidity of banks and building societies, the PRA should employ, among other measures, the Liquidity Coverage Ratio (LCR) as defined in the EU's implementation of the Basel standard. The minimum requirement should be set at an LCR of 80% until 1 January 2015, rising thereafter to reach an LCR of 100% on 1 January 2018. The PRA should consider whether any additional requirements are needed where there are idiosyncratic liquidity risks not captured by the LCR framework or where the adjustments to capital positions described in the existing capital recommendations have not been implemented.
- The PRA should continue to work with the banking industry to ensure greater consistency and comparability of the Pillar 3 disclosures of the major UK banks and building societies, including reconciliation of accounting and regulatory measures of capital.
- The PRA should ensure that all major UK banks and building societies comply fully with the October 2012 recommendations of the Enhanced Disclosure Task Force (EDTF) upon publication of their 2013 annual reports.
- The PRA should assess the feasibility of the major UK banks and building societies calculating their regulatory capital ratios under end-point Basel III definitions using the standardised approach to credit risk. The PRA should report back to the FPC for its 2013 Q4 meeting.
- HM Treasury, working with the relevant government agencies, the PRA, the Bank's financial market infrastructure supervisors and the FCA should work with the core UK financial system and its infrastructure to put in place a programme of work to improve and test resilience to cyber attack.

The Committee also reaffirmed a number of the recommendations made by the interim Committee, as outlined in Section 4.

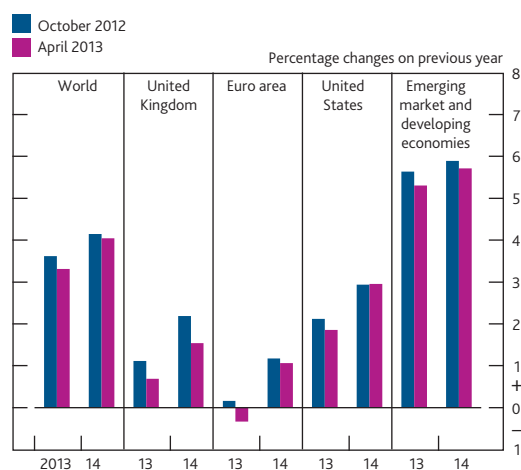
1 Global financial environment

In recent weeks, asset prices have fallen and financial markets have been more volatile, reflecting shifting expectations of the path of monetary policy in some of the major advanced economies. But, for much of the period since the previous *Report*, market sentiment improved and asset prices increased. There were signs of investors seeking to reallocate portfolios towards riskier assets, as intended by the monetary policy stance. But if investors 'search for yield' while misjudging the underlying risks, it can be a potential source of financial instability. In the United Kingdom, bank funding and credit conditions improved, but credit availability appeared to tighten further in the euro area.

This section summarises key developments in the global financial environment since the November 2012 *Report*, including the provision of financial services to UK households and companies during this period. During much of the period, market sentiment improved and asset prices increased. But, more recently, market sentiment has deteriorated and volatility has increased, reflecting shifting expectations of the path of monetary policy in some of the major advanced economies. By the end of the period, rises in most risky asset prices had partially reversed, while many risk-free rates ended the period higher than at the time of the November 2012 *Report*. Following the 17 June data cut-off for this *Report*, risk-free rates continued to rise.

The rest of this *Report* examines: short-term (Section 2) and medium-term (Section 3) risks to the financial system; the activity of the Financial Policy Committee (FPC) and progress on previous recommendations (Section 4); and, against that backdrop, the policy actions that the FPC advises to reduce risks to the financial system (Section 5). In addition, an annex provides an update of the core indicators for the countercyclical capital buffer and sectoral capital requirements that were published in the draft Policy Statement issued by the FPC in January 2013.

Chart 1.1 International GDP growth projections^(a)



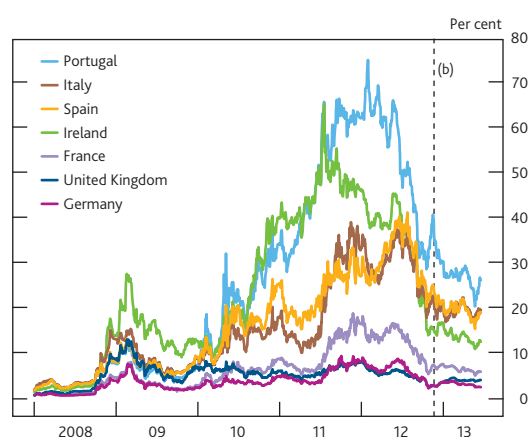
Sources: IMF *World Economic Outlook (WEO)* and Bank calculations.

(a) October 2012 and April 2013 WEO projections.

Growth prospects were in general subdued...

In the early part of 2013, global growth prospects remained subdued, particularly in the euro area. In April, the International Monetary Fund (IMF) revised down slightly its forecast for 2013 world GDP growth to 3.3% (**Chart 1.1**). The revision was consistent with the pattern of downward revisions to global growth forecasts since 2007. The divergence between the United States and the euro area became more marked. The US economy continued to grow at a moderate pace, with the level of GDP above its pre-crisis peak. But the euro area remained in recession, as balance sheet repair and tight credit conditions remained a drag on activity.

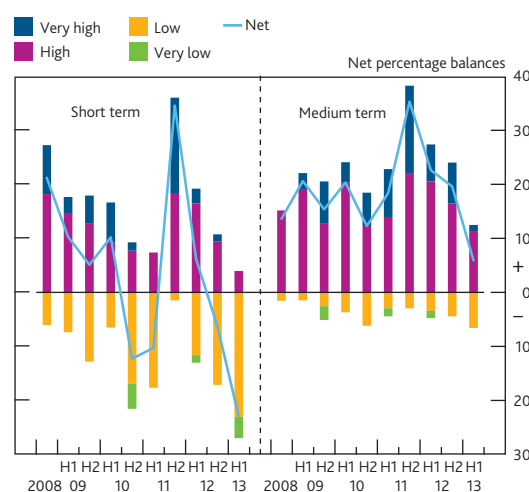
Chart 1.2 Market-implied default probabilities over the next five years for selected sovereign debt^(a)



Sources: Markit Group Limited and Bank calculations.

- (a) Probability of default, derived from CDS premia, from the perspective of a so-called 'risk-neutral' investor that is indifferent between a pay-off with certainty and an uncertain pay-off with the same expected value. If market participants are risk-averse, these measures may overstate actual probabilities of default. A loss given default of 60% is assumed.
(b) November 2012 Report.

Chart 1.3 Probability of a high-impact event in the UK financial system^(a)



Sources: Bank of England Systemic Risk Surveys and Bank calculations.

- (a) Respondents were asked for the probability of a high-impact event in the UK financial system in the short and medium term. From the 2009 H2 survey onwards, short term was defined as 0–12 months and medium term as 1–3 years. The net percentage balance is calculated by weighting responses as follows: very high (1), high (0.5), medium (0), low (-0.5) and very low (-1). Bars show the contribution of each component to the net percentage balance.

...prompting continued focus on policy support.

Against an overall weak macroeconomic backdrop, monetary policy remained supportive in advanced economies and some central banks loosened policy further. The European Central Bank (ECB) cut the interest rate on its main refinancing operations by 25 basis points in May. The Bank of Japan launched a major new monetary stimulus package, as part of a wider set of policy measures involving both fiscal stimulus and structural reform.⁽¹⁾ In the United States, the Federal Reserve committed in December 2012 to continue its open-ended purchases of assets until it observed a substantial improvement in the outlook for the US labour market and provided inflation expectations remained anchored. Towards the end of the period, however, the focus turned to the possible timing of a slowing in the pace of monetary expansion by the Federal Reserve.

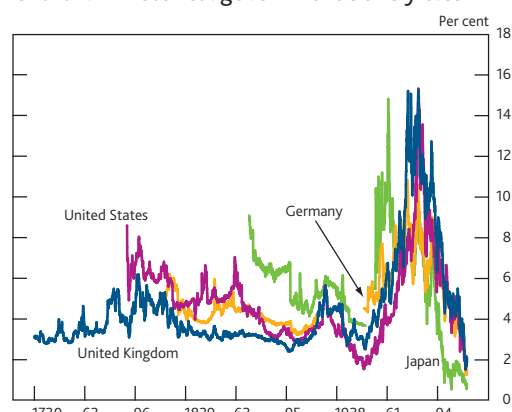
In the United Kingdom, the Monetary Policy Committee kept its policy rate and the stock of purchased assets unchanged. In April, an extension to the Funding for Lending Scheme (FLS) was announced by the Bank of England and HM Treasury.

Investor sentiment initially improved on the back of policy support...

The ECB's Outright Monetary Transactions (OMTs) programme to purchase short-term euro-area government bonds under certain conditions, which was announced in September 2012, helped dampen market concerns about some aspects of sovereign risks, such as currency redenomination risk. Spreads between vulnerable euro-area sovereign bonds and German bunds fell, in some cases to levels last seen in 2011. Ireland and Portugal were able to take advantage of improved market conditions to issue debt, the latter for the first time since the start of its bailout programme. The cost of default protection of some vulnerable euro-area countries' sovereign debt, as measured by credit default swaps (CDS), also fell despite a number of adverse events including an inconclusive election in Italy (Chart 1.2). Market reaction was also generally muted following the outcome of negotiations to resolve the sovereign debt and banking crisis in Cyprus, in which bond holders and uninsured depositors of the two largest Cypriot banks bore some of the banks' losses. This stability in financial markets in the face of potentially destabilising events was attributed by market participants to increased confidence in policymakers' willingness to 'do whatever it takes' to avoid tail risk.

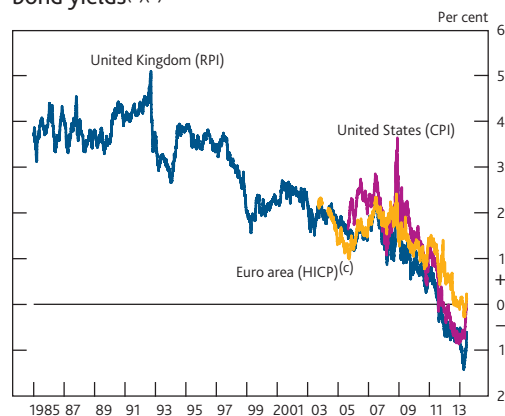
Consistent with the reduction in perceived tail risks, concerns about sovereign risk dropped back to a level last seen in the second half of 2011, according to the Bank of England's 2013 H1 Systemic Risk Survey. More generally, the perceived probabilities of a high-impact event affecting the UK financial system, over both the short and medium term, declined to their lowest levels since the survey began in 2008 (Chart 1.3).

(1) See the box on page 10 of the May 2013 Inflation Report.

Chart 1.4 Historical government bond yields^{(a)(b)(c)}

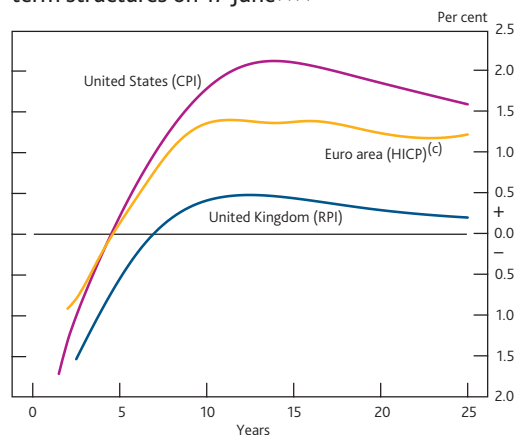
Sources: Global Financial Data and Bank calculations.

- (a) Ten-year yields.
 (b) Due to data limitations, the UK series prior to 1753 uses yields on 3% UK annuities and from 1753–1958 is compiled from yields on UK Consolidated Stock (Consols). As Consols are undated stock, the time-series comparison is only approximate. Long-dated or perpetual government securities are also used for the German, Japanese and US series where yields on ten-year bonds are unavailable.
 (c) Due to data limitations, no data are shown for Germany from 1915 to 1946 or Japan from 1947 to 1948.

Chart 1.5 International ten-year spot real government bond yields^{(a)(b)}

Sources: Bloomberg and Bank calculations.

- (a) Zero-coupon yield. Derived from the Bank's government liability curves.
 (b) Series are not directly comparable as UK real rates are defined relative to RPI inflation, whereas US and euro-area real rates are defined relative to CPI and HICP inflation respectively. In the United Kingdom, RPI inflation is generally higher than CPI inflation, which is likely to push down observed UK real rates compared with those defined relative to CPI inflation.
 (c) Euro-area real rates are implied from the average of German and French nominal government bond yields less euro-area inflation swap rates.

Chart 1.6 International instantaneous forward real rate term structures on 17 June^{(a)(b)}

Note: See footnotes (a)–(c) in Chart 1.5.

Sources: Bloomberg and Bank calculations.

...but more recently market sentiment has deteriorated and volatility increased.

More recently, risky asset prices fell and volatility increased as market sentiment was influenced by shifting expectations of the path of monetary policy in some of the major advanced economies. This highlighted the risk of abrupt changes in financial markets should expectations of the path of interest rates shift materially, including as central bank policies are exited. Section 2 examines the channels through which this could affect financial stability.

Bond yields had remained close to historically low levels...

Yields on government bonds in many advanced economies remained near historically low levels in the early part of 2013. For example, over recent years, UK ten-year nominal government bond yields have declined, on some estimates reaching their lowest levels since the 18th century (Chart 1.4).

...largely reflecting declines in real rates...

Those falls in nominal rates had largely reflected declines in real rates, with implied inflation rates remaining broadly stable. For example, in April, UK ten-year real rates — based on RPI inflation indexed bond yields — reached new lows (Chart 1.5). Market-based forward real rates remained negative in the United Kingdom, United States and euro area out to almost five years (Chart 1.6).

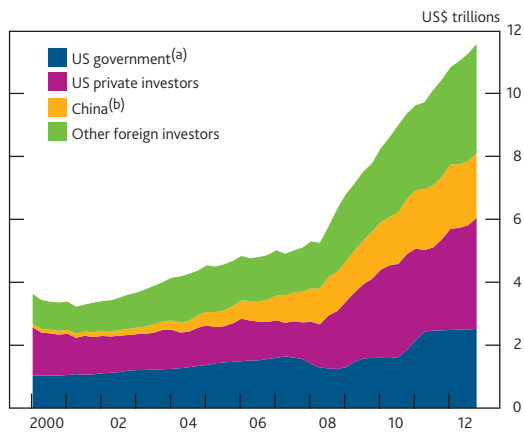
The low level of interest rates had reflected a variety of factors. Strong private sector demand for assets perceived to be safe, along with a continued trend of high savings in some emerging markets, were likely to have exerted downward pressure on yields. Consistent with that, US private investors and foreign investors, including from China, continued to increase their US Treasury holdings (Chart 1.7). Investor pessimism about growth prospects were another influence. Large-scale asset purchases by central banks, combined with an expectation that policy stimulus would remain in place, are also likely to have weighed on yields.

...but have subsequently risen.

In the weeks leading up to the publication of this Report, however, nominal bond yields rose in the major advanced economies (Chart 1.8). The increase in yields was on the back of better US macroeconomic data, including non-farm payrolls data for April, and shifting expectations of the path of monetary policy in some of the major advanced economies. In the United Kingdom, ten-year government bond yields ended the period 35 basis points higher than at the time of the November 2012 Report.

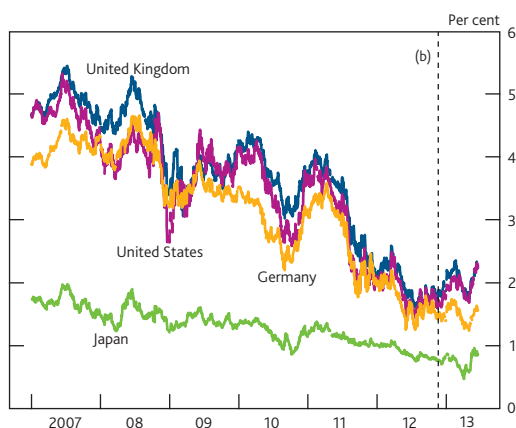
There were signs of search for yield...

Earlier in the period, there were signs of investors seeking higher yields by moving into riskier assets. This is an intended consequence of the monetary policy stance. But if investors

Chart 1.7 Holdings of US Treasury securities

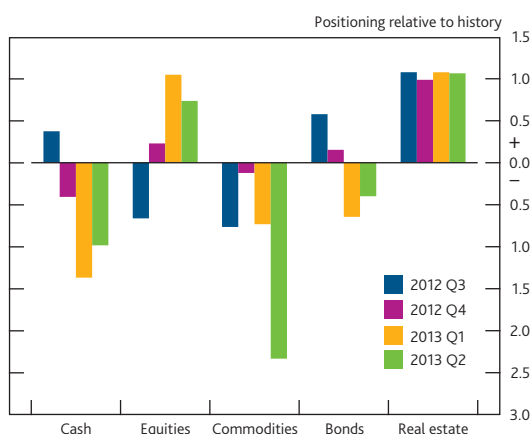
Sources: CEIC, Federal Reserve US flow of funds, IMF currency composition of official foreign exchange reserves and Bank calculations.

- (a) Includes holdings by state and local government, government retirement funds, government-sponsored enterprises and the Federal Reserve.
 (b) Assumes proportion of Chinese reserves held as Treasuries is the same as the world average. Other foreign holdings are calculated as the residual between total foreign holdings of Treasuries and the estimate of Chinese holdings.

Chart 1.8 International ten-year nominal spot government bond yields(a)

Sources: Bloomberg and Bank calculations.

- (a) Zero-coupon yield. Derived from the Bank's government liability curves.
 (b) November 2012 Report.

Chart 1.9 Global asset class positioning by investment funds(a)

Source: Bank of America Merrill Lynch Global Fund Manager Survey.

- (a) Positioning captures whether funds are overweight (positive scores) or underweight (negative scores) in each asset class relative to historical asset allocations. Historical asset allocations are based on data since 2006 for commodities and real estate and since 2001 for equities, bonds and cash.

'search for yield' while misjudging the underlying risks, it can also be a potential source of financial instability (Box 1). There was some evidence of a potential underpricing of risk in some market segments, such as high-yield credit instruments, particularly in the United States.

With government bond yields underpinning the pricing of all asset prices, a rapid change in yields would be expected to affect other financial assets too. Section 2 examines the potential impact of a rise in global long-term interest rates.

...with some portfolio rebalancing.

One dimension of investors seeking higher yields was a rebalancing of portfolios. There are limited data available on non-bank financial institutions, but global fund managers' allocations were reported to have switched from being overweight in cash in 2012 Q3, relative to past average positions, to being underweight in 2013 Q2 (Chart 1.9).

In addition, early in the period, there had been strong interest in emerging market equities and bonds from mutual fund investors. Flows into dedicated emerging market local currency bond mutual funds during the first four months of 2013 were higher than for the whole of 2012 (Chart 1.10). That was accompanied by a substantial compression of yields, on some measures reaching historical lows in May. Since late May, however, some of these flows have reversed, and spreads have risen sharply, in response to the pickup in the US Treasury yield curve.

This shift by mutual fund investors into emerging market bond classes was not, however, accompanied by generally strong inflows into other risky fixed-income asset classes. For example, net inflows into US high-yield mutual funds were not particularly strong in 2013, following the record inflows in 2012 (Chart 1.10).

Flows into dedicated equity funds, in both advanced as well as emerging economies, picked up sharply at the start of the year. Market contacts believed that reflected the deployment of cash holdings that investors had accumulated in late 2012. But, as with emerging market bonds, there has been some reversal of flows more recently, following the onset of more general market volatility in late May.

Portfolio rebalancing was evident too among UK insurance companies and pension funds. Contacts reported that some insurance companies were considering buying residential properties as they sought higher yields, diversifying away from traditional fixed-income securities. Insurance funds' corporate bond allocations suggested a shift down the credit spectrum: bonds rated BBB and below accounted for more than a third of their corporate bond holdings in 2012, up from a quarter in 2008, though some of this may have reflected ratings

Box 1

What factors might exaggerate risk-taking in financial markets?

Risky asset prices have risen internationally since mid-2012, despite the recent volatility in some financial markets, prompting questions about whether investors are demanding sufficient compensation for bearing risk.

In absolute terms, asset valuations are supported by the historically low level of risk-free interest rates, notwithstanding recent movements. There are nonetheless some market segments, such as the US high-yield corporate bond market, where price and non-price measures of risk have shown signs of becoming overly compressed. This box investigates the economic drivers and investor incentives that have the potential to exaggerate risk-taking.

Structural factors affecting risk

There are a number of long-standing structural forces that continue to affect measures of risk across financial markets. Current account surpluses in some emerging economies, and demand for savings by investors in Asia, are likely to continue to exert downward pressure on risk premia in developed markets. For example, purchases of US corporate and other bonds from US residents by overseas investors have totalled US\$4.3 trillion since 2009. And preference shifts by investors may continue to affect the constellation of risk premia between asset classes. For example, in the United Kingdom, the share of pension funds' portfolios held in fixed-income assets has risen steadily from around 10% in the early 1990s to more than one third today, while the share of equity holdings has declined.

Against this backdrop, the extraordinary policy support measures extended internationally since the financial crisis have sought to encourage investors to rebalance their exposures towards risky assets. Box 3 describes the interactions between monetary policy and financial stability, including their effects on investors' perceptions of, and tolerance for, risk.

Why might risk become mispriced?

There are a number of reasons why risk could in principle become mispriced, and why investors might continue to invest in an asset class even where they or managers acting on their behalf have concerns about valuations becoming stretched and/or non-price terms unduly loosening. Symptoms of exaggerated risk taking among investors might include elevated appetite for duration, credit and liquidity risk. Increasing balance sheet leverage is also a potential feature, as are the popularity of relatively complex instruments with

greater sensitivity to underlying economic outcomes — so-called 'embedded leverage'. A rapid unwinding of leveraged portfolios could amplify market price adjustments in the event of a material change in the financial environment.

Specifically, and most significantly in the current conjuncture, low yields have induced many investors with either explicit or implicit **nominal return targets** to maintain returns by moving down the duration, credit quality and liquidity spectrums. Investment decisions by long-term investors, such as insurance companies and pension funds, have the potential to affect overall demand for fixed-income securities. And this can have implications for risk premia in those markets and the type of securities that are issued. Relaxation of non-price terms, including the weakening of covenants in corporate bond markets for example, might provide a relatively less transparent mechanism for investors to achieve nominal return targets.

Investment institutions with comparatively restricted **investment mandates**, including those tracking benchmarks, necessarily deploy inflows from their investors in the market segments that fall within their investment mandates. They therefore need, over time, to purchase assets in benchmark constituents when they receive inflows even if prices have been rising, potentially reinforcing initial price moves. This phenomenon is most likely to occur in the public equity and bond markets where investors seek a diversified exposure to the asset class in question. It is likely to be exacerbated to the extent that less sophisticated investors place undue weight on past developments in valuations and market conditions when making portfolio decisions, with an inadequate appreciation of the underlying risks.

Where agents acting on behalf of investors are remunerated on the basis of their relative performance, **herding** could arise — with, for example, fund managers replicating the investment strategies of their peers to avoid the risk of underperformance. In addition, there may also be incentives to **game remuneration** schemes (for example if short-term performance drives remuneration) by investing in instruments with material but hard-to-measure tail risk, even if that risk may be underpriced. Some structured products have the potential to be particularly susceptible to this incentive because of their inherent complexity.

Separately, there are reasons why investors might underestimate the risks associated with some financial instruments. Examples here include: where the true distribution of returns is hard to predict because only **short time series** of data are available; where valuation models require **uncertain parameters** that cannot be directly observed and must be inferred; and where pay-off profiles are

inherently **difficult to model** even absent parameter uncertainty, perhaps because of embedded economic leverage. Such frictions are likely to be more important in some market segments than others and may be particularly important for more complex products, including structured credit instruments.

The factors above are likely to have more force if a sustained period of low financial market volatility affects investors' **beliefs** about the future distribution of returns, leading to tail risk being underestimated.

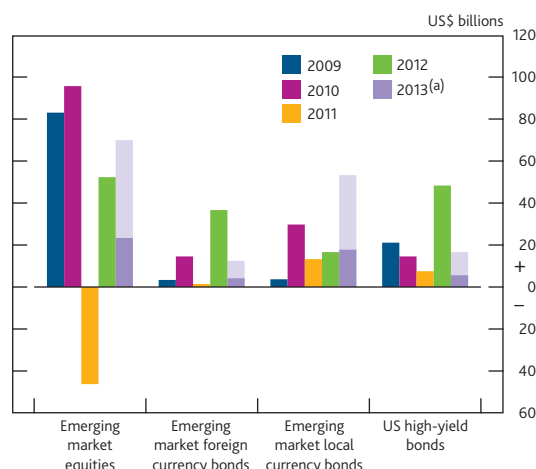
Conclusion

Over much of the period since the previous *Report*, there were signs that conditions in some parts of fixed-income markets, in particular in the advanced and emerging economies, had become relatively exuberant. It is too soon to tell whether the more recent rise in market volatility and falls in risky asset prices represent the beginning of a longer-run shift in investor sentiment.

Understanding the underlying drivers of recent developments in financial markets is important from a policy perspective because it helps to identify particular fault lines that could prompt wider disruption in the financial system. A concern from a financial stability standpoint is that investors seek to exit common risk positions simultaneously, causing market liquidity to dry up in pockets of the financial system. Contagion could occur if, for example, initial asset disposals by investors in some markets led to broader spillovers to other markets where liquidity conditions were better. The effects could be aggravated if concerns about counterparty credit risk rose in tandem.

The risks from a disorderly unwinding of risk positions in financial markets are described in Section 2.

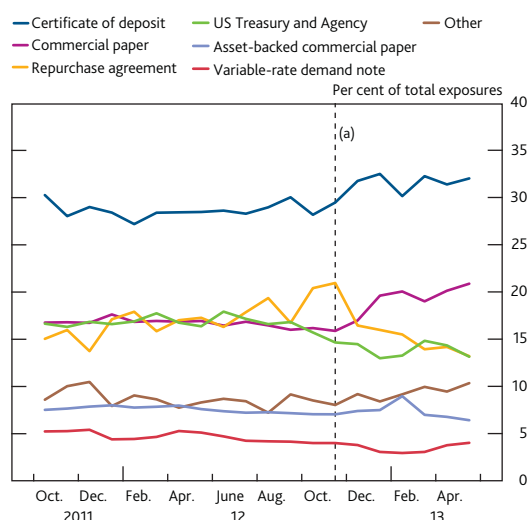
Chart 1.10 Flows into mutual funds investing in higher-risk asset classes



Sources: Emerging Portfolio Fund Research Global and Bank calculations.

(a) Dark bars show data to end-April, while dark plus light areas show annualised data.

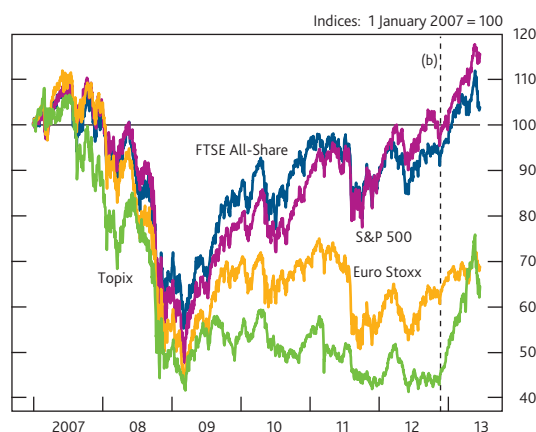
Chart 1.11 Composition of US prime money market funds' exposures



Sources: Crane data and Bank calculations.

(a) November 2012 Report.

Chart 1.12 International equity indices^(a)



Sources: Thomson Reuters Datastream and Bank calculations.

(a) Denominated in units of local currency.

(b) November 2012 Report.

downgrades. Pension funds reportedly continued to explore alternative and less liquid investments, in particular in infrastructure and social housing.

For much of the period, there were signs of an increasing appetite for credit risk by US prime money market funds, with holdings of unsecured commercial paper and certificates of deposit increasing (**Chart 1.11**). There were also some indications of an increase in the tenor of their lending to European banks.

Asset prices rose globally...

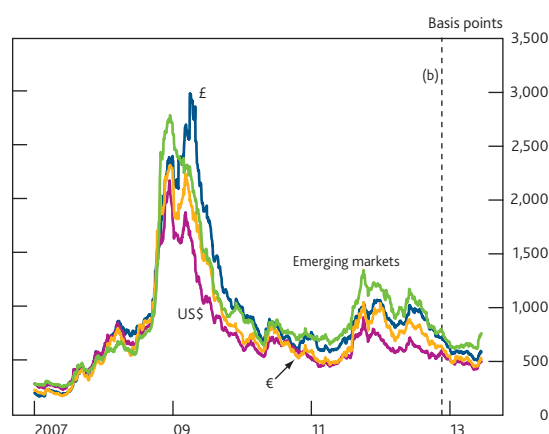
Asset prices rose strongly in the early months of 2013. Both the FTSE All-Share and the S&P 500 equity indices reached record highs in nominal terms in mid-May, and finished the period 11% and 18% higher respectively than at the time of the November 2012 Report (**Chart 1.12**). The Topix was more volatile but rose by around 40%. In debt markets, as corporate bond spreads narrowed, particularly for non-investment grade bonds (**Chart 1.13**), bond yields reached historical lows. Since late May, however, some of these trends have partially reversed. For example, non-investment grade corporate bond spreads across the major currencies widened by around 70 basis points, albeit remaining around 100 basis lower than at the time of the November 2012 Report. In emerging markets, bond spreads also increased sharply over the weeks leading up to publication, largely reversing their earlier fall.

There were also signs that the low-yield environment was supporting prices of physical assets. Residential property prices increased in a number of countries since the November 2012 Report, including in the United Kingdom. In the UK commercial property market, there continued to be strong appetite for investment in high-quality, so-called 'prime', property with flows dominated by global investors. Some market contacts reported overheating in certain subsectors of this market, such as Central London offices, with the low interest rate environment said to be a key factor (Section 2).

...accompanied by strong market issuance...

Some companies were able to take advantage of improved market conditions in the first few months of 2013 to issue new debt in both investment-grade and high-yield corporate bond markets. Increased risk appetite was evident in strong demand for lower-grade credit: for example issuance of European high-yield corporate bonds in the first half of this year has been almost as high as the total issuance in 2012 (**Chart 1.14**) and US leveraged loan market issuance reached record highs in Q1. More recently, however, there have been reports that some planned bond issues have been put on hold.

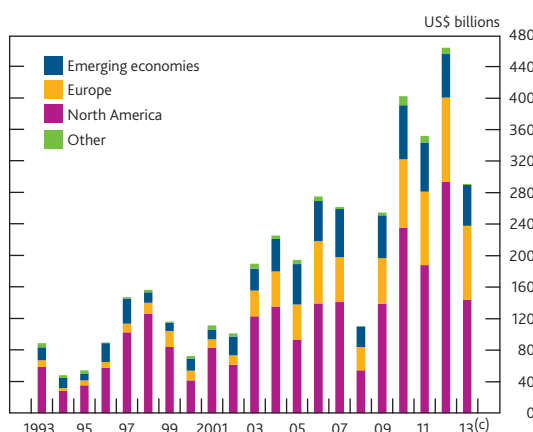
In early 2013, flows into, and issuance of, collateralised loan obligations (CLOs) and commercial mortgage-backed securities (CMBS) were strong in the United States. For

Chart 1.13 Corporate high-yield bond spreads^(a)

Source: Bank of America Merrill Lynch.

(a) Option-adjusted spreads. The US dollar series refers to US dollar-denominated bonds issued in the US domestic market, while the sterling and euro series refers to bonds issued in domestic or eurobond markets in the respective currencies. The emerging markets series is calculated using bonds with a below investment grade country of risk rating that are euro or US dollar-denominated and issued in the eurobond or US domestic markets.

(b) November 2012 Report.

Chart 1.14 Issuance of sub-investment grade corporate bonds by region^{(a)(b)}

Sources: Dealogic and Bank calculations.

(a) Primary market issuance with an original contractual maturity or earliest call date of at least 18 months.

(b) 'Emerging economies' includes Africa, Caribbean, Indian subcontinent, Latin America, Middle East, North Asia and South East Asia. 'Other' includes Australasia and Japan. Includes issuance in all currencies.

(c) Year to date.

example, US\$27 billion of US CLOs were issued in Q1, the highest quarterly issuance since 2007. There had also been signs that European markets were starting to revive. During the period since the November 2012 Report, there were seven CLO deals in Europe, a market which had been dormant since the crisis. More recently, issuance of European CLOs has slowed. That may be related to the publication of an updated draft on technical standards by the European Banking Authority,⁽¹⁾ which prohibits third-party investors from holding the 5% equity interest in the structure.

...in some cases with greater complexity and on looser terms and conditions...

Earlier in the period, there had also been some tentative signs of increased risk-taking in equity derivatives markets, with contacts noting an increased willingness by investors, including pension and insurance funds, to accept complexity. There was interest in contingent capital notes, a capital instrument that, under specified conditions, converts to equity or is written down so as to increase the loss-absorbing capacity of a firm.

Accompanying this, market contacts noted a weakening in lending standards during much of the period, particularly in the United States. Investors became increasingly willing to purchase instruments with less creditor protection in exchange for higher returns. For example, issuance of 'covenant-lite' leveraged loans, where investors accept fewer safeguards if a debtor company's finances deteriorate, increased significantly in the United States. In Europe, reports suggested that some corporate issuers, expected imminently to breach covenants, were being refinanced out of these loans into high-yield bonds with no covenants. In the US CLO market, deals were reportedly allowing up to 90% of the loan portfolio to consist of covenant-lite loans, up from as little as 30% in 2011 and the recent market standard of 50%–60%. Partly in response to these developments, in March 2013 the US supervisory agencies updated their guidance on leveraged lending.⁽²⁾ Despite the recent market volatility, covenant-lite issuance in the United States has reportedly continued.

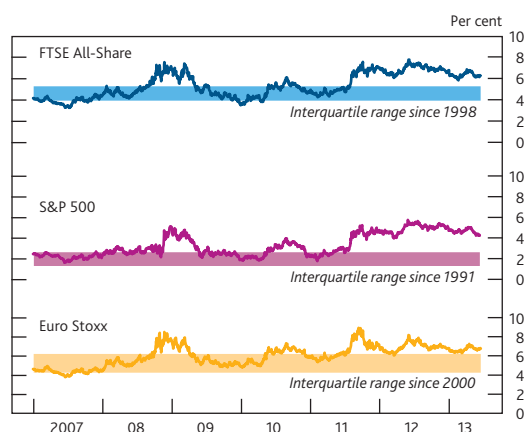
A number of European high-yield bonds were issued without 'change of control' put options, which are designed to protect investors against deterioration in credit quality in the event of a change in control of the issuing entity. Contacts also reported greater use of payment-in-kind deals, where no interest is paid on bonds until maturity.

...and with some pockets of emerging concern.

If investors 'search for yield' and misjudge the underlying risks, it can be a potential source of financial instability.

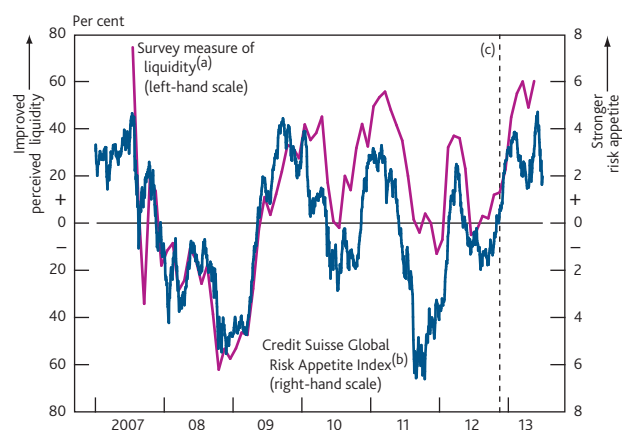
(1) <http://eba.europa.eu/-/eba-consultation-on-draft-technical-standards-on-securitisation-retention-rules>.

(2) See updated guidance by the Federal Reserve Board, the Federal Deposit Insurance Corporation and the Office of the Comptroller of the Currency, dated 21 March 2013: www.federalreserve.gov/newsevents/press/bcreg/20130321a.htm.

Chart 1.15 International equity risk premia^(a)

Sources: Bloomberg, Thomson Reuters Datastream and Bank calculations.

(a) As implied by a multi-stage dividend discount model.

Chart 1.16 Investor risk appetite and market liquidity

Sources: Bank of America Merrill Lynch Global Fund Manager Survey, Credit Suisse and Bank calculations.

- (a) The net percentage balance of respondents to a monthly Bank of America Merrill Lynch global survey of fund managers reporting liquidity conditions as positive.
 (b) Summary statistic which tracks the relative performance of safe assets versus more volatile assets, with a positive value implying strong risk appetite and a negative value implying risk aversion.
 (c) November 2012 Report.

Model-based estimates of the risk premium required by investors to hold equities fell during the period since the November 2012 Report. And although risk premia do not appear particularly compressed relative to their recent averages (Chart 1.15), such estimates will be affected by currently historically low levels of risk-free rates.

In corporate bond markets, there were pockets of emerging concern, particularly in the US high-yield corporate bond market. Implied liquidity risk premia embodied in corporate bond spreads fell, as measured by the difference between corporate bond spreads and CDS premia. While corporate bond spreads appeared to have remained above levels consistent with rates of corporate default seen in the long run, yields reached historically low levels over the period.

Perceptions of liquidity improved prior to the recent volatility...

The improvement in global financial market conditions during much of the period appeared to be underpinned by more positive perceptions of market liquidity. While a survey measure of perceptions of liquidity reached its highest level since mid-2007 (Chart 1.16), possible indicators of future liquidity — such as turnover in investment-grade corporate bonds and equities and estimates of bid-ask spreads — suggested that actual liquidity had not improved materially. In addition, market contacts suggest dealers' inventories are low in a number of markets, partly due to changes in regulation.

More generally, over recent years, there has been an increase in flows into US real estate investment trusts (REITs) that invest in agency mortgage-backed securities and into some exchange-traded funds (ETFs). Products that offer instantaneous liquidity may be especially susceptible to a change in sentiment, particularly when they invest in long-dated assets using short-term funding. These risks appeared to crystallise to some extent recently, with reports of restrictions on redemptions of underlying assets from ETFs. There have also been examples of a deterioration in liquidity in other markets, such as the Chinese interbank market, where short-term money market rates rose to extremely elevated levels in mid-June before falling back again.

Sharp moves in the prices of some financial assets since the end of May were associated with a rapid unwinding of some positions, including those held by hedge funds in popular or 'crowded' trades. Market liquidity was reported to have become strained in some financial assets over this period, illustrating both the risk of abrupt changes in asset prices should expectations on the path of interest rates shift materially, and the danger of relying unduly on market liquidity remaining robust to a widespread exit from widely held positions. Section 2 examines the channels through which this could affect financial stability.

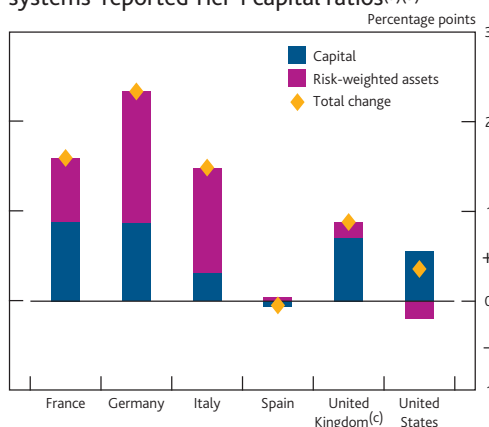
Chart 1.17 Banking system reported Tier 1 capital ratios^{(a)(b)}



Sources: SNL Financial and Bank calculations.

- (a) End-year data.
 (b) Aggregated Tier 1 capital divided by aggregated risk-weighted assets of selected banks and large complex financial institutions. Tier 1 capital and risk-weighted assets data are reported on a Basel I basis for US banks. For European banks, these data are reported on a Basel II basis up to and including 2010 and on a Basel 2.5 basis thereafter.
 (c) UK banks and building societies included are Barclays, HSBC, LBG, Nationwide and RBS.

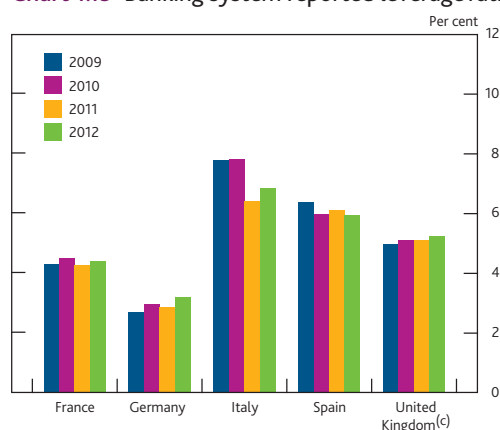
Chart 1.18 Contributions to the change in banking systems' reported Tier 1 capital ratios^{(a)(b)}



Sources: SNL Financial and Bank calculations.

- (a) Change between end-2011 and end-2012.
 (b) Chart shows a decomposition of changes in the weighted average Tier 1 capital ratio of selected banks and large complex financial institutions. Tier 1 capital and risk-weighted assets data are reported on a Basel I basis for US banks. For European banks, these data are reported on a Basel 2.5 basis.
 (c) UK banks and building societies included are Barclays, HSBC, LBG, Nationwide and RBS.

Chart 1.19 Banking system reported leverage ratios^{(a)(b)}



Sources: SNL Financial and Bank calculations.

- (a) End-year data.
 (b) Chart shows the average leverage — defined as total shareholders' equity divided by total assets — of selected banks and large complex financial institutions.
 (c) UK banks and building societies included are Barclays, HSBC, LBG, Nationwide and RBS.

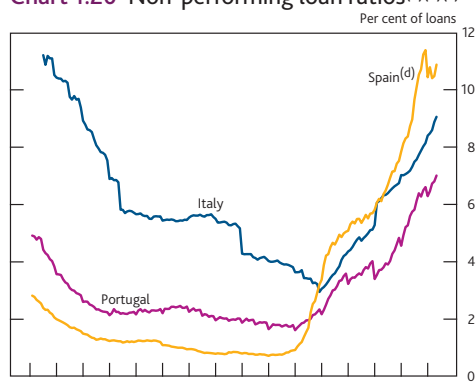
Liquidity conditions within the over-the-counter (OTC) derivatives market are difficult to gauge from available data. Only rough indicators are available, such as total activity in the market. Since the November 2012 *Report*, there has been little evidence of any significant generalised change in market activity. While the size of the interest rate derivative market increased by 7% (as calculated by gross notional amounts outstanding) during the period since November 2012, the volumes of credit derivative contracts outstanding remained broadly unchanged, standing at less than half the level experienced at the market peak at the end of 2007. And although the volume of interest rate derivatives that are centrally cleared has risen by 11% since the November 2012 *Report*, there was little change in the proportion of OTC derivatives cleared for most other asset classes. The impact of the introduction of clearing mandates in the United States and Japan during this time remains unclear.

...and uncertainties around the degree of financial system leverage remained significant.

Asset prices have the potential to adjust rapidly where investors are leveraged. Increases in asset prices over much of the period did not appear to have been accompanied by a broadly based rise in leverage. Leverage remained little changed across most global banks. Outside the banking sector, higher risk appetite was generally being expressed through portfolio shifts and not through material increases in investors' balance sheet leverage. For example, hedge fund leverage was reportedly still below 2007 levels. There were, however, some emerging signs of a revival of instruments with inherent sensitivity to economic outcomes — so-called 'embedded leverage' — such as CLOs in the United States. Moreover, there remain substantial data gaps on balance sheet leverage in the non-bank financial sector, and on embedded leverage across the financial system.

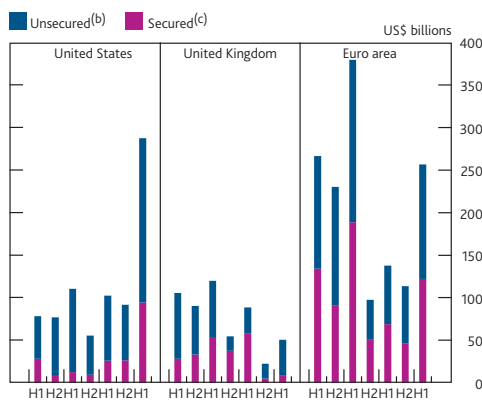
Regulatory capital ratios rose...

Reported regulatory capital ratios continued to rise in the United States and in most major European banking systems (Chart 1.17), though as discussed in Section 2 such measures can provide a poor indication of resilience. By the end of 2012 European banks, including those in the United Kingdom, had raised their reported aggregate Tier 1 capital ratio to 12.5%, a rise of 1.2 percentage points since the end of 2011. While the rise was material, this was mostly due to a substantial fall in risk-weighted assets (Chart 1.18), as weak profitability constrained the ability of banks to generate capital out of retained earnings. More recently, some major European banks have issued new equity. In the United States, the latest bank stress tests, which were published by the Federal Reserve in March 2013, suggested that aggregate levels of capital among the major US banks were sufficient to withstand a severe stress, with only one institution judged to be undercapitalised following the stress scenario.

Chart 1.20 Non-performing loan ratios^{(a)(b)(c)}

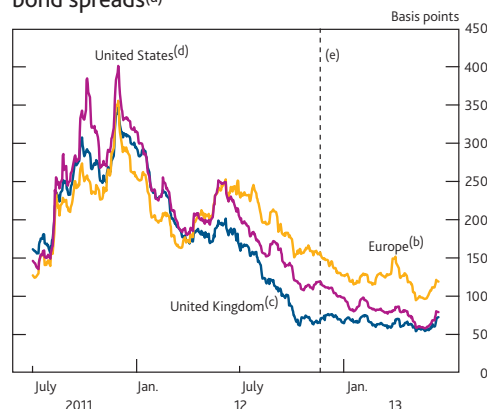
Sources: National central banks and Bank calculations.

- (a) Data to April 2013.
 (b) The chart shows gross non-performing loans as a share of total loans. Definitional differences of non-performing loans limit cross-country comparability.
 (c) Loans to resident non-financial firms and households.
 (d) The fall in the Spanish ratio in December 2012 and February 2013 is due to transfers of assets to the Asset Management Company for Assets Arising from Bank Restructuring ('Sareb'), which was set up to remove problematic assets from the balance sheets of Spanish banks.

Chart 1.21 Issuance of term bank senior secured and unsecured debt in public markets^(a)

Sources: Dealogic and Bank calculations.

- (a) Securities with an original contractual maturity or earliest call date of at least 18 months. Includes primary market issuance only and excludes issuance under government-guarantee schemes. Issuance is allocated to each region according to the bank's nationality of operations listed on Dealogic. 2013 H1 data are up to and including 17 June 2013.
 (b) Unsecured issuance includes investment-grade and high-yield bonds and medium-term notes.
 (c) Secured issuance includes asset-backed securities, mortgage-backed securities and covered bonds.

Chart 1.22 Major banks' indicative senior unsecured bond spreads^(a)

Sources: Bloomberg, Markit Group Limited and Bank calculations.

- (a) Constant-maturity unweighted average of secondary market spreads to mid-swaps of banks' five-year senior unsecured bonds, where available. Where a five-year bond is unavailable, a proxy has been constructed based on the nearest maturity of bond available for a given institution.
 (b) European banks: BBVA, BNP Paribas, Crédit Agricole, Credit Suisse, Deutsche Bank, ING, Intesa, Rabobank, Santander, Société Générale, UBS and UniCredit.
 (c) UK banks: Barclays, HSBC, LBG, Nationwide, RBS and Santander UK.
 (d) US banks: Bank of America Merrill Lynch, Citigroup, Goldman Sachs, JPMorgan, Morgan Stanley and Wells Fargo.
 (e) November 2012 Report.

...but concerns remain about banks' resilience.

Despite the improvement in reported regulatory measures of capital, market-based measures of banks' capital adequacy continued to suggest that investors were uncertain about the value of banks' assets and the prospects for bank profitability. For many banks, market capitalisation remained low relative to the book value of their assets. For example, 17 of the largest 40 listed banks in Europe had a market capitalisation below 3% of the book value of their assets.

While reported risk-based capital ratios have increased, the underlying capital ratios of some of the largest European banks may be currently lower than the 'end-point' Basel III common equity Tier 1 capital ratio of 7%, to be implemented fully in 2019 (Section 2). Separately, bank leverage has remained little changed (Chart 1.19). That reflects bank leverage being a measure of resilience that does not use weights or models to calibrate risks, although it too may imperfectly measure resilience to the extent that it is based on capital estimates that exaggerate loss-absorbing capacity. Increases in non-performing loan ratios in some vulnerable euro-area countries are also consistent with market participants' uncertainty over valuations (Chart 1.20).

Funding market conditions improved...

Despite continuing concerns about banks' resilience, the improvement in bank debt funding conditions seen internationally over the second half of 2012 continued in the first half of 2013. For example, in the United Kingdom, according to the *Bank Liabilities Survey*,⁽¹⁾ lenders reported that spreads on retail funding had fallen significantly in the three months to end-May and were expected to fall significantly further over the next three months. At the same time, many lenders also reported a fall in 'other' (such as wholesale) funding costs, with a further fall expected in Q3.

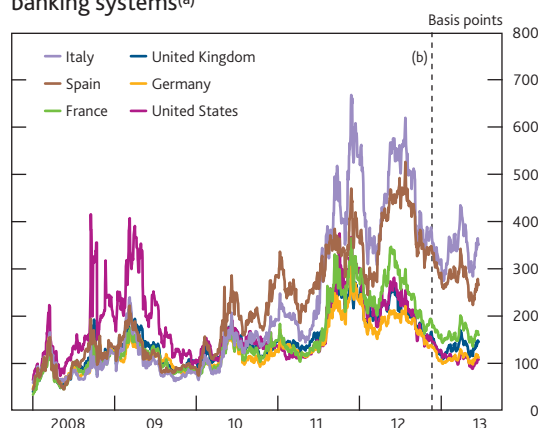
According to the ECB's *Bank Lending Survey*, euro-area banks also reported improved access to retail and wholesale funding in 2013 Q1 and expected a further marginal improvement in conditions for most market segments in Q2. Consistent with that, euro-area banks' issuance of secured and unsecured term debt in public markets also picked up, including by some banks in vulnerable euro-area countries (Chart 1.21). Contacts suggested that higher issuance was linked to continuing improvement in sentiment as investors took comfort that the ECB's OMTs would provide a backstop in euro-area sovereign debt markets.

...as reflected in lower funding costs.

Term funding costs for banks in Europe and the United States fell by about 40 basis points since the November 2012 Report, while they remained broadly unchanged in the United Kingdom (Chart 1.22).

(1) www.bankofengland.co.uk/publications/Pages/other/monetary/bls/bls1306.aspx.

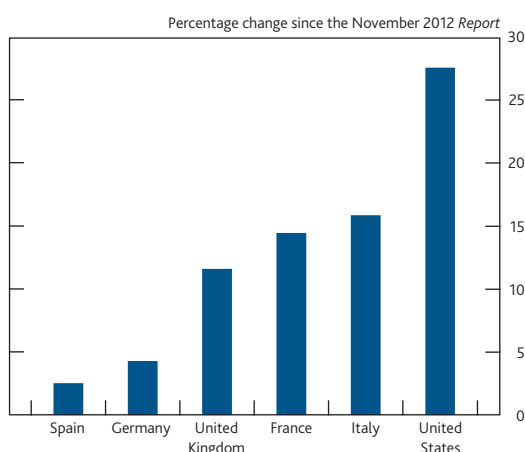
Chart 1.23 Cost of default protection for selected banking systems^(a)



Sources: SNL Financial, Thomson Reuters Datastream and Bank calculations.

- (a) Average five-year CDS premia of selected banks and large complex financial institutions, weighted by assets as at end-2012.
(b) November 2012 Report.

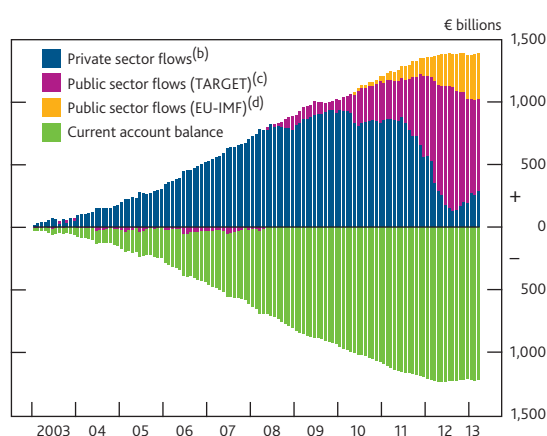
Chart 1.24 Bank equity prices^(a)



Sources: Thomson Reuters Datastream and Bank calculations.

- (a) Indices used are FTSE France banks, FTSE Germany banks, FTSE Italy banks, FTSE Spain banks, FTSE UK banks and FTSE USA banks. All indices are denominated in US dollars.

Chart 1.25 Cumulative capital flows for selected euro-area countries^(a)



Sources: Central Statistics Office, European Commission, IMF, national central banks and Bank calculations.

- (a) Refers to Greece, Ireland, Italy, Portugal and Spain.
(b) Data up to March 2013 with the exception of balance of payments data for Ireland, which are to December 2012 and extrapolated thereafter.
(c) Claims (liabilities) incurred within the Eurosystem via TARGET2 cross-border payment flows.
(d) Loans disbursed under joint financing package with contributions from the European Financial Stabilisation Mechanism, the European Financial Stability Facility, the European Stability Mechanism, individual EU members under bilateral arrangements and the IMF.

A key influence on funding conditions was a decrease in perceptions of bank risk, reflecting improved market sentiment and a perceived reduction in tail risk. For example the cost of default protection on euro-area banks' unsecured bonds fell over the period as a whole (**Chart 1.23**). Bank equity prices also increased during much of the period, including in some vulnerable euro-area countries. In Italy, for example, bank equity prices rose by around 15% (**Chart 1.24**).

Credit conditions remained tight in the euro area...

As funding conditions in the euro area eased, there were some signs that the process of financial fragmentation was starting to slow. As outlined in the November 2012 Report, since mid-2011 there had been large net private capital outflows from the vulnerable euro-area countries, which had been replaced by official inflows and, in particular, a widening of intra-Eurosystem TARGET balances.⁽¹⁾ Over recent months, these TARGET balances have narrowed (**Chart 1.25**), partly reflecting Spanish banks' renewed access to private repo markets.

While the dispersion in funding conditions across euro-area banks decreased, the divergence in lending conditions in the euro area remained considerable. Interest rates on new lending to non-financial corporations in Italy, Spain and other vulnerable euro-area countries remained well above those charged by banks in Germany and France. Euro-area lending growth also remained particularly weak in the vulnerable euro-area countries. According to the ECB's *Bank Lending Survey*, credit conditions tightened further in the euro area in 2013 Q1, albeit at a slower pace than in Q4. Credit conditions were expected to tighten further in Q2. That contrasted with the United States, where the Federal Reserve Board's *Survey of Senior Loan Officers* reported a further easing of credit standards on commercial and industrial loans.

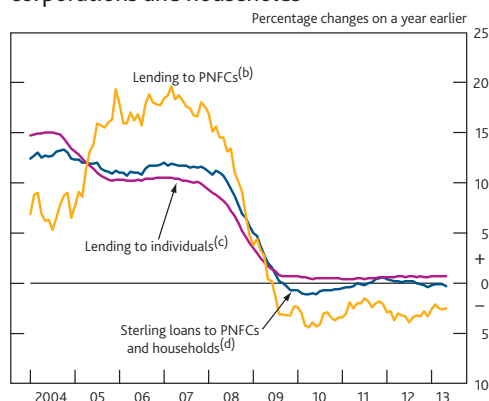
...while they eased in the United Kingdom...

In the United Kingdom, lending growth remained weak. Annual household lending growth has averaged less than 1% over the past three years (**Chart 1.26**). Lending to businesses has been weaker still, contracting by around 3% per annum over the same period.

The Bank's Q1 *Credit Conditions Survey* (CCS) provided some signs of improvement in UK credit availability. For households, mortgage availability was reported to have increased in Q1 and was expected to improve further in Q2. The rise in credit availability was reported to be a little more marked for borrowers with loan to value (LTV) ratios above 75% (**Chart 1.27**). FLS participants reported that the incentives to lend created by the Scheme had boosted mortgage market competition, including for higher LTV products where the falls

(1) TARGET2 is a payment system owned and operated by the Eurosystem for the settlement in central bank money of central bank operations, interbank transfers and other large-value euro-denominated payments.

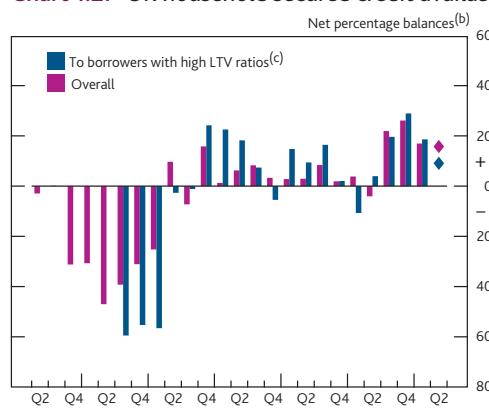
Chart 1.26 Sterling lending to UK private non-financial corporations and households^(a)



Source: Bank of England.

- (a) Twelve-month growth in the stock of lending. Data cover sterling lending and are seasonally adjusted unless otherwise stated.
 (b) Lending by UK-resident monetary financial institutions (MFIs), excluding the effects of securitisations and loan transfers. Includes loans and holdings of securities.
 (c) Lending by UK-resident MFIs and other specialist lenders. Excludes student loans.
 (d) Sterling loans by UK-resident MFIs and related specialist mortgage lenders, excluding the effects of securitisations and loan transfers. Funding for Lending Scheme measure. Non seasonally adjusted.

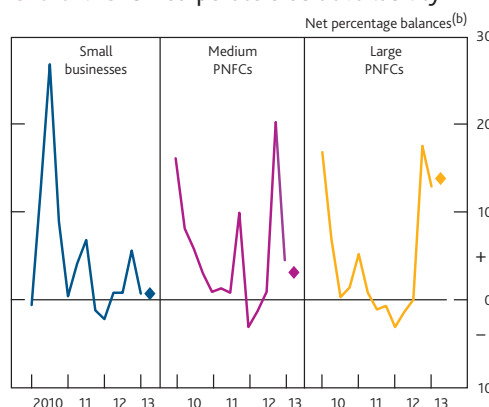
Chart 1.27 UK household secured credit availability^(a)



Source: Bank of England Credit Conditions Surveys.

- (a) Net percentage balances are calculated by weighting together the responses of those lenders who answered the question: 'How has the availability of secured credit provided to households changed?'. The magenta and blue bars show the responses over the previous three months. The corresponding diamonds show the expectations over the next three months.
 (b) A positive balance indicates that more secured credit is available.
 (c) The question was introduced in 2008 Q3. 'High' LTV ratios are defined as those above 75%.

Chart 1.28 UK corporate credit availability^(a)



Source: Bank of England Credit Conditions Surveys.

- (a) Net percentage balances are calculated by weighting together the responses of those lenders who answered the question: 'How has the availability of credit changed?'. The lines show the responses over the previous three months. The corresponding diamonds show expectations over the next three months.
 (b) A positive (negative) balance indicates that more (less) credit is available.

in quoted loan rates were most notable. But the loosening in credit conditions has yet to feed into a sustained pickup in mortgage approvals.

In March 2013, the Government also announced a 'Help to Buy' scheme which is designed to boost housing market activity. In addition to the equity loan scheme for new-build homes (which started in April), a government mortgage guarantee scheme will be available from the beginning of next year. This has the potential to support up to £130 billion of lending on house purchases — roughly equal to gross lending for house purchases in the six quarters to the end of 2012. The scheme is set to run for three years, with any extension requiring agreement from the FPC.

...including for companies.

There were signs of improvement in credit availability for large corporates. According to the Bank's CCS, credit conditions faced by large companies improved again in 2013 Q1, with further easing expected in Q2 (Chart 1.28). But net lending to large businesses remained weak, reflecting in part the fact that large companies can bypass banks and access finance by accessing capital markets directly. In the first half of 2013, UK corporate bond issuance by private non-financial corporations (PNFCs) remained robust, with cumulative net issuance to April the highest since 2003. And according to the *Deloitte CFO Survey*, businesses viewed corporate bond issuance as particularly attractive.

The improvement was less marked for small and medium-sized enterprises (SMEs). Such companies are less likely to have access to alternative sources of external finance and therefore are more reliant on banks for external finance. According to the CCS, loan spreads fell slightly in 2013 Q1 and survey evidence from the Federation of Small Businesses also suggested that the pricing of loans to small businesses was more favourable than a year ago. But applications for credit from small businesses have yet to pick up and net lending to SMEs remained negative in Q1. Against that backdrop, the Bank of England and HM Treasury announced in April 2013 an extension to the FLS, incorporating incentives to boost lending skewed towards SMEs.

There was little evidence of significant increases of finance to SMEs being provided outside the banking system. HM Treasury announced in March, as part of the *Budget*, that it will investigate options for improving access to SME credit data to make it easier for newer lenders to assess loans to smaller businesses.

2 Short-term risks to financial stability

UK banks' funding positions have improved and their funding costs have fallen, particularly for banks with previously higher funding costs. Banks' reported capital ratios have increased during 2012, but progress to build capital and reduce leverage has been slow. Headwinds to profits, including from conduct issues, have continued to impede the strengthening of UK banks' resilience. Despite a number of countries' progress in reducing fiscal and external deficits, imbalances in the euro area remain large and a re-emergence of stressed conditions continues to pose a risk to financial stability. Financial institutions and markets are also vulnerable to an abrupt rise in global interest rates. And some UK borrowers remain highly indebted, which could result in losses for UK banks.

Short-term risks to UK financial stability remain material, despite improvements in financial market conditions and in UK banks' balance sheets. Section 2.1 examines the resilience of UK banks. Section 2.2 highlights the main short-term risks to UK financial stability from the global financial environment, while Section 2.3 examines risks from exposures to UK borrowers.

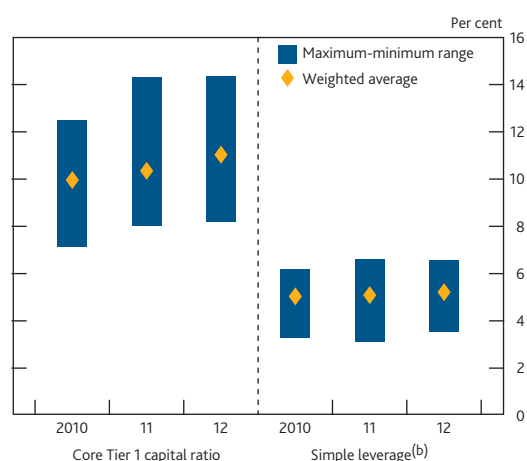
2.1 Banks' resilience to stress

Banks' reported capital ratios continued to rise...

Banks are in the process of transitioning to Basel III capital standards. Relative to Basel 2.5 standards, the Basel III definition of capital excludes some forms of capital that cannot absorb losses reliably. In part for this reason, in March 2013, the FPC recommended that the PRA use the 'end-point' definition of Basel III common equity Tier 1 capital, that will be implemented fully in 2019, in its assessment of capital adequacy.

On a Basel 2.5 basis, major UK banks⁽¹⁾ core Tier 1 capital ratios were reported to have risen to 11.0% at end-2012, from 10.3% a year earlier (Chart 2.1). Major UK banks' reported core Tier 1 capital levels also increased by £5.4 billion. But excluding HSBC Group, their capital fell by £1.2 billion during 2012. While simple leverage ratios (shareholders' equity relative to total assets) improved slightly, some UK banks' simple leverage ratios were estimated to have remained below 4%.

Chart 2.1 Major UK banks' reported capital and leverage ratios^(a)



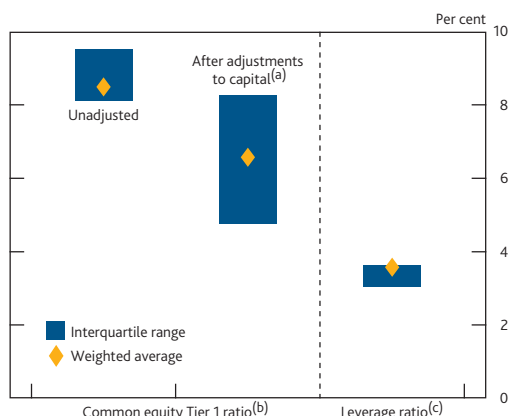
Sources: Bank of England, published accounts and Bank calculations.

(a) See footnote (1) below. This chart excludes Virgin Money.

(b) Core Tier 1 capital ratios are on a Basel 2.5 basis. Simple leverage is defined as shareholders' equity divided by total assets.

(1) Unless otherwise noted, 'major UK banks' refers to: Banco Santander, Bank of Ireland, Barclays, Co-operative Banking Group, HSBC, Lloyds Banking Group (LBG), National Australia Bank, Nationwide, Royal Bank of Scotland (RBS) and Virgin Money. Annual data used for National Australia Bank are for the period ending end-March, due to the bank's different reporting cycle.

Chart 2.2 Basel III capital and leverage ratios for the banks included in the FPC's capital exercise at end-2012



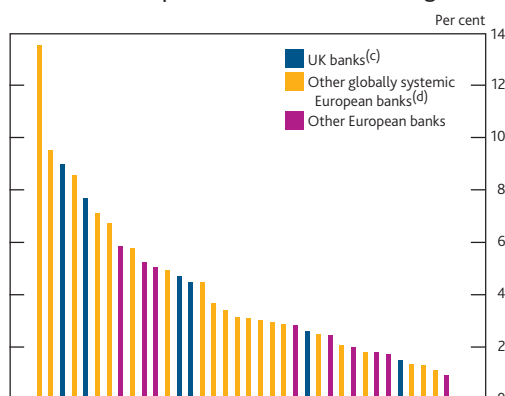
Sources: Prudential Regulation Authority and Bank calculations.

(a) Adjustments to capital and risk weights. For details of these adjustments see www.bankofengland.co.uk/publications/Pages/news/2013/081.aspx.

(b) Uses end-point Basel III definitions.

(c) The leverage ratio is calculated as common equity Tier 1 capital relative to the leverage ratio exposure as defined by Basel III proposals.

Chart 2.3 European banks' market leverage(a)(b)



Sources: Bank of England, SNL Financial, Thomson Reuters Datastream and Bank calculations.

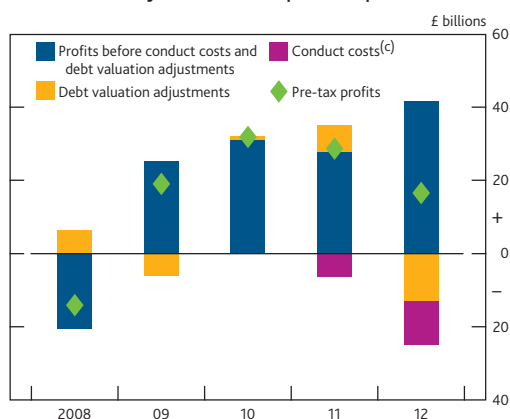
(a) Calculated as market capitalisation divided by total book assets. Total assets data are as at end-2012.

(b) Sample comprises the top 40 listed European banks in SNL Financial by total assets, excluding Allied Irish, Credit Suisse and ING Group.

(c) Banco Santander, Barclays, HSBC, LBG, RBS and Standard Chartered.

(d) BBVA, BNP Paribas, Deutsche Bank, Nordea Bank, Société Générale, UBS and UniCredit. For Crédit Agricole Group and Groupe BPCE the traded entities Crédit Agricole SA and Natixis are used respectively.

Chart 2.4 Major UK banks' pre-tax profits(a)(b)



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

(a) Components of profits are identified on a best-efforts basis from available disclosures.

(b) Excludes Virgin Money.

(c) Includes provisions for customer redress related to mis-sold payment protection insurance and interest rate swaps, and regulatory fines related to the manipulation of Libor and lapses in anti-money laundering controls.

...but these provide a poor indication of resilience...

Basel III common equity Tier 1 ratios were reported in many UK banks' annual reports for the first time in 2012. In some cases, these ratios included anticipated, but not yet approved, actions to reduce capital requirements. For example, some of the ratios disclosed by banks used models that have not yet been approved by the PRA to calculate risk-weighted assets. Using data which do not include these actions, the end-point Basel III common equity Tier 1 ratio of the banks included in the FPC's capital exercise was 8.5% at end-2012.⁽¹⁾

In March, the FPC also judged that UK banks' reported capital ratios exaggerated their loss-absorbing capacity due to underprovisioning against vulnerable assets and future conduct costs, and imprudently low risk weights used for some assets. The microprudential supervisor estimated that, for the banks included in the FPC's capital exercise, these factors were equivalent to around a £50 billion reduction in available common equity Tier 1 capital. After this adjustment, the common equity Tier 1 ratio of these banks would have been 6.6% at end-2012, based on an end-point definition of Basel III capital standards (Chart 2.2). The FPC judged that, in the current conjuncture, banks required capital ratios, on this measure, of at least 7% in order to absorb losses and sustain credit availability in the event of stress. Since March, the PRA has completed a review of individual firms' capital positions and firms have submitted plans to close any shortfall relative to this 7% benchmark (further details are provided in Section 4).

...consistent with market indicators.

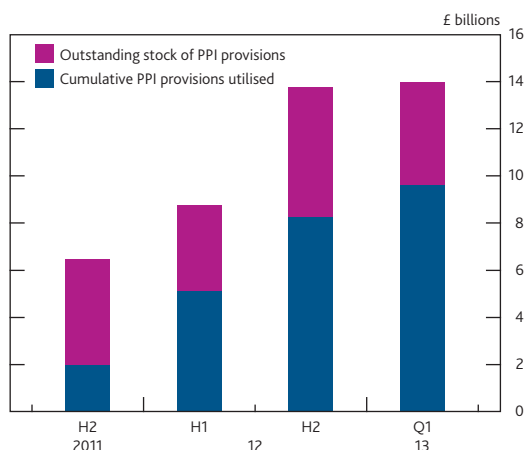
Market indicators of banks' resilience have improved in the past six months, consistent with a broader rally in financial market sentiment during much of the period since the November Report (Section 1). Equity prices of large UK banks and large complex financial institutions have increased since the November Report, and CDS premia have fallen, in both cases by around a fifth. But, for many banks, market capitalisation remains low relative to the book value of their assets (Chart 2.3). For example, as noted in Section 1, the market capitalisation of 17 of the largest 40 listed banks in Europe is less than 3% of their assets. This could reflect investors' concerns regarding banks' future profits.

Headwinds reduced UK banks' profits in 2012...

High levels of profitability can insulate banks from shocks that would otherwise reduce capital. Major UK banks' pre-tax profits before conduct costs and debt valuation adjustments (DVA) increased in 2012 by £14 billion, to £42 billion (Chart 2.4). These profits were positive for each of the six largest UK banks for the first time since 2007. Most of the increase in profits was due to lower charges for impairments

(1) Unless otherwise noted the banks included in the FPC's capital exercise were: Barclays, Co-operative Bank, HSBC, LBG, Nationwide, RBS, Santander UK and Standard Chartered. Further details are available at www.bankofengland.co.uk/publications/Pages/news/2013/081.aspx.

Chart 2.5 UK banks' provisions for redress related to mis-sold payment protection insurance (PPI)^{(a)(b)}



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

(a) Includes Barclays, HSBC, LBG, RBS and Santander UK.

(b) Data are compiled on a best-efforts basis from available disclosures.

and higher trading income. In part, the rise in trading income may reflect the generalised rise in asset prices, which is likely to have strengthened the financial positions of banks and other investors.

Conduct redress and regulatory fines remain a drag on profits. Cumulative provisions for redress related to mis-sold payment protection insurance (PPI) were nearly £14 billion at end-2013 Q1 and UK banks have already paid out nearly £10 billion in customer redress (**Chart 2.5**). UK banks also incurred £4.3 billion of costs during 2012 related to mis-sold interest rate swaps, the manipulation of Libor and lapses in anti-money laundering controls. In March, the Financial Services Authority (FSA) estimated that, over a three-year period, customer redress for mis-sold PPI and interest rate swaps and fines related to the setting of Libor might exceed provisions by around £10 billion for the banks included in the FPC's capital exercise.

Major UK banks' pre-tax profits, after conduct costs and DVA, fell to £12 billion in 2012. Moreover, these profits were distributed unevenly between banks. For example, Banco Santander and HSBC Group reported pre-tax profits of around £20 billion, while most other banks reported losses or small profits.

...and issuance of core capital has been limited to date...

Some banks outside the United Kingdom have raised large amounts of equity during 2013. By contrast, UK banks have issued only small amounts of equity to pay debt coupons. UK banks also issued hybrid capital, including contingent capital securities, which might provide some protection from tail risks. But the instruments issued to date might not absorb losses prior to the point at which investors might lose confidence in a bank's solvency. (Box 2 explores bank equity issuance in more detail.)

...including by mutually owned lenders.

Mutually owned lenders have fewer options to raise capital, and some have been exploring options to issue capital externally. Profits are a key source of capital for mutually owned lenders, but have been weak recently, in part due to the effects of low interest rates. Capital adequacy has also been impaired as a result of losses on legacy loans. In May, Moody's Investors Service downgraded the Co-operative Bank's credit rating by six notches, partly due to realised and expected losses on commercial property lending. On 17 June, the Co-operative Bank announced plans to increase its common equity Tier 1 capital by £1.5 billion through an exchange of subordinated debt, issuance of equity and business disposals.

Major UK banks have reduced their assets...

Some major UK banks have improved their reported capital ratios by scaling back their balance sheets. Risk-weighted assets have fallen by £487 billion since 2008 (**Chart 2.6**). Around half of this fall was due to reductions at LBG and RBS

Chart 2.6 Contributions to annual changes in major UK banks' risk-weighted assets (RWAs)^{(a)(b)(c)(d)}

Changes due to:

- Core balance sheet size
- Core balance sheet average risk weights
- LBG's and RBS's non-core asset reduction^(e)
- Total



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

(a) Excludes Virgin Money.

(b) All non-sterling data are converted using end-2012 exchange rates.

(c) Core balance sheet size is calculated as total assets, less non-core assets at LBG and RBS, less derivative netting. Stripping out derivative netting is an imprecise, but necessary, adjustment to avoid distortions due to volatility in gross derivative exposures.

(d) Changes in core RWAs are attributed according to the year-on-year change in core average risk weights and core balance sheet size.

(e) LBG's non-core RWAs in 2008 are estimated using the size of their non-core assets in 2008 and the average risk weight of their non-core assets in 2009.

in non-core assets, the majority of which do not provide direct support to the UK real economy. These institutions plan to reduce non-core assets further, including by around £40 billion during 2013. Similar actions have occurred at, or are planned by, other UK banks.

Reductions in assets that do not support the UK real economy can improve banks' resilience in two main ways. First, by running down or disposing of assets, banks can reduce their overall level of risk, or reallocate it to those better able to bear it. Second, asset disposals may generate new capital. For example, HSBC recently sold its stake in Ping An, a Chinese insurance firm, for US\$3 billion more than the book value.

Reductions in risk-weighted assets do not always improve resilience. For example, they may reflect changes in measured risk rather than the amount of risk that banks are exposed to. A study by McKinsey in 2012 found that most banks had 'optimised' the calculations of their risk weights, which had reduced risk-weighted assets by 5%–15% on average. Changes of this type could reduce resilience if, as a result, banks hold less capital against these risks.

Reductions in assets that support the real economy are also less likely to improve banks' resilience. For example, lower bank lending, in aggregate, could reduce economic activity and undermine borrowers' financial strength which, in turn, could increase losses for banks.

...though some intra-financial exposures remain large.

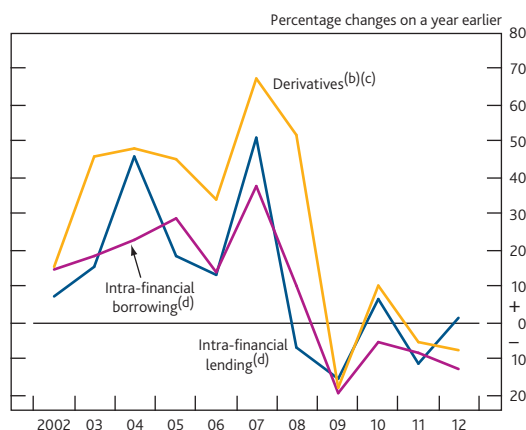
Intra-financial exposures have fallen, but remain material. Major UK banks' large exposures to other financial firms — defined as exposures that exceed 10% of total capital — have fallen by around £220 billion since end-2008 to around £70 billion at end-2013 Q1. Overall intra-financial exposures, which include those exposures that do not cross the threshold to be counted as 'large', have fallen by less. For example, major UK banks' intra-financial lending grew by around 90% during the four years prior to 2008 and have fallen by only 20% subsequently (Chart 2.7).

Major UK banks' funding positions have improved...

Alongside reductions in assets, major UK banks' customer deposit funding has increased since 2008. Most of the rise has been in the form of insured deposits, which have increased as a share of total funding from 26% in 2011 Q1 to 33% in 2013 Q1. This has allowed banks to reduce their reliance on funding from wholesale markets and other banks (Chart 2.8). At end-2012, customer loans were, in aggregate, almost fully funded by customer deposits.

Banks' liquidity positions have remained strong. Major UK banks' holdings of high-quality liquid assets⁽¹⁾ were

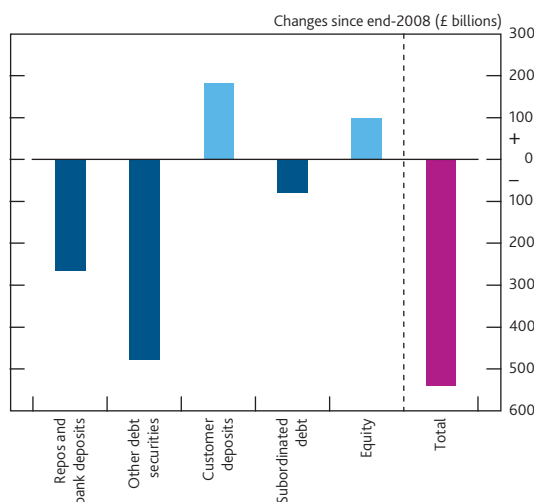
Chart 2.7 Growth of major UK banks' balance sheet interconnectedness^(a)



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

- (a) See footnotes (h)–(k) in Table A2 in the annex.
 (b) Includes Barclays, HSBC and RBS.
 (c) Gross notional value of derivative contracts.
 (d) The intra-financial lending and borrowing growth series are not adjusted for mergers/acquisitions.

Chart 2.8 Changes in major UK banks' funding mix since end-2008^{(a)(b)}



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

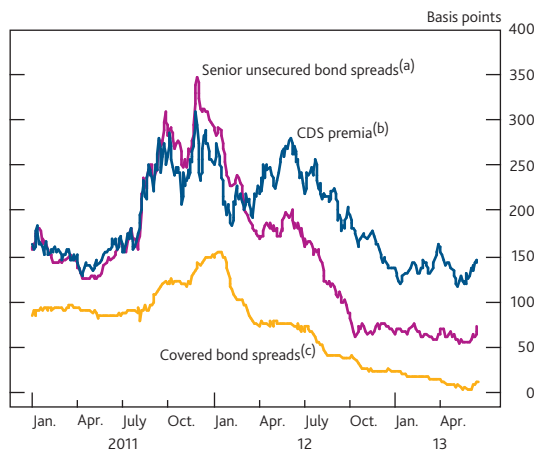
- (a) Excludes Virgin Money.
 (b) The classification of funding is on a best-efforts basis from available disclosures.

(1) Central bank reserves and unencumbered holdings of highly rated government securities. A more detailed definition can be found in the PRA Handbook, available at <http://fs handbook.info/FS/html/PRA/BIPRU/12/7>.

equivalent to 113% of current liquidity guidance in May 2013. Greater potential access to the Bank of England's liquidity facilities has further reduced the need to self-insure.

The Liquidity Coverage Ratio (LCR) will require banks to hold a sufficient stock of reliably liquid assets to cover prospective liquidity outflows during a period of stressed market conditions. In January, the Basel Committee issued revised LCR standards, which will ultimately require banks to hold sufficient liquid assets to cover prospective liquidity outflows lasting one month. In Europe, the minimum LCR standard will be phased in from 60% of one-month stressed outflows in January 2015 to 100% in January 2018, though national discretion may be exercised. At end-2012, nearly all major UK banks' LCRs already exceeded 100%. Section 5 describes the macroprudential considerations bearing on the United Kingdom's transition to the internationally agreed LCR regulatory requirements and the FPC's June 2013 recommendation in this area.

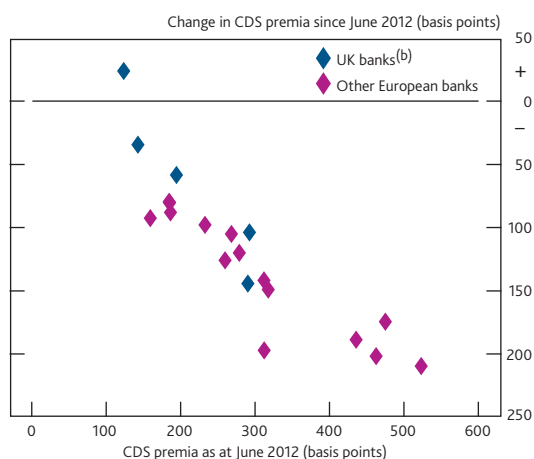
Chart 2.9 Indicative measures of wholesale funding spreads for UK banks



Sources: Bloomberg, Markit Group Limited and Bank calculations.

- (a) Constant-maturity unweighted average of secondary market spreads to mid-swaps for the six largest UK banks' five-year euro senior unsecured bonds, where available. Where a five-year bond is unavailable, a proxy has been constructed based on the nearest maturity of bond available for a given institution and the historical relationship of that bond with the corresponding five-year bond.
- (b) Unweighted average of the five-year senior CDS premia for the six largest UK banks which provides an indicator of the spread on euro-denominated long-term wholesale bonds.
- (c) The data show an unweighted average of the spread between euro-denominated covered bonds and equivalent-maturity swap rates for a selected bond issued by each of the six largest UK banks. The selected bonds have residual maturities of between three and seven years.

Chart 2.10 Changes in banks' CDS premia^(a)



Sources: Markit Group Limited and Bank calculations.

- (a) The sample shown is the largest 20 European banks by assets.
- (b) Includes Barclays, HSBC, LBG, RBS and Standard Chartered.

...and funding costs have fallen...

Wholesale funding costs continued to fall during most of the period since the November *Report*. Secondary market spreads on term senior unsecured funding are around 100 basis points lower than in June 2012 (**Chart 2.9**). Market contacts have suggested that the fall was driven by central bank policies, including the Bank of England's Funding for Lending Scheme, and a reduction in perceived risks in the euro area (Section 1). Some market contacts have also suggested that low issuance has reduced UK banks' funding costs. Major UK banks' term wholesale debt issuance so far in 2013 has been less than a third of that issued in 2012 H1.

Retail deposit costs have also fallen, and respondents to the 2013 Q2 *Bank Liabilities Survey* expect further falls. During 2012 H1, banks competed intensively to attract retail deposits, in part reflecting adverse conditions in term wholesale funding markets. As access to a range of funding sources improved in the latter half of 2012, banks reduced the rates offered on deposits. For example, the average effective rate paid on new time deposits has fallen by around 20 basis points since the time of the November *Report*, to less than 270 basis points in April 2013. With around £270 billion of UK household sector time deposits currently held at UK monetary financial institutions, the reduction in rates on UK household deposits could reduce interest expenses by around £0.5 billion per year.

...particularly for weaker banks.

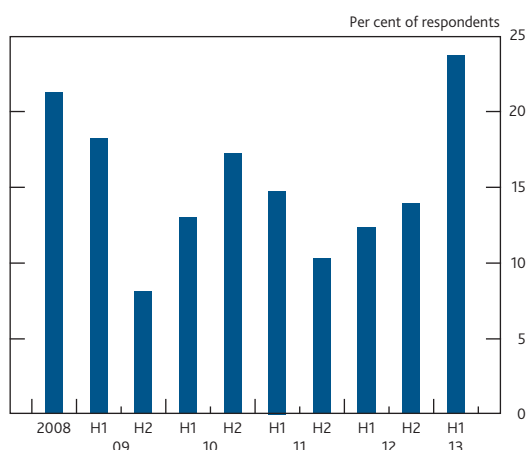
The decline in funding costs has been particularly large for those banks with the highest costs (**Chart 2.10**). The sustainability of these improvements will be determined by banks' ability to withstand shocks to their capital positions and build capital. This remains a key driver of their longer-term funding costs. As discussed below, risks from the global financial environment and the asset quality of some UK loans remain significant.

2.2 Risks from the global environment

Threats to operational resilience may be increasing...

Banks' operational risks may have received less attention in the past few years, due to the immediate need to address weaknesses in capital and liquidity. But such risks are potentially material and are increasingly highlighted by market participants. Nearly a quarter of respondents to the Bank of England's 2013 H1 *Systemic Risk Survey* highlighted operational risks as one of the main risks to the UK financial system, up from 14% in 2012 H2 (Chart 2.11).

Chart 2.11 *Systemic Risk Survey: respondents highlighting operational risk as a key risk^(a)*



Sources: Bank of England *Systemic Risk Surveys* and Bank calculations.

(a) Respondents who cited operational risk at least once, when asked to list the five risks that they thought would have the greatest impact on the UK financial system were they to materialise.

Banks and financial market infrastructure providers face a number of operational risks. Their reliance on information technology (IT) systems presents a significant risk, as highlighted by the IT outage suffered by RBS Group in 2012. Despite only affecting one banking group, this outage meant that a substantial number of customers were unable to process payments or view their account balances.

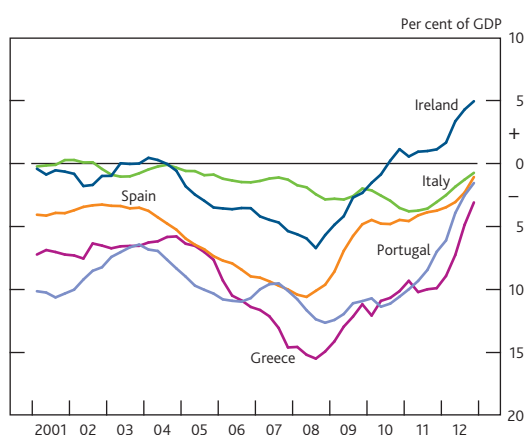
In August 2012, the FSA wrote to eight major retail banks to establish whether IT risks were articulated and tackled at Board level. The FCA and PRA are working with firms through normal regulatory engagement to reduce these risks. These problems are not unique to UK banks. In 2008, the Counterparty Risk Management Policy Group highlighted that systems used by banks internationally were often inadequate to manage their risks.

...including from cyber risks.

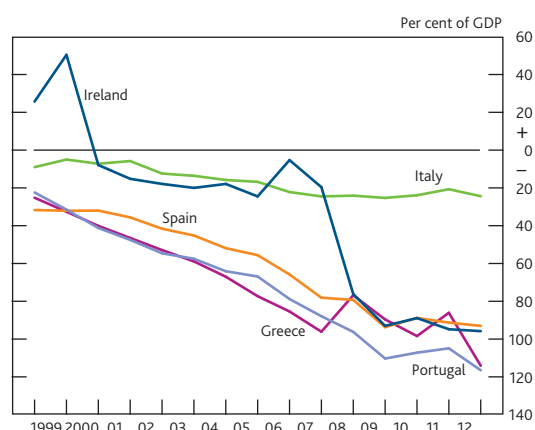
An emerging IT-related operational risk is from cyber attack. This was the most frequently highlighted operational risk in the Bank of England's 2013 H1 *Systemic Risk Survey*. Cyber attacks, where an individual or group seeks to exploit vulnerabilities in IT systems for financial gain or to disrupt services, are increasingly frequent and sophisticated. Distributed Denial of Service attacks, which if successful can result in web-based services being temporarily unavailable, are one manifestation of this risk: several large international banks and at least one e-commerce payment system have been affected by such attacks in recent months. The dynamic nature of this risk, along with rapidly evolving new threats, and the lack of historical experience, makes mitigation particularly challenging. For example, mitigants for some other operational risks (such as data centre mirroring) may exacerbate cyber risks by potentially replicating the vulnerabilities that are targeted in cyber attacks.

The 2012 annual report of the US Financial Stability Oversight Council (FSOC) identified cyber risk as a priority issue. In 2013, the FSOC recommended that the public and private sectors should improve information sharing on cyber attacks, and work together to assess their effects on business continuity and recovery.

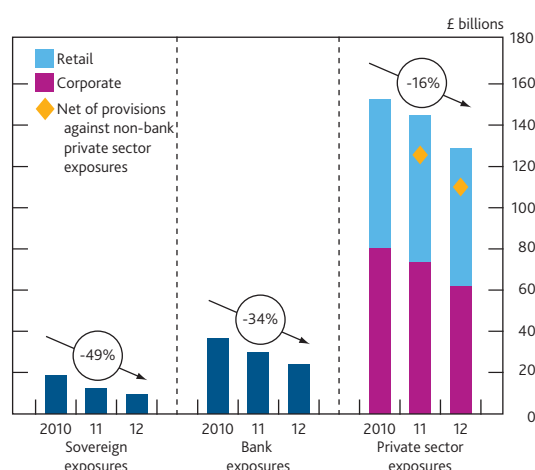
Chart 2.12 *Current account balances of selected euro-area countries*



Sources: Eurostat, Thomson Reuters Datastream and Bank calculations.

Chart 2.13 Net international investment positions of selected euro-area countries

Source: Eurostat.

Chart 2.14 Evolution of UK banks' gross exposures to vulnerable euro-area countries^{(a)(b)}

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

(a) Includes Barclays, HSBC, LBG and RBS.

(b) Includes on balance sheet exposures as disclosed by banks according to counterparties' country of domicile or incorporation. Where possible, exposures are gross of impairment provisions but net of collateral and netting arrangements. The classification by counterparty sector is on a best-efforts basis from available disclosures.

Table 2.A UK banks' exposures to the non-bank private sectors of vulnerable euro-area countries

	Gross exposure (£ billions)	Provisions (per cent of exposure)	IMF GDP forecast (per cent)	Unemployment rate (per cent)
	End-2012	End-2012	2013 projection	Latest ^(a)
Greece	3	3	-4.2	27
Portugal	9	8	-2.3	18
Italy	24	2	-1.5	12
Spain	33	6	-1.6	27
Ireland	60	26	1.1	14
Total vulnerable Europe	129	15	–	–

Sources: Bank of England, Eurostat, IMF *World Economic Outlook*, published accounts and Bank calculations.

(a) As at April 2013, except for Greece which is as at March 2013.

Cyber risk has been a focus of attention in the United Kingdom. The Government's National Cyber Security Programme is implementing measures to reduce cyber risks, including preventing and mitigating cyber attacks. The Bank of England, including the PRA, and the FCA are working closely with UK financial firms, in conjunction with government agencies and departments, to help ensure that resilience is maintained in the face of evolving cyber risks. The FPC has issued a recommendation to improve and test resilience to cyber attack (Section 5).

Perceived risks of a euro-area stress have abated, but the underlying imbalances remain...

Market sentiment towards the euro area has improved dramatically since the November *Report*, as reflected in the subsequent rally in financial markets (Section 1). Some progress to reduce fiscal and current account deficits has been made by each of the vulnerable euro-area countries (Chart 2.12). But most countries' net external liability positions have remained substantial (Chart 2.13). For example, the net external liabilities of Greece and Portugal were nearly 120% of their GDP at end-2012.

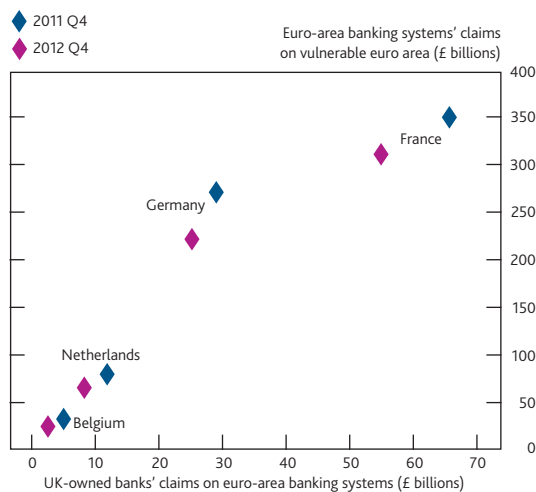
Following outflows of private capital since the middle of 2011, vulnerable euro-area sovereigns and banks have been supported by actions from the official sector. The presence of this support has helped to prevent a disorderly unwind of external imbalances. Since 2012 Q3, vulnerable euro-area countries' borrowing costs have started to fall towards those of core euro-area countries. Their net balance of liabilities to other euro-area national central banks, through the TARGET2 system, has also fallen. A re-emergence of financial market strains could nevertheless intensify pressures on banks to shrink their balance sheets more rapidly, which would lower growth and threaten financial stability.

...and UK banks are exposed to credit risks directly...

UK banks' exposures to vulnerable euro-area sovereigns at end-2012 were nearly 50% lower than in 2010 (Chart 2.14). But UK banks' total exposures to vulnerable euro-area countries remained high at around £140 billion, or 65% of their reported core Tier 1 capital. That largely reflects loans to non-bank private sector borrowers, which have fallen relatively slowly due to their long-term and illiquid nature. But some banks have reduced these exposures: for example, in April, LBG sold its Spanish retail business, which comprised around £1.5 billion of assets.

The impact on resilience of future losses on exposures to vulnerable euro-area borrowers will depend on the adequacy of banks' provisions. At end-2012, UK banks' provisions against non-bank private sector loans in vulnerable euro-area countries were £19 billion, or 15% of gross exposures (Table 2.A). Around 70% of UK banks' exposures to non-bank private sector borrowers in vulnerable euro-area countries are

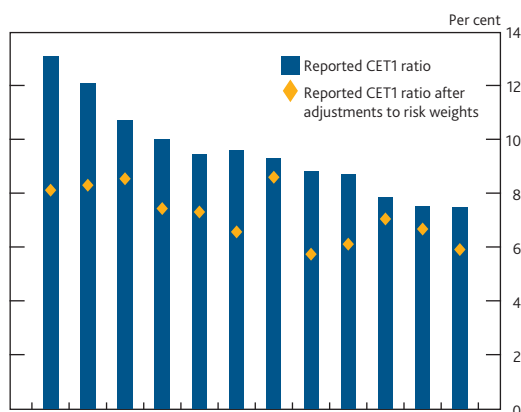
Chart 2.15 Claims on vulnerable euro-area countries via euro-area banking systems^(a)



Sources: Bank of England, BIS consolidated banking statistics and Bank calculations.

(a) X-axis shows consolidated ultimate risk basis foreign claims by UK-owned banks on the banking systems of selected euro-area countries. Y-axis shows consolidated ultimate risk basis foreign claims on all sectors of Greece, Ireland, Italy, Portugal and Spain by selected euro-area banking systems.

Chart 2.16 Common equity Tier 1 (CET1) ratios for a sample of European banks^{(a)(b)}



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

(a) Chart shows a sample of twelve major European banks drawn from the following countries: Austria, Belgium, Denmark, Germany, Italy, the Netherlands, Spain and Sweden.

(b) Diamonds show CET1 ratios, after risk weights in each internal ratings-based (IRB) exposure category have been changed to those of the most conservative bank in the sample. IRB categories cover the following types of exposure: sovereign, institution, corporate, retail mortgages and other retail exposures excluding mortgages.

in Ireland and Spain. While GDP in Ireland is forecast by the IMF to rise slightly in 2013, unemployment remains high, and the Irish mortgage arrears rate rose to nearly 12% at the end of 2012, from 9% a year earlier. The IMF forecast in April that GDP in vulnerable euro-area countries would contract further in 2013 than previously expected (Section 1).

...and indirectly through European banks.

UK banks have reduced their exposures to core euro-area banks, which in turn have cut back their exposures to the vulnerable euro-area countries (Chart 2.15). But risks from these exposures remain material. For example, Chart 2.16 presents reported common equity Tier 1 ratios for a sample of European banks after adjustments are made to increase banks' risk weights to the level used by the bank with the highest risk weights. After this adjustment, seven of these twelve banks have an adjusted common equity Tier 1 ratio below 7%. In addition, the European Banking Authority is currently reviewing the asset valuations used by major European banks.

Low global interest rates are supporting financial markets...

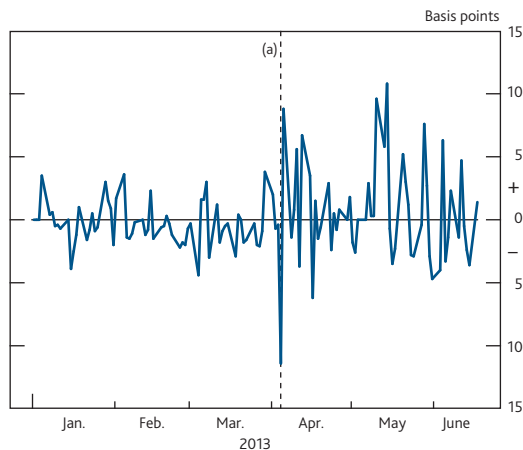
As set out in Section 1, despite recent volatility, global long-term interest rates have remained at low levels. That is likely to reflect a number of drivers. The global financial crisis and continuing problems in the euro area have increased demand for assets that are perceived to be safe, such as German, UK and US government bonds. Continued high saving in some emerging economies has also increased demand for these and other 'safe' assets. For example, holdings of US Treasury securities by Chinese investors have increased 17-fold since 2000. Weak economic growth expectations and planned fiscal consolidation in advanced economies have also reduced long-term interest rates. In particular, monetary policy has boosted the price of safe assets through low current and expected policy rates and as a result of direct asset purchases (see Box 3).

Global interest rate expectations are embedded in financial market prices. As well as increasing the value of safe assets, expectations of lower interest rates can increase the value of riskier assets, by reducing the rate at which future cash flows are discounted. In May, spreads on high-yield corporate bonds fell to their 2007 levels and the S&P 500 and FTSE All-Share equity indices reached record nominal levels. Expectations of low global interest rates can also lead to a reallocation of investments towards countries with higher interest rates. Emerging economies received large capital inflows during 2012 and the start of 2013, but there has been some reversal of flows more recently.

...but expectations could change rapidly...

Expectations about any of the drivers of low interest rates could change rapidly and cause an abrupt adjustment to financial market prices. Some partial adjustments of low interest rates appear to have taken place already, possibly

Chart 2.17 Daily changes in ten-year Japanese government bond yields



Sources: Bloomberg and Bank calculations.

(a) Bank of Japan's monetary easing announcement, 4 April 2013.

reflecting anticipated changes in monetary policy in many advanced economies (Section 1). In Japan, this has been accompanied by high levels of volatility, following the announcement in April of further monetary easing (**Chart 2.17**). In the Bank of England's 2013 H1 *Systemic Risk Survey*, risks from low interest rates were cited by 24% of respondents — a greater increase on the previous survey than any other category of risk.

Global interest rates may be affected by a number of other drivers, such as a change in sovereign risk perceptions or expected global capital flows. And these drivers could cause changes in other factors affecting financial markets, such as market risk premia or exchange rates. A further change in saving behaviour might also affect capital flows and be associated with volatility in foreign exchange markets.

...which may cause significant distress for borrowers...

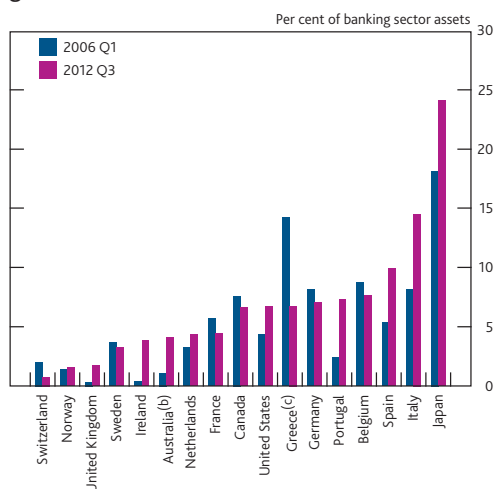
The impact of higher global interest rates on borrowers will depend on the cause of the increase. As discussed below, a significant cohort of UK borrowers could experience financial difficulties if interest rates were to rise during a period of subdued income growth. The impact of higher global interest rates may be more benign if economic conditions were also to improve, as higher incomes and wealth would help strengthen borrowers' financial positions.

As well as potentially leading to credit losses, a rise in global interest rates could increase some banks' funding costs. Banks' liabilities tend to be of a shorter duration, and therefore reprice sooner, than their assets. This can reduce net interest income in the near term, especially if customers renegotiate or reallocate their savings and loans in response to higher interest rates. For example, depositors may reduce the maturity of their savings in order to benefit more rapidly from a rise in interest rates. In the longer term, as assets are repriced, higher net interest margins might offset any initial losses.

Capital can provide some protection from interest rate risks. While Pillar 1 capital requirements for banks internationally do not require capital to be held against interest rate risks in the banking book, in the United Kingdom, Pillar 2 capital requirements do provide some protection against these risks.⁽¹⁾ These requirements include some capital charges so that banks are able to absorb losses relating to: basis risks (for example, where loans are linked to Bank Rate but banks' funding is linked to wholesale interest rates); duration risks (for example, where liabilities reprice or mature before assets); and interest rate volatility.

(1) Pillar 1 capital requirements are designed to provide protection against credit, market and operational risks of well-diversified international banks. Pillar 2 capital requirements aim to provide additional protection against those risks to the extent that individual banks do not fit into this stylised risk profile.

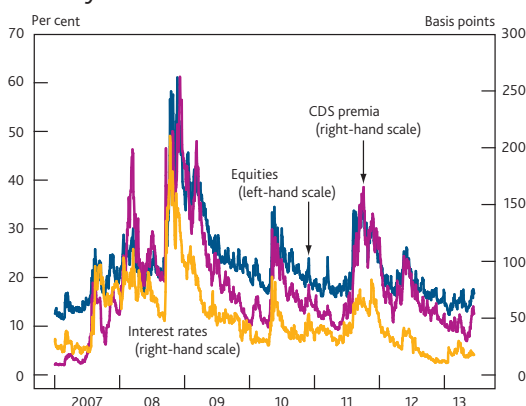
Chart 2.18 Selected banking sectors' holdings of government debt^(a)



Source: IMF Global Financial Stability Report (April 2013).

- (a) Government debt is defined as general government gross debt on a consolidated basis and includes securities other than shares, loans and other short-term debt (not included elsewhere).
 (b) Latest data for Australia are as at 2012 Q2.
 (c) Greek banks' government debt holdings fell from 12% of assets in 2011 Q4 to 8% in 2012 Q1, as a result of an official debt restructuring.

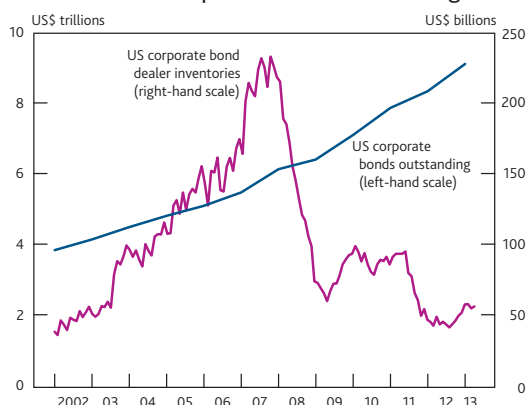
Chart 2.19 Indicators of expected financial market volatility^{(a)(b)}



Sources: Bloomberg, Chicago Mercantile Exchange, JPMorgan Chase & Co., NYSE Euronext and Bank calculations.

- (a) Three-month option-implied volatilities.
 (b) Average of FTSE 100, S&P 500 and Euro Stoxx 50 for equities. Average of three-month short sterling, eurodollar and Euribor for interest rates. Average of five-year on-the-run iTraxx Europe main and CDX North America investment-grade for CDS premia.

Chart 2.20 US primary dealers' corporate bond inventories and corporate bonds outstanding^(a)



Sources: Bloomberg, Securities Industry and Financial Markets Association, Thomson Reuters Datastream and Bank calculations.

- (a) Dealer inventories represent US primary dealer positions in US corporate bonds with remaining maturity greater than one year.

Banks can also reduce their interest rate risks through hedging, though the effectiveness of such hedges is likely to vary by bank and will depend on what other developments in financial markets accompany any change in interest rates. Low interest rates were cited as one of the most challenging risks to manage by 19% of respondents to the Bank of England's 2013 H1 *Systemic Risk Survey*.

...and losses on trading activities.

Higher long-term interest rates would affect the value of banks' trading book assets directly. Around 40% of UK banks' assets are held at fair value and would revalue immediately if global interest rates were to rise abruptly. While such risks can be mitigated by hedging, market contacts have suggested that some investors have been taking more risk, including through reduced hedging, based on an expectation that the official sector will not allow large losses to crystallise. Data limitations, as well as the complex interactions between banks' trading activities, make it challenging to predict the impact of higher interest rates, though the IMF has estimated that interest rate risk in US banks' trading books is above its pre-crisis level.

The value of banks' fixed-income assets would be particularly affected if global interest rates were to rise sharply. Sovereign bond holdings of some banking sectors have increased in recent years (Chart 2.18). In Japan, these holdings comprised around 25% of banks' assets in 2012 Q3, compared with less than 2% of UK banks' assets. The Bank of Japan has estimated that a 100 basis point increase across the yield curve would cause mark-to-market losses of 10% of Tier 1 capital for major Japanese banks and even more for regional banks. A sharp rise in global interest rates would also affect a number of other real and financial asset values. As a result, banks' profits could be affected through a number of channels, some of which may be offsetting.

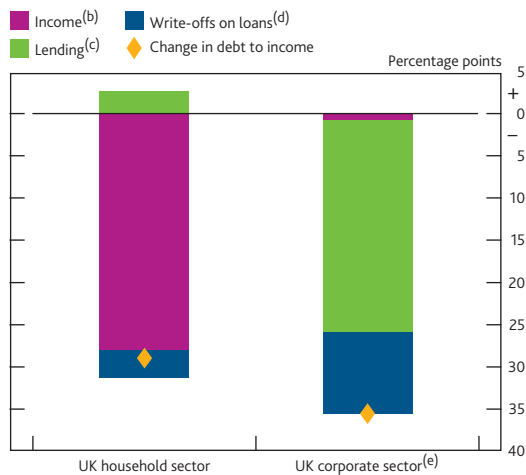
While market risk capital requirements provide some protection from trading book losses for banks, these requirements fell for UK banks in 2012. Estimates of Value-at-Risk have fallen significantly since 2010, possibly reflecting falls in some measures of financial market volatility (Chart 2.19).

Non-bank financial institutions may also suffer losses...

An abrupt rise in global interest rates could also affect financial institutions other than banks. For example, assets held by commodity trading advisors (CTAs) and hedge funds with macroeconomic strategies, which can at times be exposed to sharp reversals of trends, increased by around 30% between 2010 and end-2012. According to market contacts, these funds had increased their exposures to changes in the Japanese yen and to equity markets in emerging economies ahead of the recent rise in US bond yields.

The recent sharp reversal of earlier strengthening in Japanese equity markets, together with the rise in US bond yields has reportedly reduced the returns of some CTAs. Due to their liquid strategies, CTAs are likely to have subsequently reduced their exposure to further changes of this kind. Hedge funds with macroeconomic strategies, while generally more diverse, are also reported to have had concentrated and leveraged exposures of a similar nature. Banks are exposed to these funds through their prime brokerage and derivative operations, which provide finance and trade execution services for their clients, though the margins required by prime brokers from clients have remained above their pre-crisis levels (Section 3).

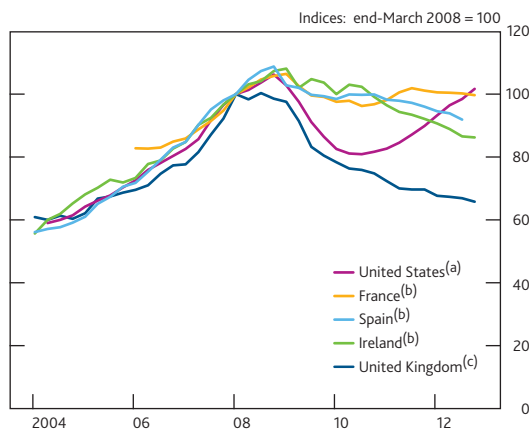
Chart 2.21 Contributions to change in debt to income ratios since 2008 Q3^(a)



Sources: Bank of England, ONS and Bank calculations.

- (a) Contributions are approximated so may not sum to totals.
 (b) Income is gross disposable income for households, gross operating surplus for corporates; both adjusted for financial intermediation services indirectly measured (FISIM).
 (c) Includes UK MFIs' lending and, for the household sector only, lending by other lenders.
 (d) Write-offs on UK MFIs' sterling loans to individuals and PNFCs, respectively.
 (e) Corporate sector refers to PNFCs as defined in *Bankstats*.

Chart 2.22 Bank lending to non-financial non-property firms



Sources: National central banks and Bank calculations.

- (a) Commercial and industrial loans at all commercial banks.
 (b) Loans by MFIs to companies excluding those in the following sectors: finance, construction, hotels and restaurants, and real estate.
 (c) Data show indexed values of outstanding total lending by UK MFIs excluding the effects of securitisations and loan transfers, and excluding securities. Data are for lending in all currencies stated in sterling terms. Data are not seasonally adjusted. Includes the following sectors: fishing, mining and quarrying, manufacturing, electricity, gas and air conditioning supply, distribution, transport, storage and communications, education, water purification and supply, and recreation, personal and community service activities.

A sharp rise in interest rates could also lead to losses for money market mutual funds, which provide funding to banks. Following a sell-off in bond markets during 1994, financial support was required from the parents of 42 US funds to cover losses on structured products (see Box 1 of the December 2010 *Report*).

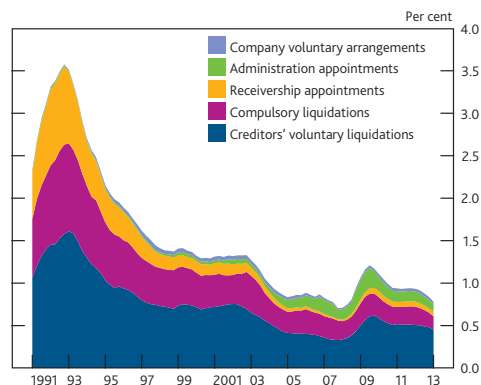
...as well as amplify the impact of rising yields.

The impact of an abrupt rise in bond yields could be amplified by some financial market structures. One source of amplification is through hedging activity in the US mortgage-backed security (MBS) market. As bond yields rise, fixed-rate mortgage borrowers tend to repay their mortgages more slowly, which causes MBS portfolio durations to rise. This can have implications for some MBS investors, such as pension funds and insurance companies, which usually attempt to match the duration of their assets to their liabilities. A rise in bond yields may lead these investors to reduce their duration risk by selling longer-dated US Treasury securities, in turn causing long-term bond yields to rise further. This mechanism contributed to the sharp rise in bond yields after the increase in the federal funds rate in 1994. US mortgage real estate investment trusts (REITs), whose holdings of MBS have expanded in recent years, would be particularly exposed to losses.

It is unclear whether this risk is more or less material than in the past. Low bond yields mean a small rise in yields can increase MBS duration significantly. And currently, there are fewer natural providers of protection against this type of interest rate risk. But the US Federal Reserve is currently the dominant buyer of MBS. And that may have reduced the potential size of this type of hedging activity, which has amplified rises in bond yields in the past.

Reduced liquidity in fixed-income markets could further amplify a market shock. For example, in the market for US corporate bonds, primary dealers' inventories have fallen significantly in recent years, despite strong growth in this market (Chart 2.20). In turn, asset sales may generate greater price volatility. So a small change in sentiment may be amplified and spread more quickly than previously. Market

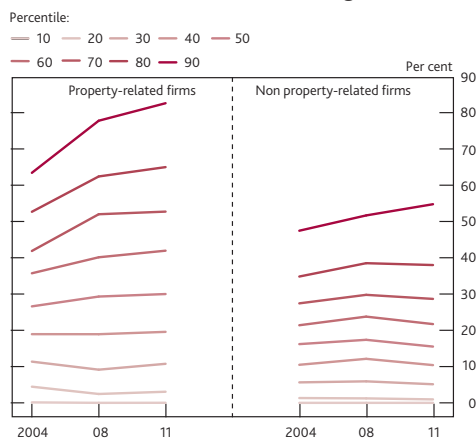
Chart 2.23 Corporate insolvency rates for England and Wales^{(a)(b)(c)}



Sources: The Insolvency Service and Bank calculations.

- (a) Rate is the number of corporate insolvency proceedings in England and Wales over the past four quarters divided by the average number of companies in England and Wales on the Companies' House Active Register over that period.
 (b) A single company may be subject to more than one type of insolvency proceeding.
 (c) The Enterprise Act 2002 introduced revisions to corporate administration procedures and came into force on 15 September 2003. Since then a number of administrations have been converted into creditors' voluntary liquidations. The data in the chart above are not adjusted for this as they do not represent a new company entering an insolvency procedure for the first time.

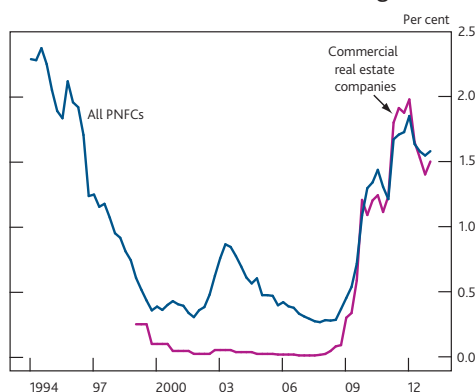
Chart 2.24 Distribution of leverage for UK PNFCs^{(a)(b)(c)(d)}



Sources: Fame, published by Bureau van Dijk and Bank calculations.

- (a) Leverage is defined as the sum of short-term and long-term debt, including overdrafts, divided by total assets.
 (b) Chart shows the leverage of firms at each percentile of leverage at the end of each period.
 (c) The sample is comprised of 1,974 non-financial firms with at least 250 employees that existed for at least five years prior to each observation date shown.
 (d) Property-related firms include firms operating in sectors where a significant share of lending is secured on property. These include: construction, health, hotels and restaurants, and real estate. Non property-related firms include firms operating in all other private non-financial sectors.

Chart 2.25 Write-off rates on lending to UK businesses^(a)



Sources: Bank of England and Bank calculations.

- (a) Write-offs on lending by UK MFIs. The series are calculated as annualised quarterly write-offs divided by the corresponding loans outstanding at the end of the previous quarter. The data are presented as four-quarter moving averages. Lending in both sterling and foreign currency are expressed in sterling terms.

contacts suggest dealers' inventories are low in a number of markets, partly due to changes in regulation.

2.3 Risks from UK sectoral balance sheets

A sharp rise in global interest rates could have a direct bearing on the capacity of UK borrowers to service their debts, and hence UK banks' credit risk. Major UK banks' lending to UK households and private non-financial corporations (PNFCs) was £1.4 trillion at end-2012.

In aggregate, borrowers continue to delever, particularly outside the UK property sector...

Some UK borrowers have delevered significantly in recent years. Debt to income ratios for UK households and PNFCs have fallen by around 30 and 35 percentage points respectively since 2008, to around 140% and 145% (Chart 2.21).

In the UK corporate sector, borrowing from banks has fallen significantly. And non-property businesses have accounted for most of this reduction. Loans to these businesses from banks have fallen sharply, by around 35% since 2008 (Chart 2.22). The majority of this fall has been due to loan repayments and some PNFCs have chosen to obtain more of their finance from capital markets.

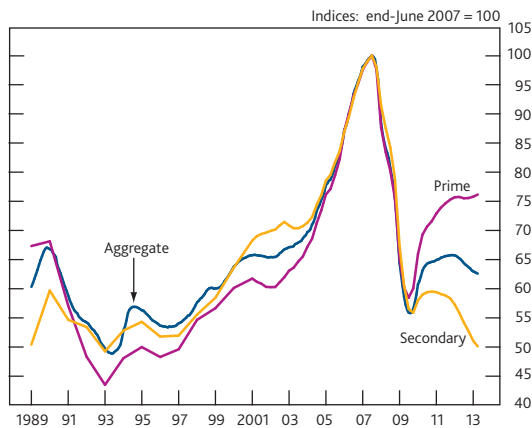
Around a quarter of the reduction in loans has been due to write-offs. While losses have been material, the corporate insolvency rate has remained low relative to the early 1990s (Chart 2.23). Low interest rates, as well as forbearance and changes to insolvency laws, are likely to have contributed to this. While deleveraging has slowed, corporate deposits in aggregate have been rising, which has further reduced net borrowing and improved businesses' resilience to cash-flow difficulties.

...but the most highly levered firms remain vulnerable...

This aggregate picture masks some important distributional patterns. In particular, the most highly levered firms have not deleveraged in recent years (Chart 2.24). Indeed, leverage of the most highly levered firms in the property sector, where leverage increased materially between 2004 and 2008, has continued to rise. In part, this is likely to reflect falls in the value of the properties owned by these businesses.

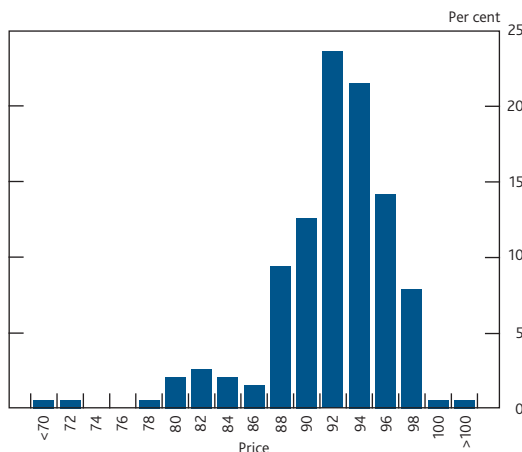
...including CRE firms...

The stock of outstanding loans to commercial real estate (CRE) firms, which account for around 40% of UK banks' UK corporate loans, has been broadly unchanged since 2008. To date, write-off rates on CRE loans have been similar to those on non-CRE loans (Chart 2.25). But previous work by the microprudential supervisor (at the time, the FSA) indicated that around a third of British CRE loans by value had received forbearance. Waivers for breaches of loan to value covenants

Chart 2.26 UK commercial property values^(a)

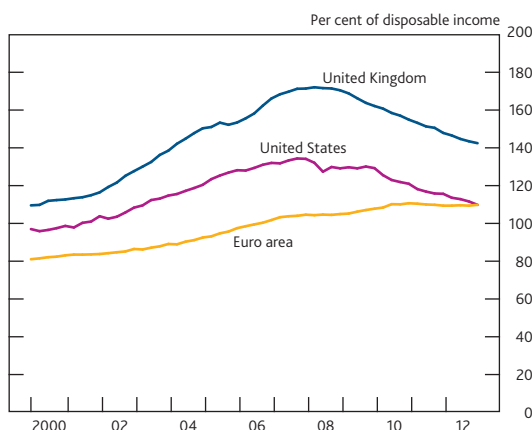
Sources: Investment Property Databank and Bank calculations.

(a) Prime and secondary properties are defined as those in the lowest and highest-yielding quartiles of commercial properties, respectively.

Chart 2.27 Distribution of underlying loan prices in European CLOs^(a)

Source: Bank of America Merrill Lynch.

(a) A price of 100 indicates that the notional-weighted average loan in a given CLO is priced at 'par' value. Most loans are prepayable at par on any coupon date. A price below 100 indicates that the notional-weighted average loan in a given CLO is priced at a discount.

Chart 2.28 Household debt relative to income^(a)

Sources: ECB, Federal Reserve, ONS and Bank calculations.

(a) Households' and non-profit institutions' total financial liabilities as a percentage of a four-quarter moving sum of their disposable income.

were the most common type of forbearance. Other forms of forbearance, such as payment holidays or maturity extensions, were also common. In some cases, banks have chosen not to foreclose on CRE loans due to poor liquidity in the market for CRE loans and properties, to avoid incurring extra losses.

Commentators describe the CRE market as bifurcated, with a liquid market for 'prime' property and an illiquid market for 'secondary' property. Investor demand for prime property has been strong, particularly from foreign investors. And the availability of credit for prime CRE has improved, including from foreign banks and insurers. In turn, the value of prime CRE properties has risen since 2009 (**Chart 2.26**). By contrast, liquidity and credit conditions in secondary CRE markets remain poor. Recently, there have been tentative improvements in transaction volumes and credit conditions, including to purchase some banks' portfolios of non-performing CRE loans. But secondary property values have continued to fall and are 50% below their pre-crisis peak.

Absent a recovery in CRE markets, forbearance cannot reduce banks' losses indefinitely. In March, the microprudential supervisor assessed the losses that might be expected to arise over the next three years on a range of banks' most risky assets, including CRE loans, forbore retail loans and vulnerable euro-area assets. They concluded that a conservative valuation of these assets, which included UK CRE lending, would be around £30 billion less than the balance sheet valuations of these assets, net of existing provisions, for the banks included in the FPC's capital exercise.

...and private equity owned firms.

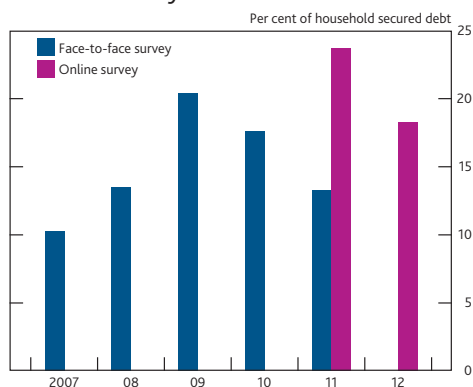
Banks' exposures to leveraged loans increased in the mid-2000s, often to finance private equity ventures. Since many loans to private equity funds have no regular repayments of principal, but are repaid only at maturity, many losses on these exposures may not yet have crystallised. Low interest rates and forbearance may also be delaying losses. An FSA study in 2012 suggested that around a quarter of UK banks' leveraged loans to European companies had received forbearance. And, consistent with an expectation of losses, the prices of many European CLOs are significantly below their par value (**Chart 2.27**).

UK households remain highly indebted...

UK household debt to income ratios have fallen, but remain at high levels (**Chart 2.28**). This improvement has resulted mainly from higher nominal incomes. Nominal levels of debt, which rose sharply in the lead up to the crisis, have continued to rise (**Chart 2.21**).

Annual write-off rates on UK mortgages remain significantly below those seen in the early 1990s and fell further in 2012. These modest loss rates are likely partially to reflect low interest rates which, as well as increasing the affordability of

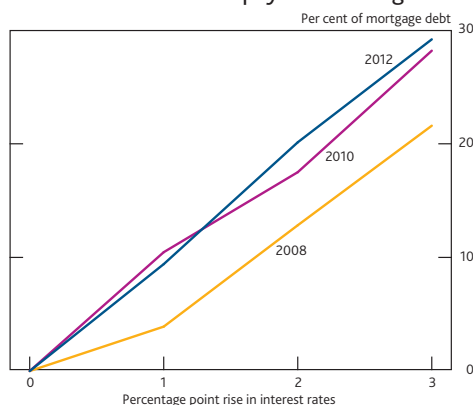
Chart 2.29 Secured debt held by households with less than £200 of monthly available income^(a)



Sources: NMG Consulting and Bank calculations.

(a) Available income is defined as households' reported income left after tax, national insurance, housing costs (eg rent, mortgage repayments, council tax), loan repayments (eg personal loans, credit cards) and bills (eg electricity).

Chart 2.30 Debt held by households that would need to take action to afford debt repayments at higher interest rates^{(a)(b)}

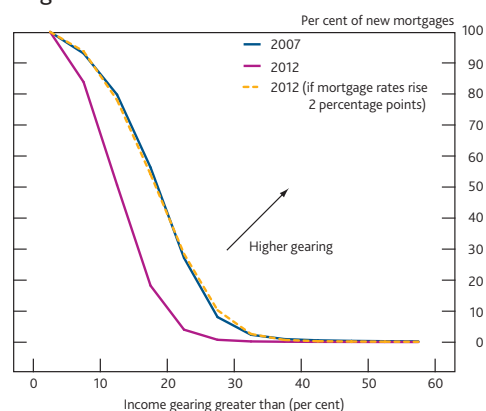


Sources: NMG Consulting and Bank calculations.

(a) The NMG Consulting survey asks households how much of their monthly income is left after tax, national insurance, housing costs (eg rent, mortgage repayments, council tax), loan repayments (eg personal loans, credit cards) and bills (eg electricity). The chart estimates the percentage of mortgage debt held by mortgagors for whom this available income would be zero or negative after making higher interest payments on their secured and unsecured debt. The calculations do not account for the effect of fixed rates of interest on some loans.

(b) Data for 2012 were collected using an online survey, data for 2010 and 2008 were collected using face-to-face surveys.

Chart 2.31 Income-gearing distribution of UK mortgages at origination^{(a)(b)(c)}



Sources: FCA and Bank calculations.

(a) Income gearing is calculated as the interest rate on the mortgage multiplied by the loan to income ratio. It does not include repayments of mortgage principal. The data cover around two thirds of mortgage originations as interest rate reporting is optional. Income is annual pre-tax.

(b) Includes loans to first-time buyers, home movers, remortgagors, and council/registered social tenants exercising their right to buy.

(c) Data include regulated mortgage contracts only, and therefore exclude other regulated home finance products such as home purchase plans and home reversions, and unregulated products such as second charge lending and buy-to-let mortgages.

loans for existing borrowers, reduce the cost to banks of forbearing on loans. A study by the FSA found that 5% to 8% of UK mortgages by value were subject to forbearance in 2012, which was broadly unchanged from 2011.

...and may be vulnerable to further distress.

The distributional pattern of UK household debt is again revealing. A significant cohort of UK households has high income gearing. The 2012 household survey carried out for the Bank by NMG Consulting indicated that 18% of secured loans were to households with less than £200 of income remaining per month after housing costs and essential expenditure (Chart 2.29). Loans made to these households might quickly become distressed if disposable incomes were to fall, for example, during a period of low wage growth or unemployment, or if interest rates increased.

A rise in interest rates, without a strengthening in income, could significantly increase borrower distress and losses to banks. One indication is that households accounting for 9% of mortgage debt would need to take some kind of action — such as cut essential spending, earn more income (for example, by working longer hours), or change mortgage — in order to afford their debt payments if interest rates were to rise by just 1 percentage point (Chart 2.30). This would rise to 20% of mortgage debt if interest rates were to rise by 2 percentage points. Provided borrowers are able to take actions in order to afford their debt payments, then this may not lead to significantly higher losses for banks.

New mortgages to UK households made recently may also be vulnerable to a normalisation of interest rates. For example, while new mortgage borrowers in 2012 typically had lower income gearing than new mortgages borrowers in 2007, their income gearing would be broadly similar if mortgage rates were as little as 2 percentage points higher, assuming all other factors remained equal (Chart 2.31). This might be mitigated to the extent that mortgage rates are fixed. But while the share of new mortgages originated with fixed rates is higher than at any time since at least 2004, the share of mortgages with fixed rates in the overall stock is close to a historical low.

Box 2

When can banks issue equity?

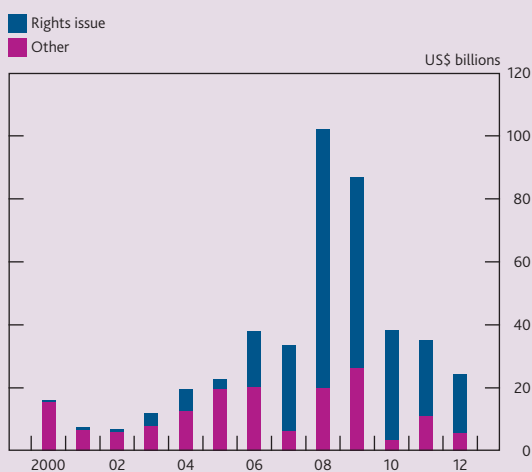
This box describes the main ways banks raise equity, as well as associated costs, and sets out an analytical framework for assessing when it might be feasible for banks to issue equity.

The costs of equity issuance

Two structures are commonly used to issue new, so-called 'seasoned' equity: rights issues and direct placings. Rights issues give existing shareholders the option to subscribe to newly issued shares. Banks typically seek to ensure the success of a rights issue by having it underwritten. In a direct placing, banks sell the new shares directly to new shareholders.⁽¹⁾

In the years preceeding the crisis, banks issued relatively little new equity, most via direct placings. Since 2007, rights issues have been the dominant form of seasoned equity offerings (**Chart A**). Over that period, US\$334 billion of new equity has been issued by European banks.

Chart A Volume of seasoned equity issues by European banks



Sources: Dealogic and Bank calculations.

Selling shares to new shareholders reduces existing shareholders' control rights and their claims on future earnings. The number of new shares issued determines the split of rights between these two groups. But the new equity that is raised can be invested in assets yielding an additional return. So the impact on future earnings depends on how well the new capital is invested. Rights issues protect existing shareholders from an undesirable loss of control by offering them the option to invest more money instead of being diluted. Direct placings do not offer this protection.

In a rights issue, new shares are offered at a pre-determined issue price to current shareholders, giving them several weeks to participate. If, during this period, the share price were to fall below the offer price, the issue would most likely fail and the underwriter would be forced to buy the new shares. Therefore, management and the underwriters often set the issue price at a discount to the market price in order to reduce the chance of this happening. If current shareholders participate, the magnitude of this discount is irrelevant to them: the deeper the discount, the more valuable is their right to participate in the offer.⁽²⁾ Direct placings tend not to be deeply discounted.

There are also upfront costs to banks, including the fees associated with underwriting and administrative costs such as issuing a prospectus. Estimates by the Office of Fair Trading (OFT) suggest that UK average underwriting fees were around 3% of deal value in 2009, but could be lower for direct placings.⁽³⁾ Underwriting costs would increase if intermediaries see a larger risk of failure and therefore require greater compensation for the risk of 'rump' shares remaining on their balance sheets. Administrative costs largely depend on the disclosure and offer rules in a jurisdiction.

Perhaps more important than the direct costs is the risk that the issue could fail. If a bank attempted to issue, but failed to place a large proportion of the shares in the market, this might have destabilising effects through confidence channels. For instance, the low uptake of the HBOS rights issue in 2008 — largely caused by the market price falling below the issue price during the subscription period — was widely seen as a failure which reflected negatively on the bank, even though HBOS ultimately received the money from its underwriters.

Feasibility indicators

Academic literature and market intelligence suggest the following factors are important determinants of the market's willingness to absorb new equity at any given time:

- **Leverage:** High levels of borrowing can contribute to a 'debt overhang' problem.⁽⁴⁾ This makes it less attractive for investors to recapitalise the bank, as most of the economic gains from being less risky will accrue to debt holders, not equity holders.
- **Profitability:** If a bank's earnings prospects are lacklustre — for example, due to expectations of further losses on existing assets or a lack of profitable future investment opportunities — it will find it more difficult to attract additional equity investment.

- **Uncertainty:** When there is material uncertainty about future prospects — for example, due to concerns over asset valuation or future governance — a rights issue might prove unsuccessful or require greater dilution, as buyers may demand an additional premium to cover the perceived risk.

It is possible to proxy these factors using observable metrics: for example, accounting and market leverage to approximate debt overhang; current return on assets (RoA) and the two year ahead forecasts of RoA for profitability; and the VIX and market-wide equity risk premia (ERP) to gauge market uncertainty. In addition, the average of analyst recommendations on the company (buy/hold/sell) and the price to book (PtB) ratio are used as summary indicators.⁽⁵⁾

If the indicators of equity issuance feasibility are meaningful, we would expect better performance on those metrics to be associated with lower levels of dilution. All else equal, a higher discount would increase the dilution, because more shares have to be issued to raise a given amount of capital. Therefore, the dilution — essentially the relative increase in the number of shares — is a measure of the difficulty a bank expects to have in raising equity.

Econometric analysis by Bank staff appears to confirm that pattern, with better indicator scores associated with lower levels of dilution. This applies to all of the indicators set out above. The indicators that stand out in terms of goodness of fit are the PtB ratio, market leverage and RoA forecasts. **Chart B** illustrates this for the PtB ratio and for a sample of 100 European banks that raised new equity between 2005 and June 2013. It shows that higher PtB ratios are associated with lower dilutions.

Application of the framework

To put the indicators in current context, the framework can be applied to UK banks. **Chart C** shows UK banks' current performance for each indicator as a percentile rank in the sample of European equity issues in the past eight years.

Of the three indicators identified as having most explanatory power, PtB ratios and market leverage place most of the UK banks comfortably within the interquartile ranges. Forecasted returns on assets are weaker, but are still within the range of other banks that have issued successfully.

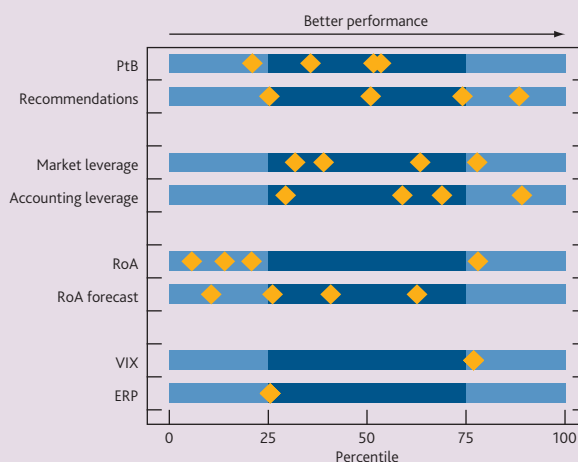
Chart B Dilution and price to book ratio^{(a)(b)(c)}



Sources: Bloomberg, Capital IQ, Dealogic, published accounts and Bank calculations.

- Sample includes 100 equity issues above US\$250 million by European banks from 2005–June 2013. Fifty four of these were rights issues. Includes Barclays, HSBC, LBG and RBS (orange diamonds); their accounts data are as of 2013 Q1, their market data as of 17 June 2013.
- Dilution is the loss of control rights assuming current shareholders do not participate and is defined as $1 - (\text{number of pre-issuance shares} / \text{number of post-issuance shares})$. The observed level of dilution is normalised to control for deal and bank size (deal size is set equal to 1% of the bank's balance sheet).
- Orange diamonds represent the expected required dilutions (based on a power line of best fit) for Barclays, HSBC, LBG and RBS if they were to issue equity at their current price to book ratios as of 17 June 2013.

Chart C Relative position of UK banks according to key indicators of equity issuance feasibility^{(a)(b)(c)(d)}



Sources: Bloomberg, Capital IQ, Aswath Damodaran, Dealogic, Moody's, published accounts and Bank calculations.

- Includes Barclays, HSBC, LBG and RBS (orange diamonds). Published accounts data as of 2013 Q1, market data as of 17 June 2013.
- For each indicator, a bank's position within the sample is measured in percentiles. The dark blue area within each bar denotes the interquartile range.
- Sample includes 100 equity issues above US\$250 million by European banks from 2005–June 2013. Fifty four of these were rights issues. The sample does not include direct recapitalisations, but might include instances where governments backstopped the equity issue.
- ERP and VIX are inverted so that higher values indicate lower performance. Accounting leverage is defined as the book value of common equity as a per cent of total assets. Market leverage is defined as the market value of equity as a per cent of total assets. The RoA forecast is for two years ahead, holding current assets constant. Recommendations is the simple average of analyst recommendations (buy/hold/sell).

On the basis of these indicators, UK banks appear to be in at least as good, if not better, a position to issue equity than many European banks that have raised equity in the recent past.⁽⁶⁾

-
- (1) Though not a legal requirement, industry practice often limits direct placings to 5% of issued share capital.
 - (2) Even non-participating shareholders should be largely compensated for the dilution, since the right can be freely traded.
 - (3) OFT (2011), *Equity underwriting and associated services*, OFT1303. Academic research suggests that these and other costs could be as high as 7% (see, for example, Eckbo, B E, Masulis, R W and Norli, O (2007), 'Security offerings', in Eckbo, B E (ed), *Handbook of corporate finance: empirical corporate finance*, Vol. 1, Elsevier/North-Holland).
 - (4) Myers, S C (1977), 'Determinants of corporate borrowing', *Journal of Financial Economics*, Vol. 5(2), pages 147–75; and Admati, A, DeMarzo, P, Hellwig, M and Pfleiderer, P (2012), 'Debt overhang and capital regulation', *mimeo*.
 - (5) Accounting indicators are measured as of the quarter prior to each issue in the data.
 - (6) The results are robust to restricting the sample to include only equity issues during the financial crisis (not shown).

3 Medium-term risks to financial stability

Macroeconomic prospects remain subdued, reflecting imbalances built up ahead of the crisis. Central banks have continued to support activity by maintaining interest rates at exceptionally low levels. That may pose risks to financial stability in the medium term if resource allocation is distorted and assets become increasingly mispriced.

Progress has been made in mitigating some of the fault lines exposed during the crisis. But vulnerabilities remain with a number of reforms still incomplete. And avoidance of regulation, inconsistent implementation and unintended consequences of cumulative reforms could lead to new fault lines.

Medium-term risks could result from adverse developments in the global financial environment (Section 3.1), for example arising from a prolonged period of low interest rates. They may also arise from structural vulnerabilities (Section 3.2), such as fault lines in the regulatory framework and innovations in financial markets.

3.1 Medium-term risks from global financial developments

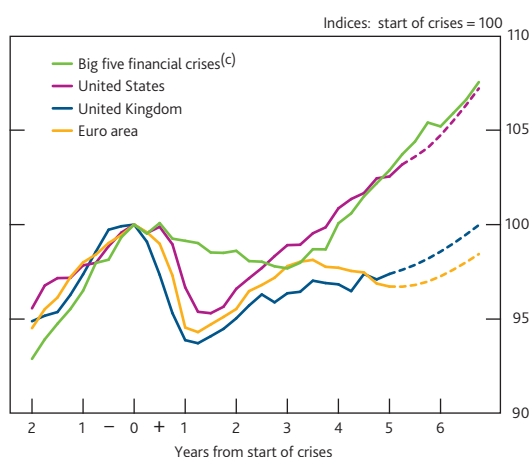
Medium-term growth prospects in advanced economies remain subdued...

The path of output in some advanced economies is expected to remain weaker even than that experienced following previous banking crises (Chart 3.1). That reflects the repair and adjustment necessitated by the imbalances accumulated ahead of the financial crisis. And the risks to global growth remain weighted to the downside, in large part reflecting the continuing adjustment within the euro area.

...despite continued support from exceptionally low interest rates...

Stimulus from monetary policy internationally has sought to support economic activity. That is reflected in exceptionally low long-term interest rates, notwithstanding some pickup in recent weeks. Indeed, UK long-term real rates — as measured by index-linked yields — turned negative for the first time at the end of 2012. But concerns have increased about the impact of persistent, exceptionally low, interest rates on financial stability in the medium term. In the Bank's 2013 H1 *Systemic Risk Survey*, the percentage of respondents flagging risks surrounding the low interest rate environment had risen by more than for any other risk, with nearly a quarter of respondents citing it, up from just 8% six months ago.

Chart 3.1 Evolution of GDP around financial crises^{(a)(b)}



Sources: OECD and Bank calculations.

(a) Dashed lines represent OECD forecasts.

(b) Dates selected for the beginning of crises are 2007 Q4 for the United States, and 2008 Q1 for the euro area and the United Kingdom.

(c) Average for the big five financial crises: Spain (1978 Q2), Norway (1986 Q4), Finland (1990 Q1), Sweden (1990 Q2) and Japan (1990 Q3).

...posing potential risks to financial stability in the medium term...

The interactions between monetary policy and financial stability are explored in Box 3. Low interest rates can help to alleviate government and private sector solvency concerns — for example, by reducing debt-servicing costs and restraining any increase in non-performing loans. This in turn helps to reduce the likelihood of disorderly deleveraging and allows greater time to implement actions to address balance sheet weaknesses. But there is a risk that expectations of a prolonged period of exceptionally low interest rates could delay necessary balance sheet repair and, by masking solvency problems, lead to a mispricing of risk.

...by delaying balance sheet repair...

One channel through which persistently low interest rates may affect financial stability is through its impact on banks' profitability. Low short-term interest rates and relatively flat yield curves tend to compress banks' net interest margins, hampering their ability to recapitalise through retained profits. With interest rates low along the yield curve, there is some evidence of a compression of bank net interest margins in recent years (Chart 3.2).

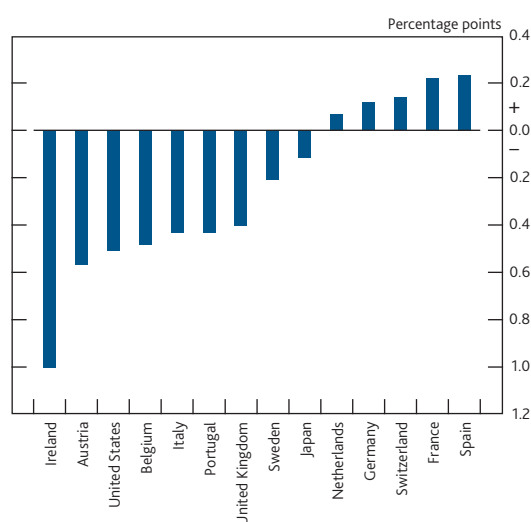
Low interest rates are also likely to have increased banks' incentives to forbear. Forbearance methods, such as switching a borrower to an interest-only loan, are more effective at reducing the short-term burden of repayment when interest rates are low. And cheaper funding reduces the cost to the bank of retaining an asset on which they are receiving little or no income. Forbearance can be beneficial for financial stability by providing borrowers with flexibility to meet their obligations in temporary periods of distress. It might also, however, exacerbate medium-term risks.

...inhibiting the efficient allocation of capital...

Forbearance can retard recovery, and hence increase credit risk, through at least two channels. The presence of firms benefiting from forbearance and shielded from market funding costs may crowd out healthy competitors and new entrants, depressing productivity in that sector. The credit extended to these firms may also not be available to fund new investment by more profitable firms in other sectors of the economy.

In 2011, a survey by the then microprudential supervisor, the FSA, found that around a third of commercial real estate (CRE) loans by value were subject to forbearance. A new survey by the Bank of England, of SMEs and mid-sized companies outside the CRE sector, also found relatively high levels of forbearance in other property-related sectors (Table 3.A). Forbearance seems to be concentrated here for a number of reasons: property-related sectors accounted for the majority of the pre-crisis expansion in corporate debt, there have been large

Chart 3.2 Changes in banking system net interest margins, 2008–12^{(a)(b)}



Sources: SNL Financial and Bank calculations.

(a) Weighted average net interest margin in the selected banking system.

(b) Net interest margins are weighted by assets of the selected banks in the sample.

Table 3.A Forbearance by sector^(a)

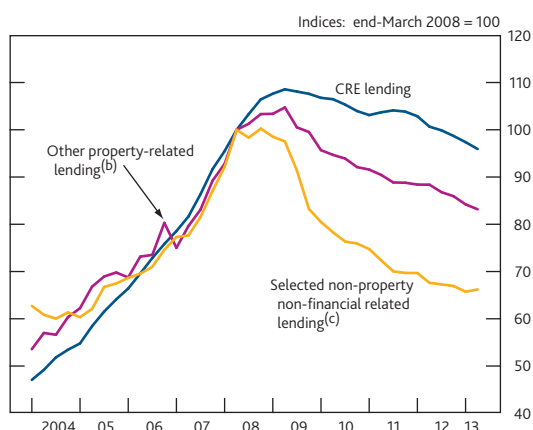
Sector	Forbearance as a percentage of UK banks' exposures to sector
Commercial real estate lending	35
Leveraged loans	28
SME/mid-sized corporate (excluding CRE lending)	14
of which, property-related ^(b)	25
of which, non property-related ^(c)	8

Source: Bank of England.

(a) Data for CRE and leveraged loans are from separate FSA surveys in 2011 and 2012 respectively. Data for SME/mid-sized corporate forbearance are from a March 2013 Bank of England survey conducted in association with the FSA.

(b) Includes sectors where a significant share of lending is secured on property: construction, hotels and restaurants, and health and social work.

(c) Comprises the following sectors: manufacturing; wholesale and retail; transport; information and communication; professional and scientific; administrative; public administration and defence; compulsory social security; education; arts, entertainment and recreation; other service activities; activities of households as employers; and activities of extraterritorial organisations and bodies.

Chart 3.3 Stock of UK loans by sector^(a)

Source: Bank of England.

- (a) Data show indexed values of outstanding total lending by UK MFIs excluding the effects of securitisations and loan transfers, and excluding securities. Data are for lending in all currencies stated in sterling terms, not seasonally adjusted. From 2011 Q1, data are on the SIC 2007 basis. Changes in the SIC codes have led to some components moving between industries.
- (b) Includes sectors where a significant share of lending is secured on property: construction, hotels and restaurants, and health and social work.
- (c) Includes fishing, mining and quarrying, manufacturing, electricity, gas and air conditioning supply, distribution, transport, storage and communications, education, water purification and supply, and recreation, personal and community service activities.

falls in the value of collateral and there has been significant borrower distress in these sectors.

Poor UK productivity performance has, by contrast, been concentrated in non property-related sectors, where forbearance is less prevalent. That suggests that forbearance may have had only a limited effect, to date, on productivity by distorting competition within those sectors. But if property-related forbearance has reduced the availability of new credit to the rest of the economy, it may inhibit growth over the medium term. There is some evidence from the forbearance surveys of an effect on lending, which has been weakest among the banks found to be offering the greatest amount of forbearance.

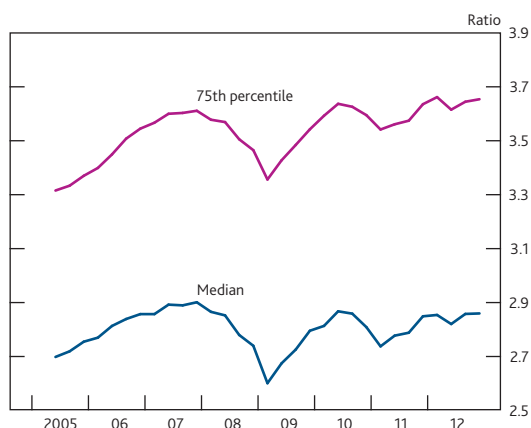
The rolling over of forborne loans may explain why aggregate property-related lending has remained so high — accounting for over half of outstanding loans to non-financial businesses. By contrast, lending to other parts of the corporate sector has fallen sharply (**Chart 3.3**). A pattern of relative weakness in non property-related lending is also apparent in several other advanced economies.

...fostering complacency about tail risk...

By suppressing corporate default rates, forbearance may also contribute to an underpricing of risk in financial markets. Corporate insolvencies in the United Kingdom have remained low relative to the early 1990s recession. In the United States, default rates on high-yield bonds are at historically low levels. Reflecting this, corporate bond spreads have fallen and underwriting standards have weakened (Section 1).

More broadly, an extended period of low interest rates may lead to an underestimation of tail risk. Some market contacts have expressed concerns that the unprecedented period of low rates may have fostered complacency, with investors overestimating the efficacy of policy measures to reduce tail risks. The Bank's 2013 H1 *Systemic Risk Survey* revealed that the perceived probability of a high-impact event in the UK financial system, over both the short and medium term, had fallen to the lowest level since the survey began in 2008.

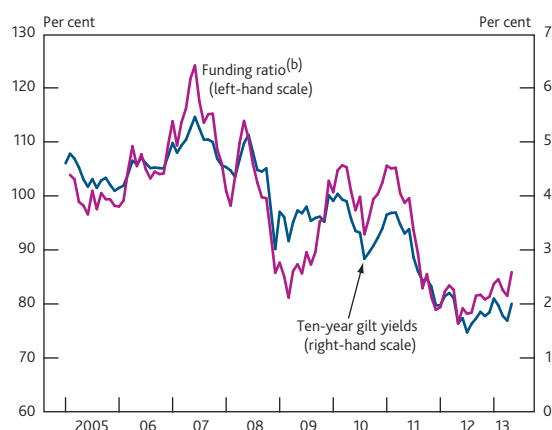
It is possible that new borrowers may not fully appreciate the risks from a normalisation of interest rates. For example, in the United Kingdom there are signs of new mortgage lending at multiples of household income that may fail to account prudently for an increase in interest rates (**Chart 3.4**). The repayment burden of mortgages advanced in 2012 was typically lower than for those made in 2007, when underwriting standards were at their weakest. But, as noted in Section 2, it would be similar if mortgage rates were to rise by as little as 2 percentage points. The FCA's *Mortgage Market Review*, which will be introduced in April 2014, requires banks' affordability assessments to take into consideration any projected increase in interest rates over the next five years. If

Chart 3.4 Loan to income ratios of UK mortgages at origination^{(a)(b)}

Source: FCA.

- (a) Includes loans to first-time buyers, home movers, remortgagors, and council/registered social tenants exercising their right to buy.
- (b) Data include regulated mortgage contracts only, therefore exclude other regulated home finance products such as home purchase plans and home reversions, and unregulated products such as second charge lending and buy-to-let mortgages. The figures in this Report may differ from those published in the *Mortgages Product Sales Data Trend Report* by the FSA due to differences in loan categories included.

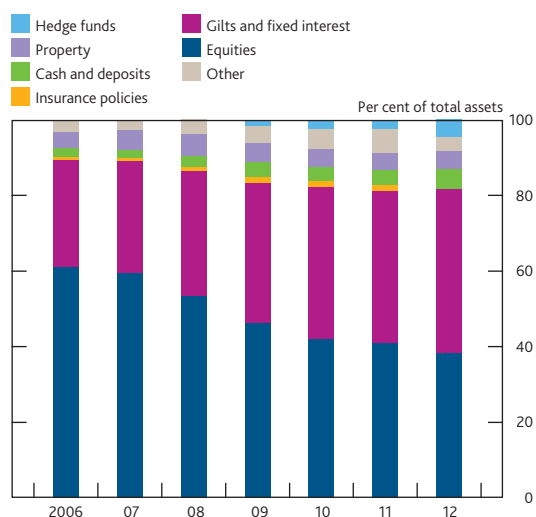
Chart 3.5 Long-term interest rates and UK defined benefit pension scheme funding ratio^(a)



Sources: Pension Protection Fund, Thomson Reuters Datastream and Bank calculations.

- (a) This covers UK pension funds eligible for entry in the Pension Protection Fund (PPF).
 (b) Assets as a percentage of liabilities measured on a section 179 (£179) basis. Schemes' £179 liabilities broadly represent the premium that would have to be paid to an insurance company to take on the payment of PPF levels of compensation. It does not take into account schemes' use of derivative instruments to hedge risks.

Chart 3.6 Average asset allocation of UK defined benefit pension schemes



Source: Pension Protection Fund *The Purple Book* (2012).

interest rates were to rise more quickly than indicated by financial market prices, that may not be captured by the affordability assessment rules.

...and exposing vulnerabilities in the insurance and pension fund sector...

Some financial institutions may intentionally invest in riskier assets to help them meet returns promised to investors when interest rates were much higher, as discussed in Box 1. Two potential examples are life insurers, who have sold products with high guarantees, and defined benefit (DB) pension funds. The future commitments of these institutions are typically of much longer maturity than their assets, which means that a fall in long-term interest rates tends to increase the present value of those commitments relative to the value of their assets. For example, the present value of future DB pension commitments has increased as bond yields — used to discount those commitments — have declined, contributing to aggregate deficits equivalent to around 20% of their liabilities (Chart 3.5).⁽¹⁾ In some European countries, the impact of low interest rates on balance sheets has also been obscured by the use of historical, rather than current market-value, accounting.

There is evidence worldwide of insurance companies exploring riskier and/or alternative asset classes (see Section 1), but there has not so far been any major reallocation. Likewise, there is little evidence to suggest that the overall derisking trend in the UK pension fund industry initiated in the early 2000s — switching out of equities and into safer fixed-income products to match better the nature of their long-term liabilities — has been reversed (Chart 3.6). According to market contacts, some pension funds have recently been revising their asset allocation strategies, so there may be more evidence of increased risk appetite in the future.

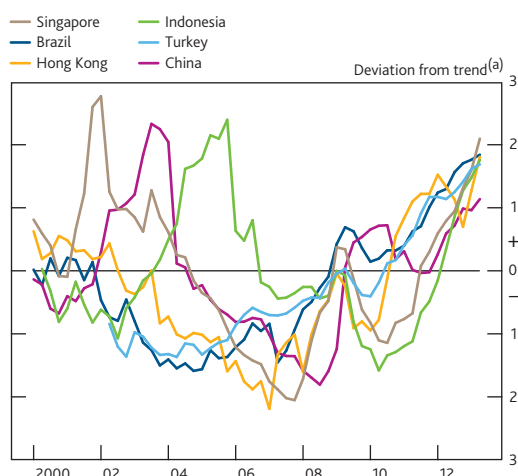
...money market funds...

There has been increasing evidence of money market funds (MMFs) shifting into riskier assets. Constant net asset value (CNAV) funds offer deposit-like contracts to their investors, promising to return the full value of their deposit on demand. In the current low interest rate environment, they have struggled to prevent net yields paid to investors from falling below zero. In response, US MMFs have raised the proportion of their portfolios invested in higher-yielding unsecured assets (Chart 1.11 in Section 1), lower-rated assets and assets with longer maturities.

Taking on greater risk could make MMFs vulnerable to deposit-like runs. In turn, that poses risks to the rest of the financial system as MMFs supply liquidity to other financial institutions. For example, US MMFs account for 35% of total

(1) For more information on the impact of asset purchases by the Bank of England on pension funds, see 'The distributional effects of asset purchases', *Bank of England Quarterly Bulletin*, Vol. 52, No. 3, pages 254–66.

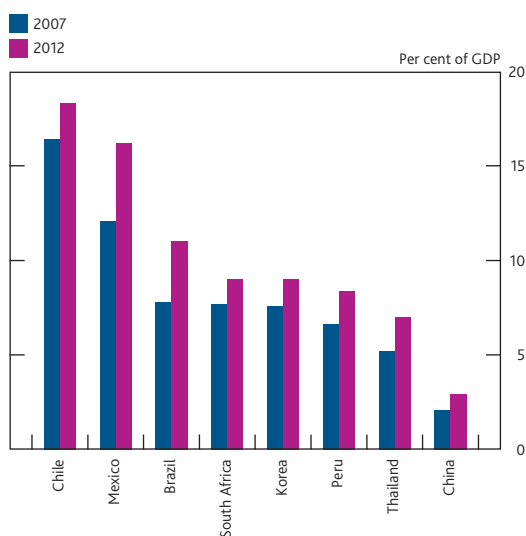
Chart 3.7 Credit to GDP ratios in selected emerging economies



Sources: Bank for International Settlements (BIS), CEIC, IMF *International Financial Statistics*, Thomson Reuters Datastream, national sources and Bank calculations.

(a) Deviation of the credit to GDP ratio from its trend measured using a Hodrick-Prescott filter, divided by its standard deviation.

Chart 3.8 Foreign currency denominated corporate debt in selected economies^(a)



Source: IMF *Global Financial Stability Report* (April 2013).

(a) Foreign currency denominated debt issued by non-financial corporates.

trading volume in the US tri-party repo market — a market for borrowing against securities through which about one third of all US repo transactions are cleared. And US MMFs are important providers of short-term dollar funding to European banks. Regulatory reforms have been proposed to address the particular risks from CNAV funds.

...and in emerging economies receiving capital flows from advanced economies.

Over the past few years, emerging economies have generally attracted strong capital inflows from investors in advanced economies in search of higher yields (Section 1). Market contacts have been expecting monetary easing by Japan to provide a significant further stimulus to these cross-border capital flows. That could lead to financial stability risks from excessive currency movements, domestic asset price bubbles, or sudden stops in capital flows once advanced economies unwind exceptional monetary policy measures. In a number of Asian and Latin American countries, credit to GDP ratios have risen to well above trend levels (**Chart 3.7**). In some cases, this has been accompanied by large increases in house prices. And an increase in corporate leverage, financed by foreign currency borrowing (**Chart 3.8**), could prove problematic in the context of disorderly currency movements or a sudden stop of external financing.

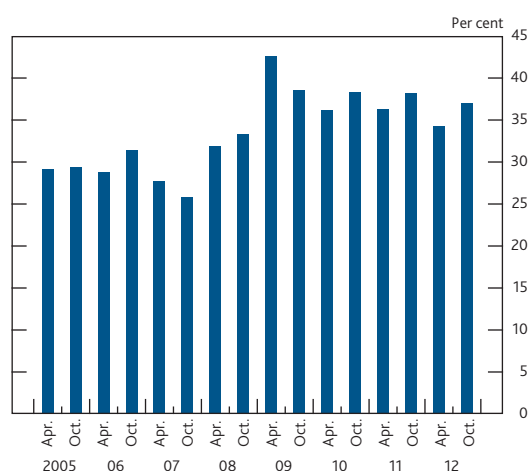
Indeed, since late May capital flows to emerging economies have reversed somewhat, and borrowing costs have risen, in response to news about US interest rate prospects. Some emerging economies, such as South Africa and Turkey, currently have large current account deficits. In the past, deficit countries have been particularly vulnerable to shifts in market sentiment.

Risks depend on the degree of leverage within the financial system.

In the Bank's 2013 H1 *Systemic Risk Survey* increased concerns were expressed that artificially low interest rates were creating distortions in asset allocation, potentially leading to overinflated risky asset prices. The implications of this for financial stability depend on the extent to which higher asset prices have been accompanied by higher leverage or greater maturity transformation, which could make the financial system more vulnerable to a disorderly correction. Measures of leverage in banks in many advanced economies, while remaining high, have not been rising recently. But there is much less information about developments outside the regular banking system in the 'shadow banking' sector.

Shadow banking activities can create leverage through borrowing against financial instruments posted as collateral, especially when margin requirements are low. And maturity transformation — investing in long-term instruments while offering liquid investment products to investors — creates the risk of runs, especially as the shadow banking sector does not

Chart 3.9 Average margin requirement of PRA-regulated prime brokers^(a)



Source: PRA Hedge Fund as Counterparty Survey.

(a) Initial margin requirement expressed as a percentage of aggregate long market value of transactions. A hedge fund is often required to post margin (collateral), in the form of cash or securities, to a prime broker where, for example, it has borrowed cash to purchase securities, engaged in short-selling of securities, or entered into certain types of derivatives contracts.

in normal circumstances have access to backstop funding in the way that banks do. At the height of the financial crisis, temporary liquidity backstops from the official sector had to be provided to prevent runs on money market funds.

A lack of data limits analysis of where leverage is located outside the banking sector, either on balance sheet or embedded via financial derivatives. Surveys suggest that hedge fund leverage remains below 2007 levels, constrained by brokers' margin requirements remaining above pre-crisis levels (Chart 3.9). And maturity transformation through asset-backed commercial paper conduits — which fund illiquid long-dated assets with short-dated commercial paper — has fallen by around three quarters relative to the peak in 2007.

Macroprudential measures to dampen property market risks have been taken in several countries — for example, in Switzerland and Hong Kong. And some emerging economies, for example Brazil and Korea, have sought to moderate the impact of strong capital inflows from advanced economies by using macroprudential tools. In the case of Brazil, those controls have been loosened in recent weeks in response to signs of a weakening in capital flows.

3.2 Structural vulnerabilities

Structural vulnerabilities are fault lines in the financial system that may aggravate or amplify an adverse shock. The financial crisis exposed a number of such vulnerabilities, prompting a substantial reform programme. Some years on, certain reforms are being implemented while others are still being debated (Tables 3.B, 3.C and 3.D). New fault lines are also likely to emerge due to changes to the financial system.

The current reform programme and remaining fault lines

Reforms to banks' capital and liquidity requirements have been agreed internationally...

Following improvements to capital standards under Basel III, the Basel Committee on Banking Supervision (BCBS) agreed in January 2013 on the definition of a Liquidity Coverage Ratio (LCR). This will require banks to hold adequate stocks of unencumbered high-quality liquid assets — that is, cash or assets that can be converted into cash easily and immediately at little or no loss of value in private markets. Assets will be required to meet 100% of stressed net cash outflows at the end of the transition phase. As Section 2 notes, nearly all major UK banks already exceeded 100% at the end of 2012. Discussions have not concluded on the question of a structural funding ratio, though it is a priority for the Basel Committee over the next two years.

As the Financial Stability Board (FSB) noted recently, there has been progress in the implementation of Basel III internationally. In the EU, broad political agreement was

Table 3.B Reforms relating to leverage and maturity mismatch

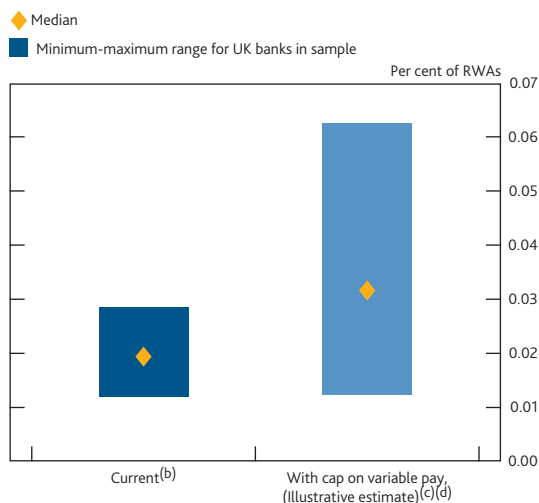
Key vulnerabilities	Reforms debated	Reforms at implementation stage
Insufficient loss absorbency		Capital framework
Poor liquidity positions	Net Stable Funding Ratio	Liquidity Coverage Ratio
Highly leveraged institutions	Leverage ratio	
Inadequate market discipline	Audit	Compensation practices Disclosure Credit rating agency reforms
Weaknesses in accounting standards	Standards for provisioning	

reached in April on the Capital Requirements Directive and Regulation, a package generally known as CRD4. These legal instruments implement the Basel III agreements on the quantity and quality of capital and the framework for risk-weighted assets. They also oblige the European Commission to introduce a binding LCR.

...but there are divergences in implementation...

An interim Basel peer review of a draft text found that CRD4 diverges materially from Basel III in several respects.⁽¹⁾ Further modifications were added in the final CRD4 text.⁽²⁾ One example is the treatment of so-called credit valuation adjustment (CVA) charges. These are capital requirements held against the risk of losses arising from deterioration in the credit quality of banks' counterparties to OTC derivatives. EU legislators have increased the number of counterparties that banks can exempt from such requirements. Credit quality deterioration was a major source of loss during the crisis. Under Basel III, the only exemptions are for transactions with a central counterparty and securities financing. CRD4 contains broader exemptions including non-financial counterparties, sovereigns and pension schemes (the last only for a transitional period), leaving a significant gap in the CRD4 framework. A preliminary estimate, based on data from a small sample of banks, suggests that the impact of these exemptions might reduce a bank's CVA charge by up to 50%, boosting capital ratios by a few tenths of a percentage point.

Chart 3.10 Fixed pay as a proportion of risk-weighted assets^(a)



Sources: Published accounts and Bank calculations.

- (a) Data are for staff currently subject to requirements set out in the PRA and FCA Remuneration Code (SYSC 19A in the PRA and FCA Handbooks) at a sample of major UK banks. The sample of banks comprises Barclays, HSBC, LBG, Nationwide, RBS, Santander UK and Standard Chartered.
- (b) Chart shows sample minimum-maximum range of fixed pay as a proportion of bank risk-weighted assets (RWAs). Fixed pay figures are 2010–12 averages; RWA figure is from 2012.
- (c) Chart shows sample minimum-maximum range of fixed pay as a proportion of bank RWAs, after the introduction of the variable pay cap. It is assumed that banks increase the level of fixed pay in order to observe the cap while keeping total pay constant. Fixed pay figures are 2010–12 averages; RWA figure is from 2012.
- (d) This figure assumes that a 1:1 ratio of fixed to variable pay is applied, as set out in CRD4. That legislation also provides flexibility for Member States to permit a maximum 1:2 ratio of fixed to variable pay, if a supermajority of shareholders give their consent.

CRD4 also contains provisions on issues not covered in the Basel III framework. For example, it introduces a cap constraining the ratio of variable to fixed pay for material risk-takers. It is possible that banks will respond by increasing fixed pay, while keeping total pay constant. In that case, the cap could reduce banks' ability to lower their overall pay bill by cutting discretionary pay in the future in order to conserve capital. Given the composition of recent annual pay bills of major UK banks, this reduction in flexibility might not materially affect resilience in the short term (Chart 3.10). The cap could have a larger effect, if banks needed to reduce their pay bill over a number of years. A significantly more expansive definition of 'material risk-takers' could also strengthen its impact — material risk-takers currently represent less than 0.4% of total staff numbers for the largest UK banks.⁽³⁾

...and prudential standards remain incomplete.

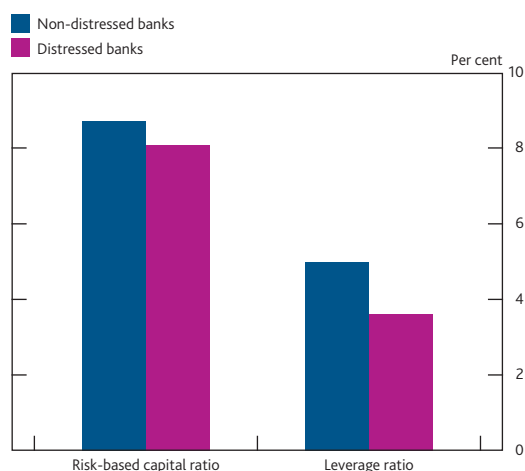
Other reforms are still under way. One example is the fundamental review of trading book capital requirements. This aims to mitigate weaknesses such as the use of Value-at-Risk (VaR) models for determining regulatory capital requirements, which do not capture losses beyond the chosen confidence

(1) See www.bis.org/bcbs/implementation/l2_eu.pdf.

(2) See <http://register.consilium.europa.eu/pdf/en/13/pe00/pe00015.en13.pdf> and <http://register.consilium.europa.eu/pdf/en/13/pe00/pe00014.en13.pdf>.

(3) Regulations governing the definition of material risk-takers are currently under review. See <http://eba.europa.eu/documents/10180/206140/EBA-CP-2013-11---Draft-RTS-on-criteria-for-Identified-Staff.pdf>.

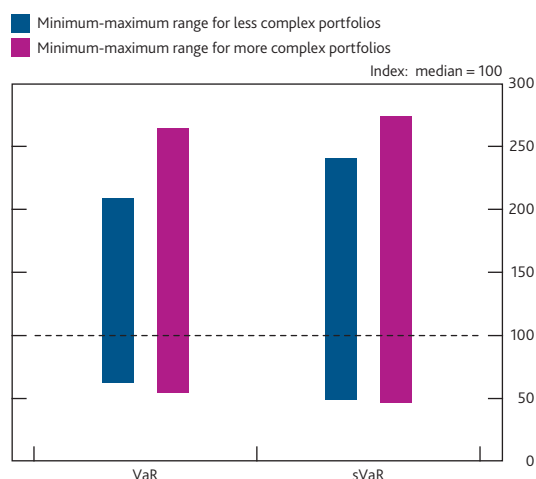
Chart 3.11 Risk-based capital and leverage ratios of distressed and non-distressed banks before the recent financial crisis^{(a)(b)(c)}



Sources: Capital IQ, Laeven and Valencia (2010), SNL Financial, published accounts and Bank calculations.

- (a) Leverage ratio is defined as Tier 1 capital divided by total assets. For institutions reporting under US GAAP, total assets are adjusted with respect to the treatment of derivatives on a best-efforts basis to achieve comparability with institutions reporting under IFRS. Risk-based capital ratio is defined as Tier 1 capital divided by total risk-weighted assets. Data are for 2006 fiscal year end.
- (b) The classification of bank distress (failure or government intervention) is based on Laeven, L and Valencia, F (2010), 'Resolution of banking crises: the good, the bad and the ugly', *IMF Working Paper 10/146*, updated to reflect occurrences of distress between August 2009 and August 2012.
- (c) August 2007 is taken as the starting point for the crisis. Sample of 102 banks, 40 of which classified as having experienced distress.

Chart 3.12 Results from the BCBS hypothetical portfolio exercise for the trading book by complexity of portfolio^{(a)(b)(c)}



Sources: BCBS and Bank calculations.

- (a) Data from the BCBS hypothetical portfolio exercise for the trading book. A sample of fifteen internationally active banks calculated a number of market risk internal model metrics over 20 trading days for 26 hypothetical portfolios. For more details of the exercise, refer to the January 2013 BCBS report.
- (b) Results for the VaR and sVaR models have been normalised to median = 100. The chart shows sample minimum-maximum ranges (the sample consists of portfolios 1 to 24 in the exercise). The lower end of each bar is derived by averaging the normalised minimum risk weights for the relevant portfolios. The upper ends were similarly derived by averaging normalised maximum risk weights.
- (c) Judgement has been used to classify the portfolios as 'more' or 'less' complex.

level, and issues arising from the treatment of less liquid positions and the definition of the trading book itself. The Basel Committee is also reviewing the treatment of interest rate risk in the banking book to limit arbitrage opportunities between the trading and banking books. This is highly relevant in the current environment, given the importance of ensuring that banks are resilient to possible shifts in interest rates.

A leverage ratio capping the proportion of total assets to capital is an important backstop to risk-based capital requirements. Indeed, in the recent crisis, the leverage ratio performed significantly better as an indicator of the future distress of large complex financial institutions than risk-based measures of capital (**Chart 3.11**). The Basel Committee plans to agree a definition and calibration of the leverage ratio later this year. It is very important that the EU implements the leverage ratio in future legislation.

Another issue relates to the calculation of risk weights. As discussed in the November 2012 *Report*, UK banks' internal models have been found to produce widely differing results for common portfolios of banking book assets. In January, the Basel Committee published a report that also showed a very wide range of variation in required capital on common portfolios of trading book assets of international banks.⁽¹⁾ Portfolios with more complex products resulted in somewhat greater variability (**Chart 3.12**). The variation also appears to increase with the complexity of the model, with the newer, relatively more complex, Incremental Risk Charge (IRC) models displaying much more variability than VaR and stressed VaR (sVaR) models (**Chart 3.13**).

This underlines the importance of the continuing review by the Basel Committee of the simplicity and comparability of the overall framework.⁽²⁾ Further work is needed to simplify the capital framework to make it more robust and comparable, including greater transparency about risk-weight calculations, consideration of the potential role of risk-weight floors, and the implementation of a robust leverage ratio.

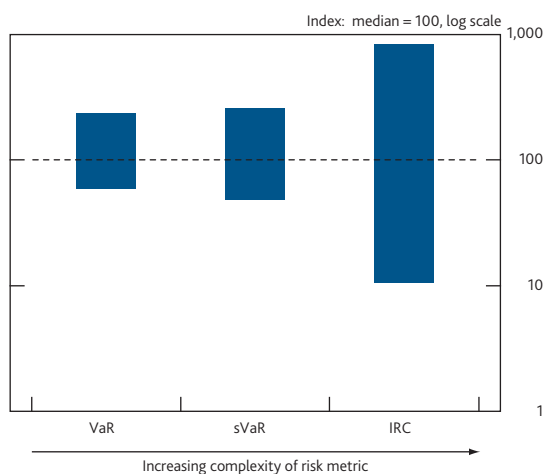
Prudential regulation should emphasise mitigation of risks affecting the financial system as a whole.

The crisis indicated that tools to mitigate time-varying risks might usefully complement the steady-state calibration of prudential standards to mitigate system-wide risks. In the United Kingdom, the regulatory framework gives the FPC directive powers over the countercyclical capital buffer and sectoral capital requirements.

(1) Basel Committee on Banking Supervision, 'Regulatory consistency assessment programme — analysis of risk-weighted assets for market risk', January 2013 (revised February 2013), www.bis.org/publ/bcbs240.pdf.

(2) This point has also been made recently in other financial stability reports — see for example the Financial Stability Oversight Council 2013 *Annual Report*, available at www.treasury.gov/initiatives/fsoc/Documents/FSOC%202013%20Annual%20Report.pdf.

Chart 3.13 Results from the BCBS hypothetical portfolio exercise for the trading book by model^{(a)(b)}



Sources: BCBS and Bank calculations.

- (a) Data from the BCBS hypothetical portfolio exercise for the trading book. A sample of fifteen internationally active banks calculated a number of market risk internal model metrics over 20 trading days for 26 hypothetical portfolios. For more details of the exercise, refer to the January 2013 BCBS report.
- (b) Results for the VaR, sVaR and IRC models have been normalised to median = 100. The chart shows sample minimum-maximum ranges (the sample consists of portfolios 1 to 24 in the exercise). The lower end of each bar is derived by averaging the normalised minimum risk weights for the relevant portfolios. The upper ends were similarly derived by averaging normalised maximum risk weights.

For insurers, the existing microprudential regime does not fully take into account system-wide risks and may require macroprudential tools. For example, mechanisms that can adjust for procyclical variation in insurers' capital resources, both in the upswing and the downswing, may be useful. This would reduce incentives for procyclical changes to asset holdings that may amplify systemic risk. Amendments to Solvency II — the proposed European prudential framework for insurers — are expected to include a number of mechanisms that could reduce procyclicality. But these include tools that apply in downswings but not in the upswing. For macroprudential purposes, it is important that these measures operate symmetrically.

Measures to address volatility in insurers' capital include adjustments to the discount rates used to value liabilities where products — such as long-dated life insurance — do not pose liquidity or (non-credit) market risks for insurers. Extending adjustments beyond such products, however, could create new incentives for insurers to take on maturity and liquidity mismatches, exposing them to shadow banking-like risks.

The crisis also exposed weaknesses in the 'soft' infrastructure.

Another major area of reform is the 'soft' infrastructure of the financial sector, including the accounting framework, audit practices and disclosure. For example, the accounting treatment of expected losses and its effect on financial stability has been a concern for some time. The latest proposal by the International Accounting Standards Board (IASB) (Box 4) aims to introduce a more forward-looking approach. The IASB's earlier proposal — produced in 2009 — required the allocation of initial expected credit losses over time and the immediate recognition in profit and loss of any changes in credit expectations. In the IASB's view, this reflected most appropriately the underlying economics of risks and rewards of lending. However, during consultation, it was judged to be operationally burdensome and has since been dropped.

The current proposal also has the potential to allow for earlier provisioning than the existing approach, although high-quality implementation will be crucial to ensure that it delivers a better outcome than the existing framework. That is in part because the proposal will require increased use of judgement by bank management and a greater reliance on internal models. For reforms to be effective, accountants and auditors will need to consider evidence and monitor provisions carefully, and enhanced disclosures will be necessary. Supervisors will also need to continue to require banks to fill any shortfall in credit loss coverage not reflected by accounting practices through their capital requirements, as with the FPC's recent recommendation on bank capital (Section 4).

External audit also plays an important role in ensuring confidence in the accuracy of publicly disclosed information by firms. The financial crisis raised concerns about the quality of bank audits. A recent global survey of audit inspection by the International Forum of Independent Audit Regulators noted, for example, issues relating to lack of professional scepticism by auditors and failure to gather sufficient appropriate audit evidence.⁽¹⁾ The recent report of the Financial Reporting Council's Audit Quality Review team of UK bank audits over the past year also identified a number of concerns, including around the audit of loan loss provisions. Work to improve audit practices and standards is continuing in a number of international bodies, including the FSB, the BCBS and the International Auditing and Assurance Standards Board.

Disclosure practices are improving, but will require sustained effort.

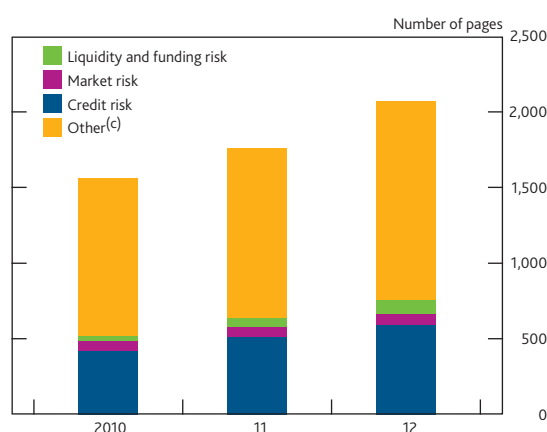
Transparency can contribute to the exercise of market discipline and more accurate pricing of risk, making it easier for market participants to form their own view on a firm's viability.

UK banks have substantially increased their disclosures over recent years, as a simple quantitative measure illustrates (Chart 3.14). In part, this reflects responses by banks to the recommendations made last October by the Enhanced Disclosure Task Force (EDTF) — a private sector body which was initiated by the FSB in May 2012 — and to FPC disclosure recommendations around leverage ratios and improved Pillar 3 disclosures (Section 4). In the future, further disclosures may result from the Sharman inquiry, which should also enhance investors' and other stakeholders' understanding of directors' behaviour.

UK banks have made good progress towards meeting the EDTF recommendations in their latest accounts. But, given the extent of the changes involved and the relatively recent nature of the Task Force's recommendations, there is scope for further enhancement. Progress was particularly evident in the areas of capital adequacy and some aspects of credit risk disclosures. It was more mixed in areas such as market risk and risk-weighted assets (RWAs) disclosures (Chart 3.15). For example, advances were made in explaining the various models used to calculate RWAs. But market participants may still find it difficult to link changes in RWAs over time to drivers such as asset quality, ratings migration and any changes in models. Additional disclosures are also required for comparisons across firms in this area.

Market intelligence suggests that the additional detail on banks' capital positions and risk weights was welcomed, but that further information is required to enable users to compare RWAs across banks. Further work is also required in better

Chart 3.14 Growth in volume of risk disclosure in the annual reports of large UK banks^{(a)(b)}



Sources: Published accounts and Bank calculations.

- (a) This chart shows the number of pages of credit, market, and liquidity and funding risk disclosures within the risk disclosure sections of the directors' annual reports and within the Pillar 3 disclosures, but not the financial statements (with the exception of Nationwide which includes its risk disclosures within its financial statements). Santander UK does not publish Pillar 3 disclosures.
- (b) The sample of banks comprises Barclays, HSBC, LBG, Nationwide, RBS, Santander UK and Standard Chartered.
- (c) 'Other' represents all other information contained within the directors' annual reports and Pillar 3 disclosures. This includes, but is not limited to, corporate governance, business performance reviews, strategy outlines and other risk disclosures, such as operational or reputational risk.

Chart 3.15 Progress towards EDTF recommendations^(a)

- Considerable progress towards recommendations
Reasonable progress
Some progress
Little or no progress

EDTF key recommendations	Large UK banks
Capital adequacy	Considerable progress
RWAs	Reasonable progress
Liquidity and funding	Some progress
Market risk	Some progress
Credit risk	Considerable progress

Sources: Published accounts and PRA calculations.

- (a) The sample of banks comprises Barclays, HSBC, LBG, RBS and Standard Chartered.

(1) See [www.ifiar.org/IFIAR/media/Documents/General/IFIAR-2012-Summary-Report-of-Members-Inspection-Findings-18-Dec-12-\(2\).pdf](http://www.ifiar.org/IFIAR/media/Documents/General/IFIAR-2012-Summary-Report-of-Members-Inspection-Findings-18-Dec-12-(2).pdf).

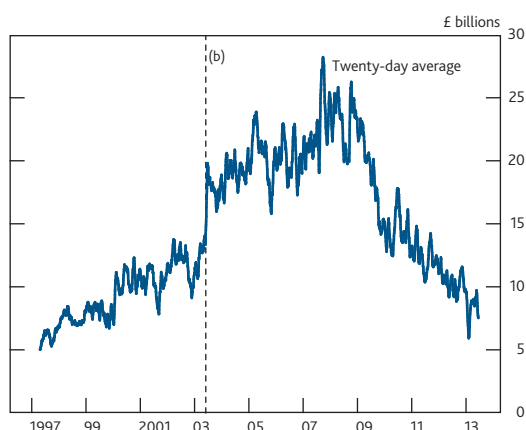
signposting disclosures in published reports to improve usability.

Disclosure also matters for non-banks. The Committee on Payment and Settlement Systems and the International Organization of Securities Commissions (CPSS-IOSCO) have already published a disclosure framework for financial market infrastructures (FMIs) and are working on a set of quantitative disclosures. These aim to enable stakeholders to evaluate and compare FMIs and to assess their importance to a market as well as the risks associated with becoming a member. For insurers, Solvency II is expected to introduce new reporting requirements and place greater emphasis on the importance of disclosure. And enhanced transparency of shadow banking activities is core to work by the FSB in this area.

Benchmarks and reference rates used for transactions are currently under review.

Concerns have been raised over the robustness of reference rates in financial markets, prompted by enforcement action for misconduct by some banks over the setting of the London interbank offered rate (Libor) and other reference rates. Falls in market activity in unsecured interbank markets have reduced the availability of data underpinning these reference rates. An indicator of activity in the overnight unsecured sterling market, SONIA volumes, which includes counterparties other than banks, has also shown a falling trend, although market contacts suggest this reflects in part a shift away from brokered transactions (Chart 3.16). A working group of the BIS Economic Consultative Committee also noted that shifts in the structure of derivatives markets — such as the move to central clearing — could reduce the demand for reference rates that factor in bank credit risk.⁽¹⁾

Chart 3.16 SONIA volumes^(a)



Sources: Bloomberg and Bank calculations.

- (a) SONIA (the sterling overnight index average) is the weighted average rate of all unsecured sterling overnight cash transactions brokered in London by contributing members of the Wholesale Markets Brokers' Association (WMBA) between midnight and 4.15 pm London time.
- (b) From June 2003, all sterling cash transactions with members of the WMBA, irrespective of counterparty status, with a minimum size of £25 million have been included.

Market participants and financial stability authorities have a strong interest in a robust reference rate regime. The FSB has noted that the official sector has an essential role to play in ensuring that widely used benchmarks are held to appropriate standards of governance, transparency and reliability, and that measures to restore governance and oversight processes need to be implemented with high priority and urgency. Draft principles for benchmark and reference rates published by an IOSCO task force set out standards for benchmark quality, methodology, governance and accountability mechanisms. With these and other international initiatives likely to take time to bear fruit, it is important to monitor any implications for stability and for market participants to develop contingency plans.

Domestically, important work is being done as part of the Wheatley Review of Libor, which sets out a plan for reform of industry-led Libor rates.⁽²⁾ As part of that overall reform, the

⁽¹⁾ See www.bis.org/publ/othp19.pdf.

⁽²⁾ See http://cdn.hm-treasury.gov.uk/wheatley_review_libor_finalreport_280912.pdf.

Table 3.C Reforms relating to connections between financial institutions

Key vulnerabilities	Reforms debated	Reforms at implementation stage
Large counterparty exposures	Large exposure framework	
Distribution of interconnectedness	OTC derivatives market reforms ^(a)	
Poor risk management		
Limited transparency of risk		
Complex market structures		Legal Entity Identifier

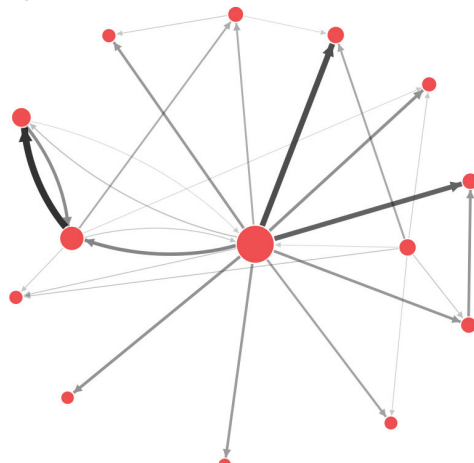
(a) OTC derivatives market reforms are shown at an intermediary stage: some elements are at implementation stage, while others are still being debated.

Chart 3.17 Exposures between the largest UK banks and building societies in 2011 and 2012^{(a)(b)}

2011



2012



Sources: PRA regulatory data and PRA calculations.

(a) Each node represents a bank or building society^(b) in the United Kingdom. The size of each node is scaled in proportion to the sum of (1) the total value of exposures to a bank, and (2) the total value of exposures of the bank to others in the network. Exposures are measured net of collateral. The thickness of the line is proportional to the value of the exposure. Arrows point towards borrowers and away from lenders. Only exposures greater than £1 billion are shown in the chart. Strength of exposures and size of nodes are not comparable year on year.

(b) The sample comprises Barclays, BNY Mellon, Citibank, Co-operative Banking Group, Credit Suisse, Goldman Sachs, HSBC, JPMorgan, LBG, Merrill Lynch, Mitsubishi UFJ, Mizuho, Morgan Stanley, Nationwide, Nomura, Northern Trust, RBS, Santander, Standard Chartered, State Street, Sumitomo Mitsui and UBS. Only UK-incorporated entities and their foreign subsidiaries are included. Only banks or building societies with exposures greater than £1 billion are represented in the chart.

Government has introduced regulation of activities in relation to benchmark rates as part of the Financial Services Act 2012. In parallel, the FCA has also introduced a new regulatory regime, which outlines requirements for the administrators of Libor and banks submitting to Libor. In addition, there is a process to nominate a new Libor administrator to succeed BBA Libor Limited. This task is currently being undertaken by the Hogg Tendering Advisory Committee for Libor, and is hoped to be completed over the summer.

Reforms to core markets aim to reduce system risk...

Work is under way internationally to reduce the systemic risk that can arise from interactions between market participants. This includes reforms to OTC derivatives markets (**Table 3.C**). For example, some jurisdictions have begun mandating derivatives products for central clearing. But as set out in the previous *Report*, important safeguards, such as margin requirements for non-centrally cleared trades, are yet to be agreed.

A number of other issues still need to be resolved between jurisdictions. There is a risk of duplication or inconsistency unless regulations in different jurisdictions are carefully aligned. This could be the case, for example, if prudential standards for central counterparties (CCPs), or clearing mandates, differ significantly across jurisdictions. Although the internationally agreed CPSS-IOSCO 'Principles for financial market infrastructures' provide a consistent qualitative standard, the way in which some elements of the Principles have been implemented in legally binding regulation varies across jurisdictions. One important example of this is the minimum liquidation period for calculating CCP margin requirements for exchange-traded derivatives. This should be sufficient to allow the CCP to liquidate the position of a defaulted member without materially affecting market prices and should therefore reflect the liquidity of the cleared products. Further work is required to align regulatory standards across borders in a manner that reduces systemic risk, reflecting the increasing importance of CCPs.

...as do improved exposure regimes.

As Section 2 notes, UK banks' large exposures to financial institutions have fallen, but remain material. A comparison of the characteristics of the exposure networks in 2011 and 2012 also shows changes in structure (**Chart 3.17**).

The international regulatory framework for measuring and controlling such large exposures to single counterparties is under review. The proposals aim to respond to evidence from the crisis that banks' measurement of exposures to single counterparties across books and operations was neither sufficient nor consistent internationally. The proposals also seek to limit contagion risk within the financial system by recommending a tighter limit for interbank exposures among global systemically important banks (G-SIBs). Domestically,

Table 3.D Reforms relating to distribution of risk

Key vulnerabilities	Reforms debated		Reforms at implementation stage
		→	
Systemically important institutions	Non-bank G-SIFI framework	Banking sector structural reforms ^(a)	G-SIB framework D-SIB framework Bank resolution framework
Build-up of risk outside traditional regulated sector	Shadow banking framework	Securitisation reforms ^(a)	

(a) Structural reforms and securitisation are shown at an intermediary stage: some elements are at implementation stage, while others are still being debated.

this will sit alongside the FPC's time-varying intra-financial sector capital tool, which will permit the FPC to adjust capital held against exposures to other financial institutions.

Incentives faced by market participants are an important factor in the effectiveness of regulation.

Prudential reforms will strengthen the framework within which institutions operate. But their impact will depend on incentives faced by market participants, which will be affected by the perceived and actual distribution of risk. Concerns during the crisis have prompted a number of reforms (**Table 3.D**). For example, during the crisis the originate-to-distribute lending model was found to have weakened the incentives of loan originators to assess risk. This was further exacerbated by flaws in the regulatory framework for banks' securitisation holdings. This has prompted a number of regulatory initiatives related to securitisation, such as the recalibration of risk weights assigned to securitisation, enhanced disclosure requirements and risk retention requirements. It is important to ensure appropriate incentives for prudent credit risk management at loan origination even where there is no single originator, as in collateralised loan obligations.

Another fault line in incentives relates to perceptions that some institutions are too systemically important to fail. The G20 agreed that G-SIBs should face higher prudential requirements given the potential adverse consequences of their failure. US regulators are currently debating whether further measures are required to offset the incentives arising from being too important to fail. These considerations include higher capital surcharges for such firms, as well as leverage ratios that increase with the size, interconnectedness and complexity of institutions. Work is also under way to consider appropriate measures for those non-banks with potential systemic importance, prompted by events such as the failure of AIG. In particular, the International Association of Insurance Supervisors is currently developing a methodology for identifying global systemically important insurers and designing appropriate policy measures.

As discussed in the previous *Report*, a number of jurisdictions are developing reforms of banking structures. For example, in the United Kingdom, legislation to implement proposals by the Independent Commission on Banking has been introduced to Parliament. Recently, the European Commission published a consultation paper on reforming the structure of the European banking sector, with legislative text expected in the autumn.⁽¹⁾

In the United Kingdom, the PRA and FCA are putting in place measures to reduce barriers to entry so as to facilitate increased competition between new and existing banks. This

(1) See http://ec.europa.eu/internal_market/consultations/2013/banking-structural-reform/index_en.htm.

will include reforms to the authorisation process and changes to prudential requirements for banking start-ups.⁽¹⁾

Removing barriers to exit is another key factor in reducing incentive distortions arising from perceptions of systemic importance.⁽²⁾ Progress has been made in establishing recovery and resolution frameworks reflecting the FSB's 'Key attributes of effective resolution regimes for financial institutions'. The Recovery and Resolution Directive, which requires Member States to put these into effect for banks and investment firms in the EU, is expected to be implemented by January 2015. The Directive is expected to require national authorities to impose minimum requirements for loss-absorbing capacity on systemically important firms. It will also require Member States to introduce new resolution tools, such as the ability to bail in creditors.

The FSB is carrying out further work on resolution regimes for insurers and FMIs, including producing guidance on how the Key Attributes apply in resolution of these firms. CPSS-IOSCO will also publish separate draft guidance on FMI recovery plans later this year. EU legislative proposals on non-bank recovery and resolution envisaged for later in 2013 are likely to include FMI-specific arrangements.

In the United Kingdom, there is now a statutory resolution regime for CCPs, which is expected to be brought into force in 2013. HM Treasury has recently consulted on introducing a Special Administration Regime for UK payment and settlement systems. This would make continuity of critical service provision the key objective of the administrator of an insolvent payment or settlement system operator, thereby mitigating the risk that critical services could be interrupted.

New fault lines arising from changes to the system

Regulatory arbitrage may weaken the impact of reform...

Institutions may respond to these and other regulatory reforms by changing their behaviour to avoid requirements. This could see the development of new products to sidestep regulatory rules and migration of activities to more lightly regulated parts of the financial sector or to jurisdictions with lower prudential standards.

...and data gaps impede monitoring of activity shifts.

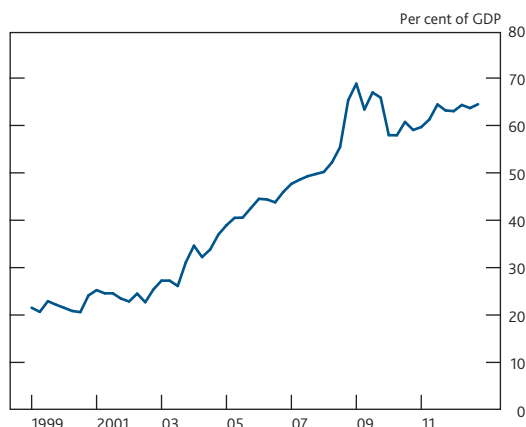
A potential response to increased regulation of banks would be to shift activity to the shadow banking sector. This underlines the importance of system-wide regulation.⁽³⁾ Data availability, however, is poor. This affects assessments of the risks associated with specific shadow banking activities, as well as the connections between different sectors. Estimates of the credit extended by UK financial institutions excluding banks,

(1) See www.bankofengland.co.uk/publications/Documents/joint/barriers.pdf.

(2) See also Tucker, P (2013), 'Resolution and future of finance', available at www.bankofengland.co.uk/publications/Documents/speeches/2013/speech658.pdf.

(3) See, for example, Box 4 in the June 2012 *Financial Stability Report*.

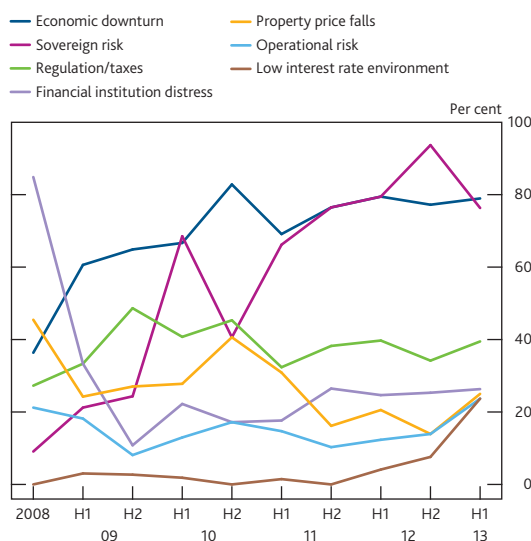
Chart 3.18 Credit extended by UK other financial intermediaries and financial auxiliaries as a proportion of GDP^{(a)(b)}



Sources: ONS and Bank calculations.

- (a) Other financial intermediaries and financial auxiliaries comprise UK financial corporations excluding monetary financial institutions (banks and building societies), insurance corporations and pension funds. Latest data value in 2012 Q4.
- (b) Credit series constructed from other financial intermediaries' and financial auxiliaries' holdings of: (1) short-term money market instruments; (2) medium-term and long-term bonds; and (3) long-term loans. Series includes credit to domestic and overseas private and public sector institutions. Quarterly GDP data are annualised by summing over four quarters on a rolling basis; non seasonally adjusted GDP has been used.

Chart 3.19 *Systemic Risk Survey*: key risks to the UK financial system^{(a)(b)}



Sources: Bank of England *Systemic Risk Surveys* and Bank calculations.

- (a) Respondents were asked to list the five risks they thought would have the greatest impact on the UK financial system if they were to materialise. Answers were in a free format and were coded into categories after the questionnaires had been submitted; only one category was selected for each answer. Chart figures are the percentages of respondents citing a given risk at least once, among respondents citing at least one key risk. The chart shows the top seven categories. For further details see the 2013 H1 *Survey*.
- (b) Risks cited in previous surveys have been regrouped into the categories used to describe the latest data.

building societies, pension funds and insurance companies shows a long-term upward trend (**Chart 3.18**), but the data available do not permit a more granular breakdown to identify shadow banking. This data gap is one that the FSB is seeking to close internationally.

Reforms may have unintended consequences.

The broad scope of the reform agenda, both internationally and domestically, also raises the question of whether there will be unintended consequences from reforms themselves or from their interaction. For example, respondents to the *Systemic Risk Survey* have raised concerns over excessive, poorly co-ordinated, inappropriate or overly complex regulation (**Chart 3.19**). In particular, proposals to tax financial transactions by the European Commission appeared to be of concern to respondents. As outlined in draft directive text,⁽¹⁾ the tax would apply to a wide range of financial transactions and counterparties. The most immediate impact would be higher transaction costs. This could reduce secondary liquidity in certain markets, increase primary issuance costs and affect market participants' ability to hedge risk. For example, the European Commission itself envisages a 75% fall in derivative volumes and the International Capital Market Association estimates a contraction of the European repo market of at least 66%.

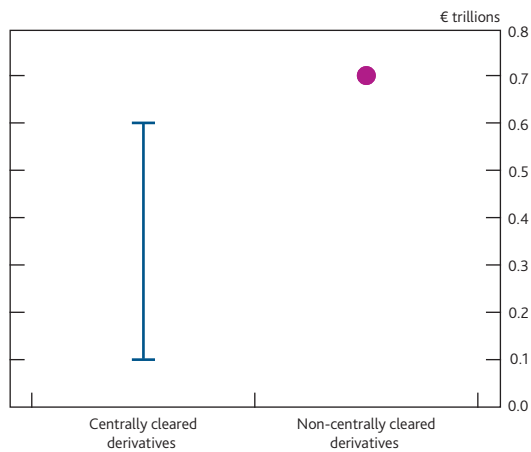
Internationally, regulators and private sector bodies are considering the impact of any increased margin requirements, and regulatory reforms more broadly, on wider collateral availability and pricing. The overall impact is uncertain (**Chart 3.20**).⁽²⁾ Issues raised include whether there is potential for increased reliance on collateral, which may create new interconnections between market participants, introduce procyclical effects, and lead to increased costs. The BIS is co-ordinating a macroeconomic assessment of the OTC derivatives regulatory reforms overall.

Issues can also arise from the cumulative impact of reforms. For example, there are a number of reforms affecting securitisation markets. These include separate risk retention requirements in the EU and in the United States, and also prudential requirements for banks and separate prudential requirements for non-bank investors such as insurers. This has prompted initiatives for harmonisation such as recent recommendations by IOSCO. There is debate over the impact of geographic ring-fencing — that is, requirements by authorities that lead to the separation of part of a banking group from its parent along geographic lines. This could take the form of higher local capital and liquidity standards. For

(1) See http://ec.europa.eu/taxation_customs/resources/documents/taxation/com_2013_71_en.pdf.

(2) See, for example, Box 6 in the June 2012 *Financial Stability Report*, pages 42–43, for a discussion of asset encumbrance and, for estimates of impact, the report on 'Asset encumbrance, financial reform and the demand for collateral assets' by the Committee on the Global Financial System.

Chart 3.20 Estimates of impact on collateral demand arising from OTC derivatives reforms^(a)



Source: Committee on the Global Financial System.

(a) The estimate for non-centrally cleared derivatives is based on a quantitative impact study by BCBS-IOSCO. The estimate for centrally cleared derivatives is based on studies by the Bank of England, BIS, De Nederlandsche Bank and IMF.

example, the US Federal Reserve Board has proposed a requirement that capital for US operations be held at an intermediate holding company in the United States. Such ring-fencing potentially strengthens local resilience, but it might also make capital and liquidity less fungible on a cross-border basis in situations of stress.

Box 3

Monetary policy and financial stability

The Monetary Policy Committee's (MPC's) objective is to achieve price stability, as embodied in the 2% inflation target. The Financial Policy Committee (FPC) contributes to the achievement by the Bank of its financial stability objective. Taken together, price and financial stability are necessary conditions for macroeconomic stability in the medium term. The actions of both the MPC and FPC can also affect growth and employment in the short and medium run. Consistent with that, both Committees have a secondary objective to support the Government's broader economic policy, including its objectives for growth and employment, though, in each case, that is subject to the Committees achieving their different primary objectives.

In discharging their responsibilities, the MPC and FPC are required to communicate how they have had regard to the policy actions of their counterpart Committee. The May 2013 *Inflation Report* discussed some of the channels through which macroprudential policy that alters bank capital requirements could affect the outlook for credit conditions.⁽¹⁾ This box discusses some of the channels through which monetary policy could affect the outlook for financial stability.

How does monetary policy affect financial stability?

Monetary policy can contribute to fostering a stable financial system. Price stability generates certainty about the real level

of debt, and stable economic growth helps companies to service debt and maintain healthy balance sheets. But there are multiple channels through which monetary policy can have more specific implications for financial stability. The implications of changes in monetary policy on the outlook for financial stability will depend on the reasons for the change in policy, and the relative strength of each channel will vary as economic conditions change over the credit cycle.

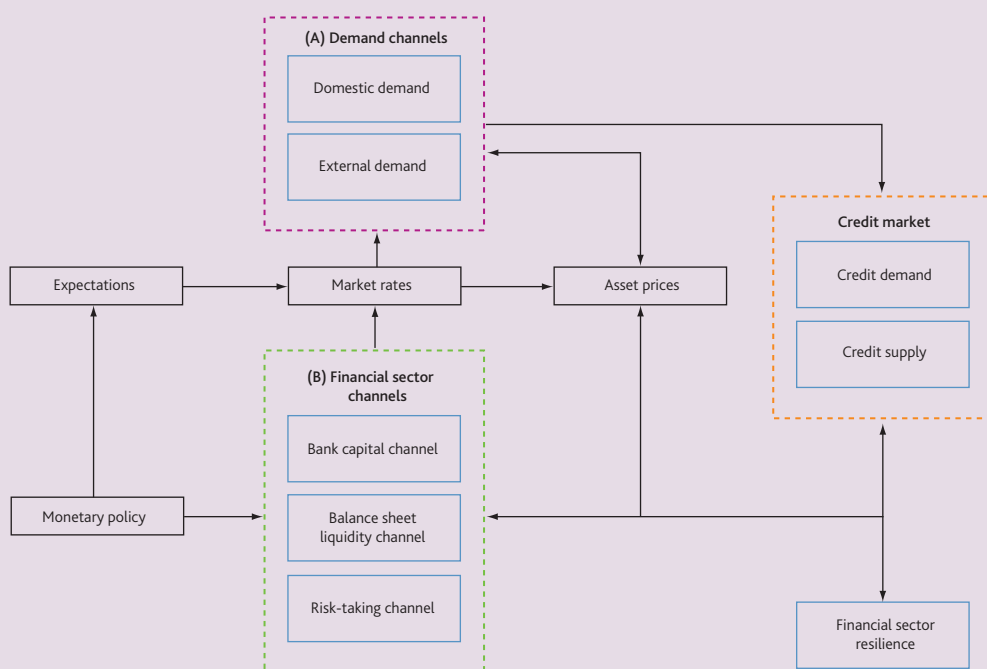
In setting Bank Rate and the scale of its asset purchases, the MPC influences market interest rates and asset prices including the exchange rate (**Figure 1**). In turn these affect the level of demand in the economy and, given the capacity of the economy to supply goods and services, inflationary pressure.

Demand channels

One way in which monetary policy affects financial stability is through changing aggregate demand (box A in **Figure 1**), which in turn affects the demand for new borrowing. When the MPC loosens monetary policy, households and firms are encouraged to increase consumption and investment spending, some of which may be financed by credit.

When the MPC lowers Bank Rate, households' and firms' debt interest payments fall, and incomes tend to rise as a result of the boost to demand. This reduces the burden of existing debts for households and corporates, lowering the frequency of default and therefore reducing the potential hit to banks' capital from loan losses. Low interest rates are one

Figure 1 Selected channels through which monetary policy affects financial stability



Note: For simplicity, the figure does not show all the interactions between variables.

explanation for why mortgage arrears and corporate insolvencies over the recent period have been much lower than in the recession of the early 1990s, when rising interest rates led to sharp increases in income gearing and defaults.

However, a boost in loan demand as a result of lower interest rates may pose a risk to future financial stability if borrowers take on debt without considering the higher servicing costs that they will face when interest rates rise again in the future. As discussed in Sections 2 and 3 of this *Report*, there are currently signs that some new mortgage lending in the United Kingdom is at multiples of household income that may fail to account prudently for a normalisation of interest rates in the future.

Changes in monetary policy also affect demand through their impact on the exchange rate, and therefore the relative prices of domestic and foreign goods and services. If large imbalances between imports and exports arise as a result, and are allowed to persist, this may have implications for financial stability. This is especially likely if cross-border flows take the form of short-term claims that are vulnerable to sudden withdrawals.⁽²⁾ Large current account imbalances in the world economy helped fuel the global financial crisis.⁽³⁾ In addition, if movements in monetary policy were to lead to large falls in the exchange rate, this could increase the burden of borrowing denominated in foreign currency, although foreign currency assets held by borrowers may help to cushion the effect of this.

There is also a risk that monetary policy may not be able to provide sufficient stimulus in the event of a downturn. If, despite supportive monetary policy, demand is very weak and unemployment is high, default rates could rise. And if weak demand leads to falling prices, this can have financial stability implications for debt contracts written in nominal terms. For example, periods of declining prices can generate instability as deflation raises the real value of households' and firms' debts — so-called 'debt deflation'. During the Great Depression, for example, US consumer prices fell by around 30% between 1929 and 1933, contributing to a large increase in the real value of households' and firms' indebtedness and compressing spending.⁽⁴⁾ In addition, deflation raises the burden of public sector debt, making it more difficult for the government to boost demand with fiscal policy, and increasing the likelihood of sovereign default. In conducting monetary policy to avoid deflationary episodes, the goals of monetary and financial policies are strongly complementary.

Financial sector channels

Monetary policy can also affect financial stability by influencing the behaviour of banks, asset prices and the wider financial sector (box B in Figure 1).

Bank capital channel

Monetary policy can affect bank profitability and hence **capital generation**.⁽⁵⁾ The two main components of this channel are the impact on net interest margins and the impact on credit risk and asset write-offs.

In the short run, an unexpected reduction in Bank Rate may boost banks' net interest margins to the extent that bank liabilities reprice more quickly than bank assets. At low levels of Bank Rate, however, further reductions may weaken banks' profitability through the 'endowment effect'. For example, consider a bank which receives interest on its loans at a rate above Bank Rate, but which pays less than Bank Rate on its deposits. Since deposit rates cannot easily be lowered below zero, the profit margin between loans and deposits will be squeezed once Bank Rate falls below a certain level. As reflected in MPC meeting minutes, this endowment effect was discussed by the Committee when debating further reductions in Bank Rate from its very low level in both March 2009 and November 2012.

The shape of the yield curve can also affect bank profitability. Intermediaries perform maturity transformation by 'borrowing short and lending long'. So a flattening of the yield curve will tend to reduce bank profitability.⁽⁶⁾

Changes in bank profitability influence the amount of capital that banks can generate internally, in turn affecting their ability to absorb losses. And banks' capital positions are also affected by the credit risk that materialises on their stocks of existing loans — the 'back book'.

The impact of lower interest rates on bank capital through lower defaults is discussed above. In addition, lower interest rates and the associated boost in asset prices also reduce losses incurred by banks in the event that borrowers with secured loans default. For example, as discussed in Section 2, improving credit conditions have boosted prices of prime UK commercial real estate. In contrast, in the early 1990s, rising interest rates pushed down property prices, increasing the scale of losses experienced by banks and depleting bank capital.

Low interest rates can also affect financial stability by increasing banks' incentives to forbear on loans to borrowers in distress. Both the current environment in the United Kingdom and the early-1990s period in Japan have been associated with forbearance. Surveys carried out by the FSA in 2011–12 found that around one third of UK banks' leveraged loan exposures to European companies and loans to commercial real estate firms, and between 5% and 8% of mortgages, had received some kind of forbearance. In Japan, both private and regulatory forbearance during the 1990s have been linked to

broader credit misallocation and to subdued investment (see Box 2 of the November 2012 *Report*).

In some situations forbearance can reduce banks' losses. Temporarily easing the loan terms for borrowers in distress may help to avoid costly liquidation if those borrowers are likely to be able to return to creditworthiness in the future. And in preventing asset fire sales that depress prices, aggregate bank capital may be maintained at a healthier level. But forbearance can disguise credit risk on banks' balance sheets. For example, the switching of mortgages onto an interest-only basis may make them affordable and appear to be performing. But borrowers may default when interest rates rise or when capital repayments have to be made. Without adequate provisioning and disclosure by banks, this could lead market participants to misprice risk and to overestimate banks' resilience.⁽⁷⁾

Balance sheet liquidity channel

Monetary policy can also affect the ability of financial institutions to attract funding. For example, if a reduction in Bank Rate raises asset prices, the value of collateral held by financial institutions as security for borrowing will also rise, helping them to attract funding from outside investors. Monetary policy can thereby affect the resilience of financial institutions, and their ability to lend and allocate capital, via a **balance sheet liquidity channel**.

Capital and balance sheet liquidity channels can interact to affect banks' ability to originate loans and attract deposits from savers. For example, periods in which short-term interest rates are low would tend to increase asset prices, improving balance sheet liquidity and boosting credit supply, other things being equal. But this could, over time, contribute to excessive risk-taking if additional distortions are present (see Box 1). These could include myopia over the true amount of credit risk, or herding behaviour that drives up the prices of particular types of asset. These distortions might have particular potency in the upswing of a credit cycle, as in the run-up to the recent financial crisis. In contrast, higher interest rates would reduce asset prices, lowering collateral values and weakening balance sheet liquidity. This could result in banks reducing credit supply and could have a knock-on effect on economic activity leading to higher loan defaults and lower bank resilience.

Risk-taking channel

Both banks and non-bank financial institutions may be influenced by the effect the monetary policy stance has on risk perceptions or risk tolerance — the **risk-taking channel** of monetary policy.

First, financial intermediaries, funding themselves at short maturities in money markets and holding risky securities on

their balance sheets, may be particularly sensitive to changes in monetary policy as they seek to control their risk exposures.⁽⁸⁾ For example, the current stance of monetary policy worldwide has boosted asset prices, and measures of volatility, such as the VIX, are at very low levels. This will affect, for example, measures of Value-at-Risk, which market-based intermediaries often use to manage their balance sheet exposures. The potency of this channel could be enhanced by other frictions. For example, a period of unusually stable macroeconomic conditions, such as that running up to the global financial crisis, could cause backward-looking measures of volatility to fall and to an underestimation of the true scale of risk in the economy, underpinning excessive risk-taking.

Second, financial institutions and market participants may have incentives to take greater credit risk as nominal interest rates fall, particularly those subject to nominal return targets.⁽⁹⁾ There is evidence of such 'search for yield' behaviour in the run-up to the financial crisis. One study, for example, relates loose monetary policy in the euro area and the United States to the observed softening of bank loan standards observed in those jurisdictions prior to the crisis.⁽¹⁰⁾ Box 1 in this *Report* discusses drivers of a search for yield in more detail.

Third, monetary policy can affect the balance sheets of insurance companies and pension funds if they hold assets of shorter duration than their liabilities. The impact of movements in market interest rates on these institutions depends upon the extent of these funds' 'duration gaps'. For a pension fund that is fully funded and has a negative duration gap, a fall in long-term rates could increase the value of liabilities by more than the value of its assets, possibly creating a deficit for the fund. However, this would be ameliorated if the fall in long-term rates caused other asset prices, such as equities, to rise. Other factors, such as pension scheme underfunding or insurance guarantees — an example of a nominal return target — can also influence the impact of monetary policy on the balance sheets of insurance companies and pension funds.⁽¹¹⁾ Any shortfalls that result following falls in market rates could encourage firms to move into riskier asset classes, or, in the extreme, impair their ability to meet their financial service obligations. Section 3 of this *Report* discusses this in more detail.

More generally, a period of low interest rates that results in rapid credit growth can alter the structure of the financial system, such that the level of credit, while appearing manageable at the individual level, becomes unmanageable at a system level. For example, the rapid credit growth in the United States in the pre-crisis period was associated with a sharp rise in the use of securitisations to disperse risk around the financial system. This contributed to loans being extended without proper risk assessment and generated uncertainty

about which institutions were exposed to the risk. It was a major factor exacerbating the scale of the global financial crisis.

Finally, the communication policies of the central bank, including through the *Inflation Report*, could affect the impact of monetary policy. For example, if central bank communications reduce uncertainty about the future stance of monetary policy, they could compress risk premia.⁽¹²⁾ In circumstances such as today's, with short-term interest rates still at historically unprecedented levels and expected to remain there for some time, the risk-taking channel may be particularly significant. While this is an intended consequence of monetary policy, it is especially important to ensure that market participants are not mispricing risk as a result. Expectations of the reaction of policymakers to adverse events may also be important. For example, the expectation of low rates materialising in the wake of a crisis could exacerbate the collective tendency for financial intermediaries to co-ordinate on excessively risky portfolios — a form of 'moral hazard'.⁽¹³⁾

Conclusions and current considerations

The primary objectives of the MPC and the FPC are complementary in promoting macroeconomic stability. But the policy tools at each Committee's disposal will have implications for the other Committee's primary objective and the shared secondary objectives to support growth and employment.

This box has identified channels through which monetary policy could affect the outlook for financial stability. In the absence of a strong macroprudential policy framework, there might be periods when loose monetary policy could lead to the build-up of financial risks. In this respect, recent actions by the FPC to boost bank capital positions, enhancing financial resilience, should complement the MPC's highly stimulatory monetary stance intended to speed recovery in the post-crisis economy.

- (1) See the box on pages 16–17 of the May 2013 *Inflation Report*.
- (2) Tucker, P (2012), 'National balance sheets and macro policy: lessons from the past', available at www.bankofengland.co.uk/publications/Documents/speeches/2012/speech547.pdf; and Bank of England (2013), 'The Financial Policy Committee's powers to supplement capital requirements: a draft policy statement', available at www.bankofengland.co.uk/financialstability/Documents/fpc/policystatement130114.pdf.
- (3) King, M (2011), 'Global imbalances: the perspective of the Bank of England', *Banque de France Financial Stability Review*, No. 15, February, pages 73–80.
- (4) Fisher, I (1933), 'The debt-deflation theory of great depressions', *Econometrica*, Vol. 1(4), pages 337–57; and Eggertson, G and Krugman, P (2012), 'Debt, deleveraging, and the liquidity trap: a Fisher-Minsky-Koo approach', *Quarterly Journal of Economics*, Vol. 127(3), pages 1,469–513.
- (5) For a description of the role of the bank capital channel, see eg Aikman, D and Vlieghe, G (2004), 'How much does bank capital matter?', *Bank of England Quarterly Bulletin*, Spring, pages 48–58.
- (6) For UK evidence on the impact of monetary policy on bank profitability, see Alessandri, P and Nelson, B (2012), 'Simple banking: profitability and the yield curve', *Bank of England Working Paper No. 452*.
- (7) For further discussion of the risks associated with forbearance see Box 2 in the June 2011 *Report*.
- (8) Adrian, T and Shin, H S (2011), 'Financial intermediaries and monetary economics', in Friedman, B and Woodford, M (eds), *Handbook of monetary economics*, Vol. 3, Chapter 12, pages 601–50.
- (9) Hanson, S G and Stein, J C (2012), 'Monetary policy and long-term real rates', *mimeo*; Tucker (2012), *ibid*.
- (10) Maddaloni, A and Peydró, J-L (2011), 'Bank risk-taking, securitization, supervision, and low interest rates: evidence from the euro-area and the US lending standards', *The Review of Financial Studies*, Vol. 24(6), pages 2,121–65.
- (11) Bean, C (2012), 'Pension funds and quantitative easing', available at www.bankofengland.co.uk/publications/Documents/speeches/2012/speech573.pdf. For a description of the impact of low rates on insurance companies and pension funds see Antolin, P, Shich, S and Yermo, J (2011), 'The economic impact of protracted low interest rates on pension funds and insurance companies', *OECD Journal: Financial Market Trends*, Vol. 2011, Issue 1, pages 237–56. For a description of the impact of quantitative easing on defined benefit pension schemes see Bank of England (2012), 'The distributional effects of asset purchases', *Bank of England Quarterly Bulletin*, Vol. 52, No. 3, pages 254–66.
- (12) Borio, C and Zhu, H (2008), 'Capital regulation, risk-taking and monetary policy: a missing link in the transmission mechanism?', *BIS Working Paper No. 268*, December.
- (13) Farhi, E and Tirole, J (2012), 'Collective moral hazard, maturity mismatch, and systemic bailouts', *American Economic Review*, Vol. 102(1), pages 60–93.

Box 4

Provisioning: issues with the current model and policy responses

Appropriate and timely recognition of credit loss is fundamental to measuring and assessing the resilience of banks' balance sheets. In March, the International Accounting Standards Board (IASB) — the body responsible for setting accounting standards for listed groups in the United Kingdom — published new proposals to reform the recognition, measurement and reporting of credit impairment losses (often referred to as 'provisions') on loans and other financial assets. This is the third published set of proposals from the IASB on credit impairment since 2009. The US Financial Accounting Standards Board (FASB) also published its own proposals to address this issue in December 2012.

This box outlines the key elements of the latest IASB proposal and highlights features that are important from a financial stability perspective.

Problems with the current approach

The financial crisis highlighted weaknesses in the current impairment model. Under the existing model, expected credit losses are not recognised until a 'loss event' has occurred. A range of illustrative 'loss events', including significant financial difficulty of the borrower or restructuring of a loan due to financial difficulty, are provided in the model. But, in practice, banks have tended to focus on whether arrears have emerged rather than on the less easily verifiable factors. This has resulted in loss recognition occurring later in the credit cycle than the current system could have allowed.

The focus on past loss events has led to concerns that income statements and balance sheets may not reflect adequately the economics of lending. When loans are extended, lenders anticipate future losses and charge spreads to reflect the expected loss. The current impairment model allows firms to recognise the additional interest income related to the credit spread, without any accompanying reserving against the expected credit loss which the spread reflects. This approach is now widely viewed as painting a flattering picture of the balance of risks and rewards, in particular by overstating banks' profitability and capital positions early in the life of loans. It may also add to procyclicality in the system, by inflating balance sheets in upswings and deflating balances in downswings.

A new approach based on expected loss

Accounting standard setters have been engaged in a long-standing project to introduce a more forward-looking model for impairment recognition, based around banks' estimates of expected loss (EL). The latest proposal from the

IASB aims to respond to credit deterioration in a more timely fashion by allowing banks to build up provisions earlier in the cycle and in advance of non-payment. This approach should result in a more prudent assessment of banks' profitability and capital. By introducing provisions earlier in the cycle, the new approach should also mitigate, in part, the procyclical impact of the current approach when defaults actually occur.

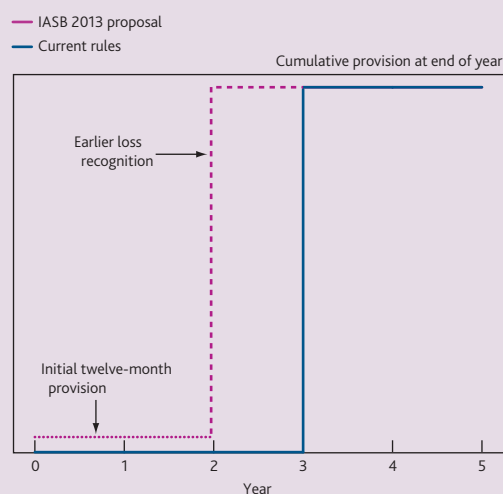
A number of practical and conceptual challenges have arisen in designing the new EL impairment model. For example, there has been a debate about the extent to which it is appropriate to establish a 'day 1' provision against EL for loans priced on market terms. The FASB and IASB proposals differ in the amount of upfront provisioning they would require as a result of this conceptual disagreement. At the root of the delay in progressing these reforms has been the difficulty of developing a model that both reflects the economics of lending and is operationally feasible. For example, it has been argued that it is difficult to track, on a continuing and systematic basis, how expected losses change over time. As a result, the IASB's earlier proposals were felt by some banks to be impractical.

The latest IASB proposal is intended to balance implementation challenges with a faithful representation of the underlying economic risks and rewards of lending. It adopts a staged approach to establishing loan provisions. From inception of a loan, provisions would be raised to cover expected losses arising from defaults expected in the next twelve months based on a probability of default (PD). This twelve-month loss estimate is updated as the PD changes. Subsequently, if a significant credit deterioration has occurred, the provision for that loan is increased to recognise full expected losses over the lifetime of the loan. 'Significant credit deterioration' is defined in the proposal as a point when the PD has increased significantly and the resulting credit risk is no longer classed as low.

The latest proposal provides guidance on the criteria for determining when significant credit deterioration has occurred. There is a rebuttable presumption that all loans that are past due by 30 days or more fall into this category. Other factors include a significant decrease in the credit rating of the borrower (whether internal or external), changes in other indicators of how the borrower's credit risk is priced, such as credit default swap prices, and qualitative factors such as an adverse change in the regulatory, economic or technological environment of the borrower.

The latest proposal is intended to result in earlier provisioning than the current model. **Chart A** illustrates how the new model might affect firms' provisioning for a stylised five-year loan. The illustration assumes that 'significant credit deterioration' occurs at the end of year 2, whereas a 'loss event' under the current approach occurs at the end of year 3.

Chart A Patterns of provision recognition under current and proposed IASB approaches



Source: Bank calculations.

Practical issues and prudential policy implications

A key feature of the new model from a financial stability perspective will be how banks define a 'significant credit deterioration' and interpret the threshold for transitioning loans to the lifetime loss category. If undue focus is given to arrears relative to more qualitative credit risk information, provisions may not, in practice, be raised markedly earlier than under the current 'loss event' model.

As with any forward-looking model, the new approach will also rely on management's judgements about the future and some use of internal models. This will introduce greater subjectivity and uncertainty into the accounting standard. There has been evidence of divergence in practice across banks in the judgements made by management on the definition of loss under the current model. And overoptimistic assumptions about recoverable cash flows can also result in levels of provision that are too low, particularly in the cases of problem sectors or for loans subject to forbearance. With regard to model-based judgements, evidence from capital risk weighting suggests that there can be wide differences between the risk assessments models generate. This is a concern with the current proposals. At a minimum, it underscores the need for specific and comparable disclosures, applied consistently across firms, to accompany the new model. It also calls for the application of judgement and careful monitoring by auditors and regulators when applying the new standard.

It is likely that there will be a continuing role for close regulatory attention to provisioning practices. The recent FPC recommendation on bank capital was intended, in part, to address the incomplete capture of expected loss under the current accounting model, including the risk that not all of these expected losses are covered in Pillar 1 capital deductions. Although the latest proposal from the IASB has the potential to mitigate some of these concerns, it will be essential for regulators to monitor its practical implementation and, if necessary, to take steps to address any capital shortfalls that are identified.

4 Macprudential policy since the November 2012 *Report*

The Financial Policy Committee (FPC) was established on a statutory basis on 1 April.

In January 2013, the interim Committee issued a draft statement outlining the policy that the statutory Committee could be expected to follow in using its powers of Direction. At its policy meeting in March 2013, the interim Committee issued six recommendations on banks' capital adequacy. In light of these recommendations, it was agreed that it should not be necessary to issue further recommendations on capital in the immediate future.

At its policy meeting on 18 June, the Committee issued five additional recommendations as set out in Section 5 of this *Report*. It also reviewed progress against previous recommendations. Three existing recommendations have now been implemented. One has been restated and action is under way to implement six other existing recommendations which were reaffirmed by the Committee.

This section describes the activity of the Committee and the progress made in implementing previous recommendations over the past six months. Each recommendation has been given an identifier to ensure consistent referencing of recommendations over time. For example, the identifier 11/Q3/3 refers to the third recommendation made following the 2011 Q3 Committee meeting, and so on.

4.1 Activity of the Committee

In January, the Committee published a draft policy statement explaining how it would use its proposed new macroprudential powers of Direction to set the countercyclical capital buffer and sectoral capital requirements.⁽¹⁾ The draft statement describes these tools, the likely impact of using them on financial stability and growth and the circumstances in which the Committee might expect to use each tool. It also describes a set of core indicators the Committee will routinely review, alongside other information including market and supervisory intelligence, to help inform its judgements.

The Committee issued six new recommendations at its meeting in March. A full account of this meeting is available in the published Record.

The Committee met on a statutory basis for the first time in June, issuing five additional recommendations, restating one existing recommendation and reaffirming a further six recommendations. The conclusions of the Committee's June meeting are outlined in Section 5 of this *Report*. A full account of this meeting will be made available in the published Record.

4.2 Progress made in implementing recommendations

At its March meeting, the Committee reviewed progress in implementing its recommendations. It agreed that the recommendation on bank capital adequacy made in November 2012 had been superseded by the recommendations issued at its March meeting and that action was under way to implement other existing recommendations.

At its June meeting, the Committee considered the progress made in achieving previous recommendations. The conclusions are summarised in **Table 4.A** and described in more detail in the remainder of this section.

Recommendation 11/Q3/3

'The Committee urged HM Treasury to continue its efforts to ensure that developments in European legislation did not provide an impediment to the ability of the Committee to use macroprudential policy instruments in the interests of financial stability in the United Kingdom, as envisaged in the consultation documents proposing the establishment of the Financial Policy Committee.'

On 16 April, the European Parliament approved the final version of the Capital Requirements Directive and Regulation (CRD4/CRR), which seeks to implement the Basel III

(1) Bank of England (2013), 'The Financial Policy Committee's powers to supplement capital requirements: a draft policy statement', available at www.bankofengland.co.uk/financialstability/Documents/fpc/policystatement130114.pdf.

Table 4.A Summary of recommendations

Identifier	Short title	Lead	Status
11/Q3/3	Flexibility in EU legislation to enable national discretion	HMT	Implemented and closed
11/Q4/3	Disclosure of leverage ratios	FSA	Implemented and closed
12/Q2/3	Manage and mitigate balance sheet risks from euro-area stress	UK banks	Reaffirmed — action under way
12/Q2/5	Work towards consistent and comparable Pillar 3 disclosures	FSA, BBA, UK banks	Restated as 13/Q2/3
12/Q4/1	Ensure capital position reflects prudence in asset valuations, conduct cost estimates and risk-weight calculations	FSA	Closed — superseded by 13/Q1/1–4
13/Q1/1	Assess capital adequacy on Basel III basis adjusting for expected future losses, future conduct costs and more prudent calculation of risk weights	PRA	Implemented and closed
13/Q1/2	Ensure capital resources of at least 7% of risk-weighted assets on basis described in 13/Q1/1 by the end of 2013	PRA	Reaffirmed — action under way
13/Q1/3	Apply higher capital requirements where there are additional concerns about resilience	PRA	Reaffirmed — action under way
13/Q1/4	Meet 13/Q1/2 and 13/Q1/3 in a way that does not hinder lending to the economy	PRA	Reaffirmed — action under way
13/Q1/5	Ensure credible plans to transition to higher future capital requirements	PRA	Reaffirmed — action under way
13/Q1/6	Develop proposals for regular stress testing of the UK banking system	Bank, including PRA	Reaffirmed — action under way
13/Q2/1	Assess vulnerability to sharp upward movements in long-term interest rates	FCA and Bank, including PRA	New
13/Q2/2	Introduce minimum 80% LCR requirement	PRA	New
13/Q2/3	Work towards consistent and comparable Pillar 3 disclosures	PRA	Restatement of 12/Q2/5
13/Q2/4	Implement EDTF recommendations	PRA	New
13/Q2/5	Assess feasibility of calculating capital ratios using Basel III standardised approach	PRA	New
13/Q2/6	Improve resilience to cyber attacks	HMT, FCA and Bank, including PRA	New

agreement in the European Union (EU). It consists of a directly applicable EU Regulation and a Directive, which instructs EU Member States to adopt its provisions into national law.

The legislation allows national authorities discretion to vary a number of macroprudential policy instruments, including the countercyclical capital buffer and sectoral capital requirements. The use of these instruments will be subject to a process of co-ordination at an EU level.

The European Market Infrastructure Regulation (EMIR) formally entered into force in August 2012. Among other things, EMIR establishes prudential standards for the calculation of margin requirements by central counterparties (CCPs). But it does not provide scope for national macroprudential authorities to vary minimum margin requirements through the cycle as previously considered by the Committee (see the March 2012 Record). A European Commission review (also involving the European Securities and Markets Authority and the European Systemic Risk Board),

scheduled for 2015, will revisit the need for additional measures to reduce procyclicality in margin requirements for CCPs.

Status: Implemented and closed

The Committee agreed that CRD4/CRR provided sufficient discretion to use its powers of Direction. It noted that some potential macroprudential tools were not currently covered by CRD4/CRR, notably the leverage ratio; and that other tools, such as the terms of collateralised transactions (margin requirements), fell outside the scope of this legislation. Nevertheless, the Committee agreed that it should close the existing recommendation. If required, it could issue a further recommendation if it developed concerns on how relevant negotiations on these or other macroprudential instruments were proceeding.

Recommendation 11/Q4/3

‘The Committee recommended that the FSA encourages banks to disclose their leverage ratios, as defined in the Basel III agreement, as part of their regular reporting not later than the beginning of 2013.’

The largest UK banks have published a leverage ratio as part of their 2012 annual reports. This was published using a Basel III end-point and a Basel III transitional definition of Tier 1 capital. But there were some variations in details of the reporting. The PRA has asked the relevant banks to address these inconsistencies.

Status: Implemented and closed

The Committee agreed that this disclosure represented an important step in helping to reduce investors’ uncertainty about firms’ resilience, given market concerns about inconsistencies in risk-weighted asset calculations. The Committee noted that while the recommendation had been implemented, it was important that banks continued to provide these disclosures, based on the end-point Basel definitions and on a consistent basis.

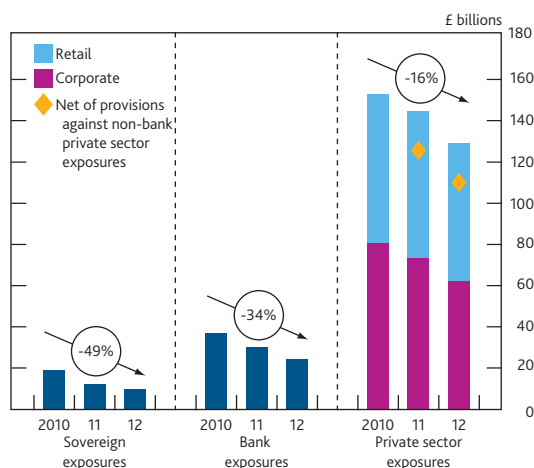
Recommendation 12/Q2/3

‘The Committee recommended that banks work to assess, manage and mitigate specific risks to their balance sheets stemming from current and future potential stress in the euro area.’

The major UK banks have taken further steps to meet this recommendation. As discussed in Section 2, the underlying trend has been a reduction in exposures to vulnerable euro-area countries: UK banks’ exposures to vulnerable euro-area sovereigns at the end of 2012 were nearly 50% lower than in 2010 (Chart 4.1). But progress had tailed off somewhat in the past two quarters and UK banks’ total direct exposures to vulnerable euro-area countries remained at around £140 billion, or 65% of core Tier 1 capital at end-2012.

Provisions have been made against some of these exposures. Indirect exposures have also been reduced: exposures to core euro-area banks have fallen and they in turn have reduced their exposures to vulnerable euro-area countries.

Chart 4.1 Evolution of UK banks' gross exposures to vulnerable euro-area countries^{(a)(b)}



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

(a) Includes Barclays, HSBC, LBG and RBS.

(b) Includes on balance sheet exposures as disclosed by banks according to counterparties' country of domicile or incorporation. Where possible, exposures are gross of impairment provisions but net of collateral and netting arrangements. The classification by counterparty sector is on a best-efforts basis from available disclosures.

The Committee remained concerned about the potential currency risk that could arise from any differential redenomination of local assets and liabilities. Some progress had been made to reduce this mismatch for example, by banks seeking to increase local deposits to support their lending in vulnerable countries and reducing their usage of ECB repo facilities.

Status: Reaffirmed and action under way

While progress had been made to reduce exposures, the Committee remained concerned about the resilience of the UK banking system to the crystallisation of stress in the euro area. The Committee decided that action by banks to manage and mitigate this risk should continue. Looking forward, the Committee agreed that the planned stress tests (see Recommendation 13/Q1/6) should aid it in assessing whether banks had taken sufficient steps to mitigate this risk.

Recommendation 12/Q2/5

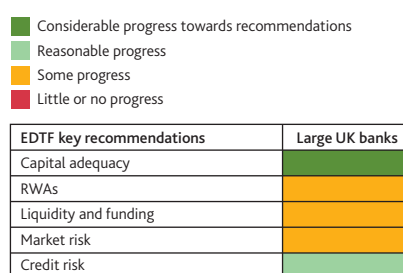
'The Committee recommended that UK banks work with the FSA and British Bankers' Association (BBA) to ensure greater consistency and comparability of their Pillar 3 disclosures, including reconciliation of accounting and regulatory measures of capital, beginning with the accounts for the current year.'

Pillar 3 disclosures require banks to provide key information on their capital, risk exposures and risk assessment processes on at least an annual basis, to enable market participants to assess banks' risk profiles and capital adequacy. The PRA, and

its predecessor the FSA, have worked with the BBA to agree a series of improvements to banks' statutory Pillar 3 disclosures. These improvements were intended to enhance the consistency, comparability and usability of disclosures.

As discussed in Section 3, progress was particularly evident in the areas of capital adequacy and some aspects of credit risk disclosures (Chart 4.2). Advances were made in explaining the various models used to calculate risk-weighted assets (RWAs); in reconciling accounting and Basel III regulatory measures of capital; and in improving the consistency and comparability of disclosures.

Chart 4.2 Progress towards EDTF recommendations^(a)



Sources: Published accounts and PRA calculations.

(a) The sample of banks comprises Barclays, HSBC, LBG, RBS and Standard Chartered.

Status: Restated as 13/Q2/3 and action under way

The Committee welcomed progress by UK banks in their 2012 Pillar 3 disclosures, which left them well placed relative to international peers. But further improvements are needed to ensure greater consistency and comparability of Pillar 3 disclosures. As such, the recommendation remained open.

The Committee agreed that the recommendation should now be addressed to the PRA, working with the banking industry. As such it reaffirmed the intention of its earlier recommendation and formally restated it as set out in Section 5.

Section 5 also notes that the Committee issued two further disclosure recommendations: requiring banks to implement all of the recommendations of the Enhanced Disclosure Task Force (EDTF); and commissioning the PRA to assess the feasibility of banks and building societies calculating regulatory capital ratios using the standardised approach to credit risk.

Recommendation 13/Q1/1

'The Prudential Regulation Authority (PRA) should assess current capital adequacy using the Basel III definition of equity capital but after: (i) making deductions from currently-stated capital to reflect an assessment of expected future losses and a realistic assessment of future costs of conduct redress; and (ii) adjusting for a more prudent calculation of risk weights.'

Recommendation 13/Q1/2

'The PRA should take steps to ensure that, by the end of 2013, major UK banks and building societies hold capital resources equivalent to at least 7% of their risk-weighted assets, as assessed on the basis described in Recommendation 13/Q1/1. Relative to that benchmark, major UK banks and building societies in aggregate currently have a shortfall in capital of around £25 billion.'

Recommendation 13/Q1/3

'The PRA should consider applying higher capital requirements to any major UK bank or building society with concentrated exposures to vulnerable assets, where there are uncertainties about assets not covered in the FSA's assessment of future expected losses or risk weights analysis, or where banks are highly leveraged relating to trading activities.'

Recommendation 13/Q1/4

'The PRA should ensure that major UK banks and building societies meet the requirements in Recommendations 13/Q1/2 and 13/Q1/3 by issuing new capital or restructuring balance sheets in a way that does not hinder lending to the economy. Any newly issued capital, including contingent capital, would need to be clearly capable of absorbing losses in a going concern to enable firms to continue lending.'

Recommendation 13/Q1/5

'The PRA should ensure that major UK banks and building societies have credible plans to transition to meet the significantly higher targets for capital and the leverage ratio that will come into effect in 2019 after full implementation of Basel III, the trading book review and surcharge for systemically important banks, and after HM Government's implementation of the ICB proposals, in ways consistent with sustainable expansion of the UK economy.'

At its March meeting, the Committee made a number of recommendations to the PRA on major UK banks' and building societies' capital adequacy, based on work from the microprudential supervisors that the Committee had commissioned in November 2012.

Since March, the PRA Board has adopted the Committee's recommendations and conducted firm-by-firm reviews of the

capital adequacy of the eight major UK banks and building societies in order to implement them.

At its June meeting, the Committee received a report from the PRA on implementation of the recommendations. The PRA subsequently published details of this on a firm-by-firm basis.⁽¹⁾ Box 5 sets out the judgements on capital adequacy that led to the recommendations in March and a summary of the Committee's review in June of how they are being implemented by the PRA.

Based on the report from the PRA, at its June meeting the Committee judged that implementation of the March recommendations was under way. It therefore agreed to reaffirm all but one of the recommendations. The first recommendation (13/Q1/1) has been implemented, as the PRA Board had decided to employ this framework for assessing capital adequacy. The Committee intends to assess full implementation of the remaining recommendations in early 2014.

Looking further ahead, the Committee noted that implementation of these recommendations was an important step towards the transition to higher capital requirements that would be required to meet full Basel III implementation by 2019, as well as implementation of the recommendations made by the Independent Commission on Banking.

Recommendation 13/Q1/6

'Looking to 2014 and beyond, the Bank and PRA should develop proposals for regular stress testing of the UK banking system. The purpose of those tests would be to assess the system's capital adequacy. The framework should be able to accommodate any judgements by the Committee on emerging threats to financial stability.'

Working with the PRA, the Committee intends to embed a permanent stress-testing framework to provide a forward-looking view of the UK banking system's capital adequacy. Design principles to guide this work are set out in Box 6.

Status: Reaffirmed and action under way

The Committee agreed to reaffirm the existing recommendation, and requested further work, as discussed in Section 5.

(1) Bank of England News Release, 'Prudential Regulation Authority (PRA) completes capital shortfall exercise with major UK banks and building societies', available at www.bankofengland.co.uk/publications/Pages/news/2013/081.aspx.

Box 5

The Committee's judgements on the capital adequacy of the UK banking system

This box summarises the recommendations made by the Committee on major UK banks' and building societies' capital adequacy and the work carried out by the microprudential supervisors to implement them. The box also sets out the background to the Committee's decision to omit a section of text from the Record of its November 2012 meeting, as well as its decision to release that text in this *Report*.

At its meeting in November 2012, the Committee identified three factors which suggested that the capital adequacy of the UK banking system could be overstated: overvaluation of some assets through underprovisioning against expected future credit losses; undervaluation of future liabilities from unrecognised costs for conduct redress; and insufficiently prudent risk weighting of some assets in the calculation of banks' capital ratios. At that meeting, the Committee discussed a range of estimates, based on work by Bank and FSA staff, to determine whether these factors were material. These estimates suggested that major UK banks' and building societies' capital positions could be overstated by £30 billion–£40 billion as a result of unrecognised expected losses, £10 billion–£20 billion from currently unrecognised conduct-related costs and around £20 billion from an imprudent approach to risk weighting.

The Committee judged in November 2012 that these initial estimates were sufficiently material to warrant commissioning the microprudential supervisors to conduct a further exercise to assess more precisely the quantitative impact of these three factors, to provide an assessment of the capital adequacy of major UK banks and building societies. In the interests of avoiding unnecessary market uncertainty, the Committee decided not to include these initial estimates in the Record of its November 2012 meeting and to defer publication until that further work was complete. In the November 2012 *Report*, the Committee chose to illustrate these factors by using a wide range of estimates and methodologies, mainly based on public information.

At its March meeting, the Committee discussed the results of the exercise conducted by the microprudential supervisors. This work suggested that major UK banks and building societies may have underprovisioned, by around £30 billion, against future credit losses that might arise over a three-year period. In considering these results, the Committee noted that they had been prepared on a different basis from the estimates from November. First, the more recent exercise by the microprudential supervisors had focused on the portfolios where it judged there to be the biggest risk of asset

overvaluation. Second, this exercise took account of additional provisions made by banks, including those made in the intervening period, and more granular information on expected losses over the three-year period. The November 2012 *Report* had discussed a variety of alternative sources of information on underprovisioning for expected future losses.

The more recent exercise estimated that future costs that might be incurred over a three-year period as a result of fines related to the setting of Libor and redress payments linked to the mis-selling of payment protection insurance and interest rate swaps could exceed current provisions by around £10 billion. That was in the middle of the range identified in the November 2012 estimates, after taking account of additional provisions made in the intervening period. To give an indication of the potential size of these costs, the November 2012 *Report* had included a range of market estimates for conduct costs of between £4 billion and £10 billion.

Finally, the microprudential supervisors assessed that a more prudent approach to the calculation of risk-weighted assets for those parts of the banking book covered by the exercise would equate, on a 7% risk-weighted capital ratio, to around £12 billion of capital. That was within the broad range of estimates published in the November 2012 *Report*.

On the basis of the results of this exercise, at its March meeting, the Committee made three key decisions: the basis on which to assess capital adequacy; the scale of the adjustment it was appropriate to make to measures of banks' capital to reflect the exercise; and the capital ratios that banks were likely to need in the current conjuncture to absorb losses and sustain credit availability in the event of stress.

The Committee's discussion was reflected in the Record of its March meeting and resulted in the recommendations that it made to the PRA in March: that the PRA was commissioned to assess current capital adequacy using the Basel III end-point definition of equity capital and risk-weighted assets; that the assessment based on that definition should be made after adjusting for the impact of the three factors that it had identified in November 2012 and that the microprudential supervisors had subsequently quantified; and that the PRA should require major UK banks and building societies to have capital resources equivalent to at least 7% of their risk-weighted assets, on that basis.

The Committee also noted in March that the exercise conducted by the microprudential supervisors had necessarily been selective. When considering overvaluation of assets, the FSA had prioritised those areas that it judged most material. And when assessing risks weights, uncertainty around the level of, and variability across firms in, risk weights against trading

portfolios had not been considered. Further, leverage at some large firms would remain high even after taking into account the adjustments made in the March exercise and the achievement of a 7% capital ratio threshold.

The Committee therefore asked the PRA to keep these areas in mind in its determination of individual bank capital requirements. In particular, the Committee recommended that the PRA should consider applying higher capital requirements to any major UK bank or building society with concentrated exposures to vulnerable assets, where there were uncertainties about assets not covered in the exercise or where banks were highly leveraged relating to trading activities.

The implementation of the capital recommendations is a matter for the PRA as part of their microprudential supervision. But the collective approach to strengthening resilience is relevant from a macroprudential perspective. The Committee therefore also recommended to the PRA that the requirements should be met through the issuance of new capital or through restructuring balance sheets in a way that does not hinder lending to the economy.

After the Committee's March meeting, the PRA Board considered the implications of the Committee's recommendations for the eight major UK banks and building societies covered by the exercise. It judged that, on a firm-by-firm basis, five of the eight firms had a shortfall relative to a 7% Basel III end-point capital ratio after the three adjustments which, together, had been equivalent to a deduction of around £50 billion from capital. Given that some firms had a Basel III end-point common equity capital ratio above 7% prior to the adjustments, the shortfall amounted in aggregate to around £25 billion at end-2012.

Around half of this shortfall would be met by actions that firms had already planned to make over the course of 2013. Some of these actions are subject to regulatory approval before they can be implemented. This left an aggregate shortfall projected at end-2013 of around £13 billion. In the light of this, the relevant firms have agreed with the PRA to take additional actions to close the remaining capital shortfalls. In the event that these actions are not carried out by firms, or not approved by the PRA, the PRA will require other actions in order to meet any shortfall.

In addition to the agreed actions to meet the 7% risk-weighted capital ratio after adjustments, the PRA Board has asked two firms to submit plans by end-June to reach a 3% common equity Tier 1 leverage ratio, after adjustments.

The PRA Board published a statement setting out the results of their considerations and numbers for individual firms on 20 June.

In view of the PRA Board's adoption and planned implementation of the Committee's March recommendations on capital adequacy, the Committee judged at its June 2013 meeting that it was appropriate to release the text omitted from the Record of its November 2012 meeting on the initial estimates that led to this work.⁽¹⁾ This text is as follows:

'The Committee had examined a wide range of analysis — taken from both an aggregated and disaggregated perspective — to gauge the possible quantitative significance of any capital overstatement. Despite uncertainty around any quantitative estimates, Committee members agreed that, based on estimates derived from a number of different approaches, the aggregate capital overstatement at the four largest UK banks was of the order of £60 billion–£80 billion, given their current balance sheets. At a disaggregated level, members had greater confidence in the quantitative estimates for some factors than for others. For example, in part because the Committee benefited from the guidance of the Managing Director of the FSA's Conduct Business Unit, it seemed likely that the major UK banks would collectively face further, currently unrecognised, conduct-related costs of the order of £10 billion–£20 billion within the next few years. In contrast, there was a wide range of estimates of possible unrecognised expected losses. But, on balance, the Committee judged that unrecognised expected losses were likely to be around £30 billion–£40 billion, spread unevenly across the major UK banks. Gauging the scale to which capital positions may be overstated by aggressive risk-weighting was even harder. But, considering the range of alternative approaches, the Committee judged that this factor might equate to around £20 billion of capital, given the current structure of the major UK banks' balance sheets.'

(1) Section 9V(1) of the Bank of England Act 1998 (as amended by the Financial Services Act 2012) permits the FPC to defer publication of information contained in the Record where it considers that to do so would be against the public interest. The interim FPC applied this legislative provision prospectively in determining that it would not be in the public interest to publish these quantitative estimates on capital adequacy.

5 Prospects for financial stability

For much of the period since the previous *Report*, prices of risky assets rose and balance sheets across the financial system strengthened. More recently, however, asset prices have fallen and financial markets have been volatile, reflecting shifting expectations of the path of monetary policy in some of the major advanced economies. The outlook for financial stability is still clouded by risks from a weak and uneven global recovery, and imbalances in the euro area. In the near term, risks could crystallise if global long-term interest rates were to rise abruptly from current still historically low levels, or if credit spreads were to widen. Further out, risks could accumulate if a search for yield intensifies and assets become progressively mispriced. Market participants have increasingly highlighted concerns about operational risk, including threats of cyber attack. And confidence in the financial system remains fragile with weak credit growth.

In light of the outlook for financial stability and the actions under way to enhance the capital adequacy of the UK banking system, at its June meeting the Financial Policy Committee (FPC) agreed the following new recommendations:

- The Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA), with other Bank staff, should provide an assessment to the FPC of the vulnerability of borrowers and financial institutions to sharp upward movements in long-term interest rates and credit spreads in the current low interest rate environment. They should each report back to the FPC in September 2013.
- In assessing the liquidity of banks and building societies, the PRA should employ, among other measures, the Liquidity Coverage Ratio (LCR) as defined in the EU's implementation of the Basel standard. The minimum requirement should be set at an LCR of 80% until 1 January 2015, rising thereafter to reach an LCR of 100% on 1 January 2018. The PRA should consider whether any additional requirements are needed where there are idiosyncratic liquidity risks not captured by the LCR framework or where the adjustments to capital positions described in the existing capital recommendations have not been implemented.
- The PRA should continue to work with the banking industry to ensure greater consistency and comparability of the Pillar 3 disclosures of the major UK banks and building societies, including reconciliation of accounting and regulatory measures of capital.
- The PRA should ensure that all major UK banks and building societies comply fully with the October 2012 recommendations of the Enhanced Disclosure Task Force (EDTF) upon publication of their 2013 annual reports.
- The PRA should assess the feasibility of the major UK banks and building societies calculating their regulatory capital ratios under end-point Basel III definitions using the standardised approach to credit risk. The PRA should report back to the FPC for its 2013 Q4 meeting.
- HM Treasury, working with the relevant government agencies, the PRA, the Bank's financial market infrastructure supervisors and the FCA should work with the core UK financial system and its infrastructure to put in place a programme of work to improve and test resilience to cyber attack.

The Committee also reaffirmed a number of the recommendations made by the interim Committee, as outlined in Section 4.

Sections 1–3 of this *Report* outline developments in the global financial environment and short and medium-term risks to financial stability. Section 4 describes the activity of the Committee and progress made in implementing its past recommendations since the November 2012 *Report*. This section sets out the decisions taken by the Committee at its June 2013 meeting in the light of its assessment of the outlook for financial stability. It includes a box on stress testing of the UK banking system.

5.1 Recent developments

For much of the period since the previous *Report*, prices of risky assets rose and balance sheets across the financial system strengthened. More recently, however, asset prices have fallen and financial markets have been volatile, reflecting shifting expectations of the path of monetary policy in some of the major advanced economies. The outlook for financial stability is still clouded by risks from a weak and uneven global recovery, and imbalances in the euro area. In the near term, risks could crystallise if global long-term interest rates were to rise abruptly from current still historically low levels, or if credit spreads were to widen. Further out, risks could accumulate if a search for yield intensifies and assets become progressively mispriced. Market participants have increasingly highlighted concerns about operational risk, including threats of cyber attack. And confidence in the financial system remains fragile with weak credit growth.

Market developments

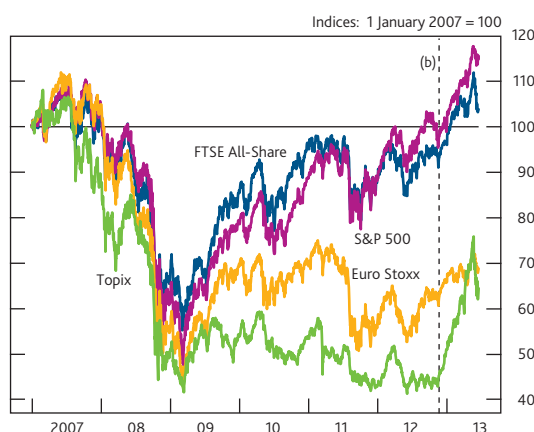
Despite their recent falls, risky asset prices remain higher than at the time of the November 2012 *Report*, as discussed in Sections 1 and 2. Equity indices have risen globally, with UK and US equity indices reaching their highest levels since 2007 (**Chart 5.1**). Increased risk appetite was, for much of the period, evident in corporate debt markets, particularly in the United States. And residential and some prime commercial property prices rose in the United Kingdom and in a number of other countries. UK banks' funding positions improved substantially as funding costs fell, in particular for weaker banks (**Chart 5.2**).

An uneven global recovery

The picture for economic growth internationally has been mixed. Growth in the United States has been sustained at a moderate pace. Growth has been subdued in the United Kingdom and has slowed in some emerging economies. Progress is being made by vulnerable euro-area countries in improving their external positions but a weak and uncertain outlook for growth in the euro area increases the challenges they face in tackling large underlying imbalances in their economies.

As discussed in Section 4, UK banks have reduced their exposures to vulnerable euro-area countries, in particular

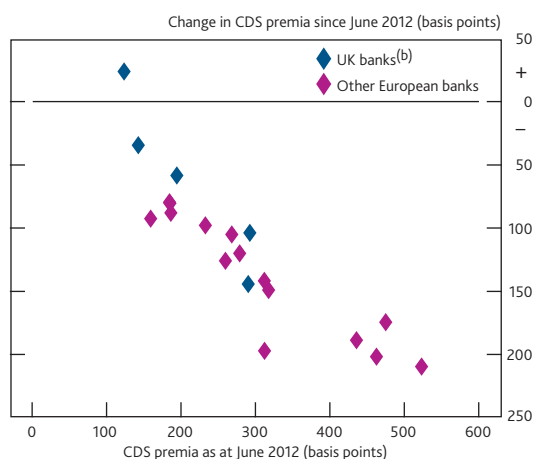
Chart 5.1 International equity indices^(a)



Sources: Thomson Reuters Datastream and Bank calculations.

(a) Denominated in units of local currency.
(b) November 2012 *Report*.

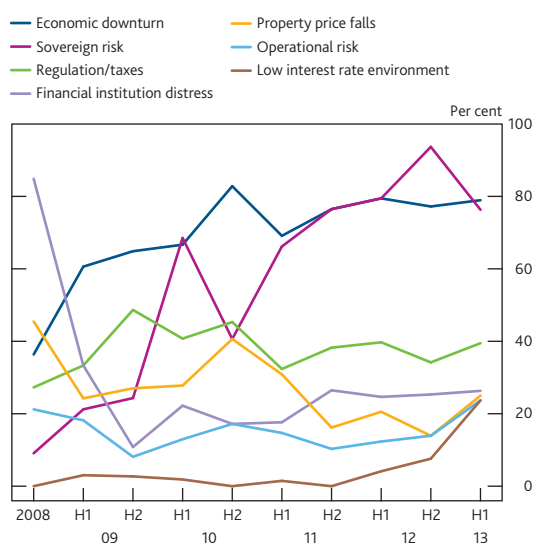
Chart 5.2 Changes in banks' CDS premia^(a)



Sources: Markit Group Limited and Bank calculations.

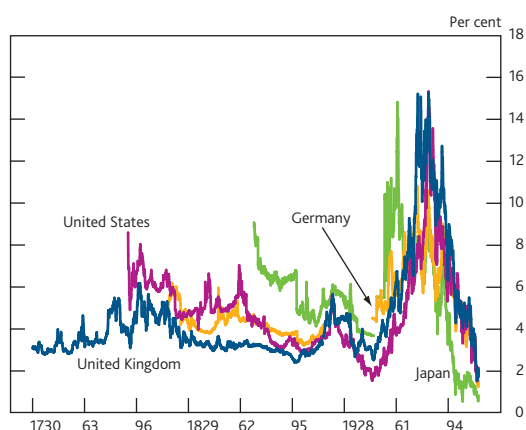
(a) The sample shown is the largest 20 European banks by assets.
(b) Includes Barclays, HSBC, LBG, RBS and Standard Chartered.

Chart 5.3 Systemic Risk Survey: key risks to the UK financial system^{(a)(b)}



- (a) Respondents were asked to list the five risks they thought would have the greatest impact on the UK financial system if they were to materialise. Answers were in a free format and were coded into categories after the questionnaires had been submitted; only one category was selected for each answer. Chart figures are the percentages of respondents citing a given risk at least once, among respondents citing at least one key risk. The chart shows the top seven categories. For further details see the 2013 H1 Survey.
- (b) Risks cited in previous surveys have been regrouped into the categories used to describe the latest data.

Chart 5.4 Historical government bond yields^{(a)(b)(c)}



- (a) Ten-year yields.
- (b) Due to data limitations, the UK series prior to 1753 uses yields on 3% UK annuities and from 1753–1958 is compiled from yields on UK Consolidated Stock (Consols). As Consols are undated stock, the time-series comparison is only approximate. Long-dated or perpetual government securities are also used for the German, Japanese and US series where yields on ten-year bonds are unavailable.
- (c) Due to data limitations, no data are shown for Germany from 1915 to 1946 or Japan from 1947 to 1948.

sovereign exposures. But UK banks' total exposures to these countries remain relatively high.

Risks from persistently low interest rates

Accompanying euro-area fragility and a subdued economic recovery internationally have been persistent and exceptionally low levels of interest rates on assets perceived to be safe, such as major economy government bonds.

Concerns about risks that may emanate from the low interest rate environment have been rising. The latest Bank of England *Systemic Risk Survey* shows an increase in the number of respondents citing risks around low rates as one of their key risks to the financial system (Chart 5.3).

Declining long-term interest rates have been a persistent phenomenon (Chart 5.4) over recent years. Those falls in long-term nominal interest rates have tended to reflect declines in real interest rates. Investor perceptions of weak long-run growth prospects and an increasing demand for 'safe' assets, coupled with monetary policy support and an expectation that this support will remain in place for some time, are likely to have contributed to these declines.

As discussed in Sections 2 and 3 of this *Report*, this constellation of asset prices, while in part an intended outcome of policy actions, also raises two sources of risk to financial stability that warrant monitoring.

First, the extended period of low interest rates may have led some financial market participants to become exposed to a substantial rise in long-term interest rates, particularly if that correction were to happen abruptly. There has been some evidence of both recently. Threats to financial stability could crystallise through direct exposures to asset prices or indirectly through counterparty credit risk. Similarly, the ability of households and companies to service their debts may be directly affected by increases in interest rates.

Second, some investors may be demanding insufficient compensation for bearing risk. If investors are 'searching for yield', without a full appreciation of the underlying risks, this can lead to a progressive mispricing of risk or investors being exposed to risks with which they are unfamiliar. In turn, investors could be exposed to any abrupt repricing of risk in the future.

In both cases, the potential impact of risks crystallising will depend on both the degree to which increases in asset prices have been accompanied by increases in leverage, including embedded leverage via derivatives contracts, and on whether risks are concentrated in particular sectors. The terms of lending and transactions, including margining, will also influence how any shocks affect, and are transmitted among, counterparties.

Measures of leverage in banks in many advanced economies, while remaining high, have not been rising recently. However, substantial data gaps on balance sheet leverage in the non-bank financial sector, and on embedded leverage across the financial system, make it difficult to assess how credit and interest rate risk is distributed outside the banking sector. Recent market volatility suggests that such risks merit monitoring.

Outside the financial sector, the level of indebtedness of UK households remains historically high, increasing risks from an adjustment in interest rates. The same is true of parts of the corporate sector, especially within the property sector. Borrowing by households and companies is still subdued in the United Kingdom. The Bank of England's *Credit Conditions Survey*, however, provides indications that credit conditions facing households and companies have eased since the November 2012 *Report*.

5.2 Improving the resilience of the financial system

Risks from low interest rates

Notwithstanding recent volatility, interest rates remain at low levels. If they were to rise abruptly, or if low rates persist but assets become progressively mispriced, there could be material risks to financial stability. The Committee discussed information currently available on the impact on financial stability in the event that these risks were to crystallise.

The Committee identified a number of challenges in trying to assess the exposure of banks and other financial institutions to these risks. The extent of banks' exposure to interest rate risk is not fully understood. The build-up of risks in the non-bank financial sector, and the extent to which risk is concentrated in some sectors, is even more difficult to monitor.

The Committee agreed that it was necessary for financial institutions themselves, as well as the authorities, to ensure that they have a richer understanding of the scale of risks from abrupt shifts in interest rates or from mispriced risk. It is important to pay particular attention to developing a better understanding of the distribution of exposures to such risks in the non-bank financial sector, as well as the ways in which risks could flow back to the banking system.

Recommendation 1

The FCA and the PRA, with other Bank staff, should provide an assessment to the FPC of the vulnerability of borrowers and financial institutions to sharp upward movements in long-term interest rates and credit spreads in the current low interest rate environment. They should each report back to the FPC in September 2013.

The FPC made this recommendation on a 'comply or explain' basis, under Section 9Q(3) of the Bank of England Act 1998 (as amended by the Financial Services Act 2012).

Ensuring capital adequacy

At its meeting in March, the interim FPC had estimated that UK banks had a capital shortfall of around £25 billion relative to a 7% Basel III common equity Tier 1 ratio as at end-2012, after taking into account adjustments calculated by the FSA for a realistic assessment of asset valuations and future conduct costs and a prudent assessment of risk weights.⁽¹⁾ It made a number of recommendations to the PRA in order to fill this shortfall.

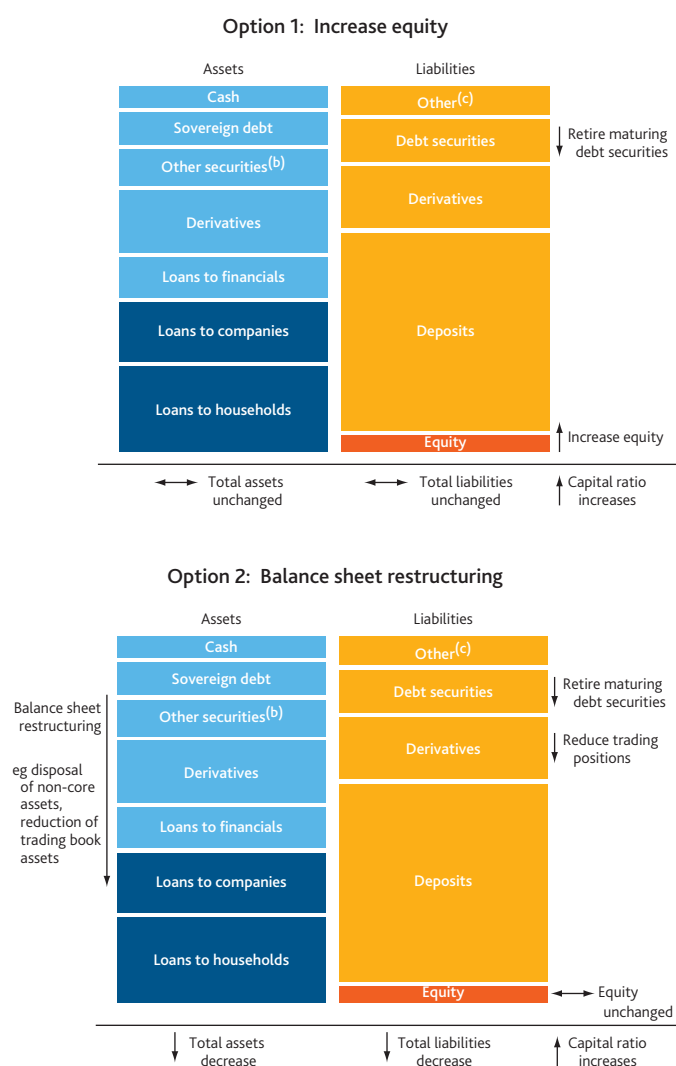
As discussed in Section 4, the PRA Board is implementing those recommendations to improve UK banks' capital resilience. The PRA Board has concluded its assessment of the eight major UK banks and building societies.⁽²⁾ The FPC was briefed in June on the PRA's implementation so far and the PRA has since published details of its response to the FPC's recommendations.

The Committee believes that implementation of the capital recommendations is crucial to building financial resilience. In turn that should help to maintain lower funding costs — which could be passed on to borrowers as lower lending rates and be used to strengthen bank profitability and therefore to increase capital organically. Both would support financial resilience and growth.

In its May 2013 *Inflation Report*, the Monetary Policy Committee concluded that improved capital adequacy should help to support credit conditions and loan growth in the medium term. The FPC has sought to minimise the risk of a tightening in credit conditions in the near term, as banks transitioned to the higher capital standard, by requiring banks to meet the capital requirements in ways that do not hinder lending to the real economy.

Figure A illustrates the different ways in which banks could meet the FPC's capital recommendations without hindering lending to the real economy. First, banks could increase equity capital (for example, via fresh equity issuance or retention of profit), which could allow them to retire maturing debt securities, while leaving balance sheet size unchanged. This is illustrated by option 1 in Figure A. Banks could also increase lending to the real economy at the same time as increasing equity capital, without reducing capital ratios. Second, banks could restructure their balance sheets in a way that does not hinder lending to the real economy. For example, banks could dispose of non-core assets or reduce trading book assets. This would reduce the asset side of the balance sheet and any

Figure A Illustrative diagram of how banks could meet the FPC's capital requirements^(a)



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

(a) Proportions are illustrative of the aggregate balance sheet of the major UK banks, with total assets of £7.3 trillion at end-2012.

(b) Includes equity securities and other (non-sovereign) debt securities.

(c) Includes liabilities under insurance and investment contracts, settlement balances, accruals and short positions.

(1) See www.bankofengland.co.uk/publications/Documents/news/2013/pracappres.pdf.

(2) See www.bankofengland.co.uk/publications/Pages/news/2013/081.aspx.

associated funding on the liability side of the balance sheet. Equity capital could remain unchanged, increase if asset sales generated a profit or fall if they resulted in a loss. This is illustrated by option 2 in **Figure A**. The PRA reported to the FPC that the plans for the UK banks agreed by the PRA Board are consistent with these principles.

Given this progress, and as outlined in Section 4, at its June meeting the FPC agreed that the first of its capital recommendations from March had been implemented. It also reaffirmed the remaining four recommendations.

Regular stress testing of the UK banking system will provide a further tool for assessing the capital adequacy of the UK banking system on a forward-looking basis. As discussed in Section 4, the Committee had in March made a recommendation to the Bank, including the PRA, to develop a framework for stress testing from 2014 onwards. In June the Committee had an initial discussion of a set of design principles that could underpin such a framework (Box 6). These will be developed during the second half of the year so that a Discussion Paper on a proposed stress-testing framework can be published in the autumn. Recognising this progress, the Committee reaffirmed the March recommendation on stress testing.

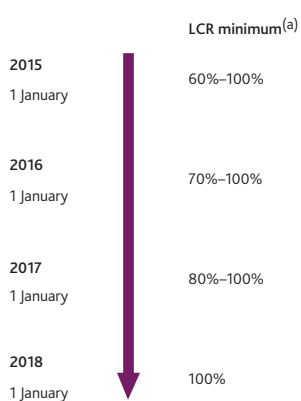
Another strand of the efforts to enhance resilience of the UK banking system has been action to improve the management of risks to UK bank and building society balance sheets from stress in the euro area. Section 4 discusses the progress that UK banks have made to mitigate these risks since the previous *Report*. The Committee noted this progress but felt that it was important for banks to continue to manage these risks, including the potential currency risk that could arise from any differential redenomination of local assets and liabilities. With that in mind, it reaffirmed the interim Committee's recommendation in this area (Section 4).

Implementing the Liquidity Coverage Ratio

UK banks have built up larger liquid asset buffers in recent years. These reflect steps taken by the microprudential supervisors to implement a liquidity regime since the start of the crisis, as well as the effects of quantitative easing, which tends to concentrate liquid assets in the banking sector. In June 2012 the interim FPC recommended that there could be some relaxation in FSA liquidity requirements given the enhanced availability of central bank liquidity facilities.

Since then the LCR has been agreed in Basel. EU implementation requires banks to meet a minimum LCR ratio of 60% by 1 January 2015 rising to 100% by 1 January 2018 (**Figure B**). UK banks begin above 100% in aggregate. The Committee discussed the macroprudential considerations bearing on the United Kingdom's transition to the internationally agreed LCR regulatory requirements.

Figure B CRD4/CRR transition path for the LCR



Source: Bank of England.

(a) Member States will have discretion to set LCRs within the ranges specified.

Implementation of the FPC's capital recommendations should improve banks' ability to fund themselves at longer tenors and at lower cost. Banks also continue to have access to central bank liquidity facilities, such as the Bank of England's contingent Extended Collateral Term Repo Facility. These considerations point towards banks being able to hold lower buffers of liquid assets. In those circumstances, initially having a lower LCR minimum requirement could free up liquid assets that banks could use to support lending to the real economy or to improve their profitability by retiring expensive debt.

But there are risks to the resilience of the banking system if the requirements were to be reduced too much, given that liquid assets provide banks with self-insurance against liquidity shocks and the continuing exceptional risks to the financial environment. It is also important for the PRA to set LCR requirements on the basis of individual banks' particular circumstances.

The Committee concluded that as a general policy, and so subject to microprudential supervisory judgements on individual institutions, setting a minimum LCR requirement of 80% until 1 January 2015, rising to 100% by 2018, would provide the banking system with greater flexibility and could support economic recovery without compromising financial stability. Based on end-2012 estimates, an initial LCR requirement of 80% rather than 100% would give the big four UK banks, in aggregate, additional scope to reduce their holdings of liquid assets by around £70 billion.⁽¹⁾ Banks may have additional headroom to reduce liquid assets further where they already hold more than the 100% requirement, although some banks may have to hold assets to address individual liquidity risks not captured in the LCR framework. The impact of looser liquidity requirements on credit conditions is uncertain. But by removing possible impediments to an expansion of credit supply, the Committee intends to give the banking system more flexibility to lend.

Recommendation 2

In assessing the liquidity of banks and building societies, the PRA should employ, among other measures, the Liquidity Coverage Ratio (LCR) as defined in the EU's implementation of the Basel standard. The minimum requirement should be set at an LCR of 80% until 1 January 2015, rising thereafter to reach an LCR of 100% on 1 January 2018. The PRA should consider whether any additional requirements are needed where there are idiosyncratic liquidity risks not captured by the LCR framework or where the adjustments to capital positions described in the existing capital recommendations have not been implemented.

The FPC made this recommendation on a 'comply or explain' basis, under Section 9Q(3) of the Bank of England Act 1998 (as amended by the Financial Services Act 2012).

(1) UK 'defined liquidity groups' for Barclays, HSBC, LBG and RBS.

5.3 Structural vulnerabilities affecting financial stability

Section 3 of this *Report* discusses a wide range of risks emanating from structural features of the financial system. At its June 2013 meeting, the Committee attached particular priority to tackling issues relating to bank disclosure, to support further its previous recommendations on capital adequacy, as well as operational risks from cyber attack.

Table 5.A EDTF recommendations

Seven principles: disclosures should:

- be clear, balanced and understandable;
- be comprehensive on key activities and risks;
- present relevant information;
- reflect how the bank manages its risks;
- be consistent over time;
- be comparable among banks; and
- be provided on a timely basis.

Coverage of recommendations

- Risk governance and management
- Capital adequacy and risk-weighted assets
- Liquidity
- Funding
- Market risk
- Credit risk
- Other risks (including legal and operational)

Source: Enhanced Disclosure Task Force.

Enhancing disclosure

Section 4 of this *Report* discusses the progress made by UK banks in complying with earlier recommendations on disclosure. Improved disclosure has enhanced the availability of information on banks' leverage and increased the usefulness of their Pillar 3 disclosures. UK banks are ahead of many of their international peers in implementing the recommendations in the October 2012 report of the Enhanced Disclosure Task Force (EDTF) — an industry group initiated by the Financial Stability Board to improve risk disclosure (Table 5.A).

Looking first at Pillar 3 disclosures, the Committee felt that the efforts to ensure greater comparability among firms should continue. It therefore reaffirmed the intention of its earlier recommendation, updating it to recognise the progress that banks had made in this area.

Recommendation 3

The PRA should continue to work with the banking industry to ensure greater consistency and comparability of the Pillar 3 disclosures of the major UK banks and building societies, including reconciliation of accounting and regulatory measures of capital.

The FPC made this recommendation on a 'comply or explain' basis, under Section 9Q(3) of the Bank of England Act 1998 (as amended by the Financial Services Act 2012).

The Committee also felt that there were significant benefits from banks implementing the full set of EDTF recommendations. In particular, they placed great weight on major UK banks and building societies using the EDTF's templates in order to meet these requirements, in order to promote consistency and, therefore, comparability of these disclosures. Given major UK banks' planned compliance with most of the recommendations, and given that the EDTF was an industry initiative, the marginal cost of requiring full compliance with these recommendations was likely to be small in comparison to the benefits.

Recommendation 4

The PRA should ensure that all major UK banks and building societies comply fully with the October 2012 recommendations of the Enhanced Disclosure Task Force (EDTF) upon publication of their 2013 annual reports.

The FPC made this recommendation on a 'comply or explain' basis, under Section 9Q(3) of the Bank of England Act 1998 (as amended by the Financial Services Act 2012).

The Committee noted ongoing concern about risk-weighted assets (RWAs). Three related issues have been identified previously: (i) falling investor confidence in reported RWAs; (ii) opacity of RWA calculations, reducing the efficacy of market discipline; and (iii) large variability in model-derived RWAs, raising concerns over the capital adequacy of firms that estimate lower risk weights for a given risk.

The EDTF had made five recommendations⁽¹⁾ to improve disclosure around banks' RWAs. Full compliance with the EDTF recommendations on RWA disclosures would reduce the opacity to investors of the differences in RWAs across banks and over time.

But implementation of the EDTF recommendations is unlikely to be sufficient to address fully current comparability issues on RWAs for investors. For example, implementation of the recommendations will not, by itself, provide an assessment of the degree of prudence of risk weights. Their effectiveness in reducing aggressive risk-modelling may also be small.

In that light, the Committee discussed further disclosure that could improve comparability of capital disclosures and increase the incentives for prudent calculation of risk weights. One readily available point of comparison for model-derived RWAs for credit risk is the Basel III standardised approach for credit risk. This consists of flat risk weights for a number of different exposure categories, generally based on external credit ratings. RWAs calculated on this basis are consistent across banks and through time.

The Committee felt that it might also be valuable for major UK banks to calculate, in addition to model-based calculations, their regulatory capital ratios using the standardised approach to credit risk and for this to be available to the regulatory authorities.

A number of regulators in other countries have sought to make banks calculate RWAs, fully or in part, on a standardised basis. For example, the Swiss National Bank has asked the two largest Swiss banks to calculate, and disclose, RWAs on a standardised approach. The Committee requested further work to assess the costs and benefits.

Recommendation 5

The PRA should assess the feasibility of the major UK banks and building societies calculating their regulatory capital ratios under end-point Basel III definitions using the

⁽¹⁾ See recommendations 13 to 17 on page 11 of the EDTF report, available at www.financialstabilityboard.org/publications/r_121029.pdf.

standardised approach to credit risk. The PRA should report back to the FPC for its 2013 Q4 meeting.

The FPC made this recommendation on a 'comply or explain' basis, under Section 9Q(3) of the Bank of England Act 1998 (as amended by the Financial Services Act 2012).

Calculating regulatory capital ratios on the Basel III standardised approach is not sufficient to understand variation in model-derived RWAs by itself. In that respect, the Committee noted the importance of the requirement under the CRD4/CRR legislation for banks to undertake an annual hypothetical portfolio exercise specified by the European Banking Authority. The results of these exercises will be reported to the PRA and the PRA has the ability both to influence the scope of these exercises and to undertake exercises of its own. It will be important to ensure that these exercises in due course cover retail and trading book portfolios, as well as wholesale portfolios.

Operational risks from cyber attack

The dependence of major banks and financial market infrastructure on highly complex IT systems makes them potentially vulnerable to cyber attack, where an individual or group seeks to exploit vulnerabilities in IT systems to disrupt services or for financial gain. This is one facet of operational risk that is increasing in frequency and sophistication. Mitigating cyber attack is not a matter of systems enhancements alone but also requires changes in processes and culture. In the latest *Bank Systemic Risk Survey*, operational risk was increasingly highlighted by survey respondents as one of the main threats to the UK financial system; and cyber attack was the most frequently highlighted operational risk.

Progress has been made to reduce cyber risks in the United Kingdom. For example, the UK Government's National Cyber Security Programme is implementing measures to reduce cyber risks, including preventing and mitigating cyber attack. The Bank, including the PRA, and FCA are working closely with UK financial firms, in conjunction with government agencies and departments, to advance and implement these measures in the financial services industry. The Committee emphasised the importance of this work continuing in a co-ordinated way.

The Committee considered it essential that the core UK financial system and its infrastructure continued to work towards improving its ability to withstand cyber attack and to test its resilience. As part of this, it would be important to consider the resilience of IT systems to cyber attack as part of business as usual management of operational risk.

Recommendation 6

HM Treasury, working with the relevant government agencies, the PRA, the Bank's financial market infrastructure supervisors and the FCA should work with the core UK financial system and its infrastructure to put in place a programme of work to improve and test resilience to cyber attack.

Box 6

Stress testing of the UK banking system

The FPC recommended in March 2013 that, looking to 2014 and beyond, the Bank, including the PRA, should develop proposals for regular stress testing of the UK banking system. Work is ongoing within the Bank, including the PRA, to develop this framework. The FPC discussed in June progress made to date. In particular, it focused on a number of the key principles that it expects will inform the design of the stress-testing framework over the medium term. These principles would be subject to adjustment after further analysis and discussion.

Key principles for the design of the stress-testing framework

(i) Purpose and use of the stress tests

The stress-testing framework would meet the needs of both the PRA and the FPC in assessing the capital adequacy of the UK banking system on a forward-looking basis. It would inform judgement on — rather than mechanically drive assessments of — capital adequacy across the banking system and for individual firms within it.

It is important that credible policy actions are taken in response to the results of the stress tests. To this end, the outputs of stress tests would be used to: (a) inform the FPC's assessment of the resilience of the financial system and, in doing so, aid formulation of policy responses; and (b) support PRA decisions and actions on individual firms, taking into account any system-wide actions by the FPC.

(ii) Frequency of stress tests

It is envisaged that stress tests will be performed annually and simultaneously across firms. Regular stress testing helps avoid the risk that initiating an exercise is interpreted by the markets as an adverse signal of specific or immediate concerns about the health of the financial sector or a particular firm. It also encourages investment by firms and the authorities in the capabilities to conduct these exercises effectively. By setting out a clear annual cycle, this allows the FPC and PRA to assess forward-looking capital adequacy in a regular, predictable way. An annual cycle would be more closely aligned with the PRA's annual capital planning and supervisory processes. Stress testing firms simultaneously is essential for forming a view of capital adequacy for the banking system as a whole.

(iii) Coverage of the banking system

The framework would cover the most important banks operating in the United Kingdom. It could include foreign firms that have large subsidiaries in the United Kingdom.

There will be a number of smaller firms that are not included in this stress-testing framework. But all UK-regulated firms will

still be required to run their own stress tests as part of existing regulatory requirements, though likely on a different timescale.

It is not envisaged that non-bank financial institutions will initially be within the scope of this framework. The modelling toolkit necessary for non-banks would likely be different to that used for banks, and the PRA already conducts stress tests on insurance companies. It is also not obvious that the exercises for banks and non-banks would need to be conducted concurrently given that the types of policy actions that the stress tests would support could be different. Risks stemming from — or propagating through — parts of the non-bank sector, or via small banks, would be incorporated in the FPC's regular surveillance.

(iv) Scenario design

For each firm, a range of scenarios would be applied as part of the exercise. It is envisaged that the scenarios would be a mix of: (a) those that are designed by Bank staff and applied across all firms undertaking the stress test, with sign-off by the FPC and; (b) firm-specific scenarios agreed between the banks and the PRA, with the broad degree of severity determined by the FPC. The use of a range of scenarios would help ensure that the banking system as a whole does not focus on being resilient to only a single adverse scenario. It would allow the framework to perform a broader risk assessment role for the FPC. There are also benefits to risk management within firms if the exercise is linked with senior managements' own internal assessment of the risks to which they are most vulnerable.

(v) Application of scenarios

Application of the common and firm-specific scenarios would be run by Bank, including PRA, staff. This would build on a suite of models. It would also consider, where appropriate, estimates of the impact of the scenarios produced by the firms themselves. The output would be a synthesised view of the capital adequacy of the financial system in a baseline, or central, case as well as in stress scenarios. Avoiding excessive reliance on a single approach or model should help reduce the likelihood of particular risks being overlooked because of, for example, the particular calibration of a given model. There will be an important role for policymakers' judgement in the application of the scenarios, as no set of models will perfectly capture all of the risks in each scenario.

(vi) Amplification mechanisms

Over time, stress testing will seek to capture the effects of various feedbacks and amplification mechanisms, which are likely to have a crucial bearing on system-wide resilience. Such mechanisms could arise due to interactions within the financial system; interactions between the financial system and the real economy; threshold effects due to an uneven distribution of debt across companies, households and banks; and liquidity

stress events. This would aim to move the framework away from a partial-equilibrium approach, by explicitly accounting for feedback channels that might arise from banks and other institutions' responses to adverse shocks. These feedbacks were important for capturing system-wide stresses during the current crisis.

(vii) Communication

Among the key principles considered by the Committee was how the outcome of, and analysis associated with, the stress-testing exercise would be made public. Any public communication should aim to support the credibility of the framework as well as facilitating accountability and public scrutiny of the exercise. It would incentivise the firms involved

to engage fully with the process. Ahead of any publication, banks would be expected to submit remedial plans to the PRA, as necessary. The FPC and PRA Board are yet to reach a firm view on what precisely would be disclosed from the exercise so as to enhance transparency, accountability and market confidence.

Next steps

In order to elicit feedback on the development of a framework for stress testing, under the principles described in this box, a Discussion Paper will be published in the autumn.

The stress-testing exercise to be conducted in 2014 will take a first step towards incorporating these principles.

Annex: Core indicators

Table A.1 Core indicator set for the countercyclical capital buffer^(a)

Indicator	Average, 1987–2006 ^(b)	Average 2006 ^(c)	Minimum since 1987 ^(b)	Maximum since 1987 ^(b)	Previous value (oya)	Latest value (as of 17 June)
Bank balance sheet stretch^(d)						
1 Core Tier 1 capital ratio ^(e)	6.6%	6.3%	6.1%	11.0%	10.3%	11.0% (2012)
2 Leverage ratio ^(f)						
Simple	4.7%	4.1%	2.9%	5.4%	5.1%	5.2% (2012)
Basel III	n.a.	n.a.	n.a.	n.a.	4.0%	4.1% (Dec. 2012)
3 Average risk weights ^(g)	53.6%	46.2%	35.7%	65.4%	36.4%	36.4% (2012)
4 Return on assets before tax ^(h)	1.0%	1.1%	-0.2%	1.5%	0.4%	0.4% (2012)
5 Loan to deposit ratio ⁽ⁱ⁾	114.0%	132.4%	96.0%	133.4%	109.0%	103.1% (2012)
6 Overseas concentration indicator: countries to which UK banks have 'large' and 'rapidly growing' total exposures ^(j)	In 2006 Q4: BR, CH, CN, ES, FR, IE, IN, LU, NL				In 2011 Q4: CN, NL	In 2012 Q4: CA, CH, DE, MX, MY, NL, SG
7 Bank debt measures						
CDS premia ^(k)	12 bps	8 bps	6 bps	298 bps	246 bps	158 bps (17 June 2013)
Subordinated spreads ^(l)	29 bps	10 bps	4 bps	614 bps	517 bps	267 bps (17 June 2013)
8 Bank equity measures						
Price to book ratio ^(m)	2.14	1.97	0.50	2.83	0.63	0.89 (17 June 2013)
Market-based leverage ratio ⁽ⁿ⁾	9.7%	7.8%	1.9%	14.9%	3.3%	4.6% (17 June 2013)
Non-bank balance sheet stretch						
9 Credit-to-GDP ^(o)						
Ratio	131.1%	179.1%	91.2%	198.4%	182.0%	182.1% (2012 Q4)
Gap	4.4%	12.5%	-16.8%	23.9%	-13.9%	-15.7% (2012 Q4)
10 Private non-financial sector credit growth ^(p)	10.6%	10.1%	-4.7%	23.8%	0.8%	1.6% (2012 Q4)
11 Net foreign asset position to GDP ^(q)	-4.7%	-26.4%	-35.3%	21.6%	-17.0%	-35.3% (2012 Q4)
12 Gross external liabilities to GDP ^(r)	245.2%	419.6%	146.1%	513.2%	502.7%	501.0% (2012 Q4)
of which debt to GDP	205.5%	351.0%	130.8%	441.2%	425.4%	414.9% (2012 Q4)
of which bank debt to GDP	134.6%	210.6%	90.5%	285.8%	249.0%	227.4% (2012 Q4)
13 Current account balance to GDP ^(s)	-2.0%	-2.9%	-5.3%	0.6%	-1.4%	-3.6% (2012 Q4)
Conditions and terms in markets						
14 Long-term real interest rate ^(t)	3.10%	1.27%	-0.48%	5.29%	0.08%	0.04% (17 June 2013)
15 VIX ^(u)	19.1	12.8	10.6	65.4	23.1	15.4 (17 June 2013)
16 Global spreads ^(v)						
Corporate bond spreads ^(w)	115 bps	87 bps	52 bps	486 bps	182 bps	131 bps (17 June 2013)
Collateralised and securitised debt spreads ^(x)	50 bps	46 bps	15 bps	257 bps	105 bps	71 bps (17 June 2013)
17 Spreads on new UK lending						
Mortgage lending ^(y)	82 bps	52 bps	36 bps	352 bps	331 bps	289 bps (Apr. 2013)
Corporate lending ^(z)	103 bps	99 bps	89 bps	392 bps	346 bps	308 bps (2013 Q1)

(a) A spreadsheet of the series shown in this table is available at www.bankofengland.co.uk/financialstability/Pages/fpc/coreindicators.aspx.

(b) If the series starts after 1987, the average between the start date and 2006 and the maximum/minimum since the start date are used.

(c) 2006 was the last complete non-crisis year.

(d) Unless otherwise stated indicators are based on the major UK bank peer group defined as: Abbey National (until 2003); Alliance & Leicester (until 2007); Bank of Ireland (from 2005); Bank of Scotland (until 2000); Barclays; Bradford & Bingley (from 2001 until 2007); Britannia (from 2005 until 2008); Co-operative Bank (from 2005); Halifax (until 2000); HBOS (from 2001 until 2008); HSBC (from 1992); Lloyds TSB/Lloyds Banking Group; Midland (until 1991); National Australia Bank (from 2005); National Westminster (until 1999); Nationwide; Northern Rock (until 2011); Royal Bank of Scotland; Santander (from 2004); TSB (until 1994); Virgin Money (from 2012) and Woolwich (from 1990 until 1997). As Virgin Money has not yet reported its 2012 results, Northern Rock's 2011 results have been used for 2012. Accounting changes, eg the introduction of IFRS in 2005 result in discontinuities in some series. Restated figures are used where available.

(e) Major UK banks' aggregate end-year core Tier 1 capital as a percentage of their aggregate end-year risk-weighted assets. The series starts in 2000 and uses the major UK banks peer group as of end-2012 and their constituent predecessors. Data exclude Northern Rock/Virgin Money from 2008. From 2008, core Tier 1 ratios are as published by banks, excluding hybrid capital instruments and making deductions from capital based on PRA definitions. Prior to 2008, that measure was not typically disclosed and Bank calculations approximating it as previously published in the *Financial Stability Report* are used. Sources: Published accounts and Bank calculations.

(f) A simple leverage ratio calculated as aggregate end-year peer group equity (shareholders' claims) over aggregate end-year peer group assets (note a discontinuity due to the introduction from 2005 of IFRS accounting standards, which tends to reduce reported leverage ratios thereafter) and, in addition from 2011, a series corresponding to the proposed Basel III definition from PRA regulatory returns (aggregate peer group Tier 1 capital over aggregate leverage ratio exposure). Tier 1 capital includes some 'grandfathered' instruments which will no longer be eligible after the full transition to Basel III in 2019. Note that the simple series excludes Northern Rock/Virgin Money from 2008, and the Basel III series consists of Barclays, Co-operative Bank, HSBC, Lloyds Banking Group, Nationwide, RBS and Santander UK. Sources: PRA regulatory returns, published accounts and Bank calculations.

(g) Calculated dividing aggregate end-year peer group risk-weighted assets by aggregate end-year peer group assets. Series begins 1992. Sources: Published accounts and Bank calculations.

(h) Calculated as major UK banks' annual net income (excluding tax) as a proportion of total assets, averaged over the current and previous year. Sources: Published accounts and Bank calculations.

(i) Major UK banks' end-year customer lending as a percentage of end-year customer funding, where customer refers to all non-bank borrowers and depositors. Repurchase agreements are excluded from loans and deposits where disclosed. One weakness of the current measure is that it is not possible to distinguish between retail deposits from households and deposits placed by non-bank financial corporations on a consolidated basis. Additional data collections would be required to improve the data in this area. The series begins in 2000. Sources: Published accounts and Bank calculations.

(j) This indicator highlights the countries where UK-owned monetary financial institutions' overall exposures are greater than 10% of UK-owned monetary financial institutions' tangible equity on an ultimate risk basis and have grown by 10% or more as a proportion of UK-owned monetary financial institutions' tangible equity during the previous year. Foreign exposures as defined in BIS consolidated banking statistics. Tangible equity figures for 2005–07 are estimated. Series begins in 2005 Q4. Countries flagged in 2006 Q4 were Brazil (BR), Switzerland (CH), People's Republic of China (CN), Spain (ES), France (FR), Ireland (IE), India (IN), Luxembourg (LU) and Netherlands (NL). Countries flagged in 2011 Q4 were People's Republic of China (CN) and Netherlands (NL). Countries flagged in 2012 Q4 were Canada (CA), Switzerland (CH), Germany (DE), Mexico (MX), Malaysia (MY), the Netherlands (NL) and Singapore (SG). Sources: Bank of England, published accounts and Bank calculations.

- (k) Average of major UK banks' five-year senior CDS premia, weighted by total assets. Series starts in 2003. Includes Nationwide from July 2003. Sources: Markit Group Limited, published accounts and Bank calculations.
- (l) Average of UK banks' five-year euro-denominated subordinated debt spreads to swaps, weighted by total assets. Includes contingent capital instruments. Sample includes the following financial groups: Banco Santander, Bank of Ireland, Barclays, HSBC, LBG and RBS. Series starts in 2002. The data provider has changed the calculation of the underlying series which explains differences to the data published in the Draft Policy Statement in January 2013. Sources: UBS Delta, published accounts and Bank calculations.
- (m) Relates the share price with the book, or accounting, value of shareholders' equity per share. Simple averages of the ratios in the peer group, weighted by end-year total assets. The sample comprises the major UK banks excluding Britannia, Co-operative Bank and Nationwide. Northern Rock/Virgin Money are excluded from 2008. Series starts in 2000. Sources: Thomson Reuters Datastream, published accounts and Bank calculations.
- (n) Total peer group market capitalisation divided by total peer group assets (note a discontinuity due to introduction of IFRS accounting standards in 2005, which tends to reduce leverage ratios thereafter). The sample comprises the major UK banks excluding Britannia, Co-operative Bank and Nationwide. Northern Rock/Virgin Money are excluded from 2008. Series starts in 2000. Sources: Thomson Reuters Datastream, published accounts and Bank calculations.
- (o) Credit is defined as debt claims on the UK private non-financial sector. This includes all liabilities of the household and not-for-profit sector and private non-financial corporations' loans and debt securities excluding derivatives, direct investment loans and loans secured on dwellings. ONS data are not available before 1990. Before then, stable relationships between the ONS household and private non-financial corporation debt data and Bank of England household and private non-financial corporation lending data are assumed and the ONS household and private non-financial corporation debt series is assumed to grow at the same rate as the Bank of England household and private non-financial corporation lending series. The credit-to-GDP gap is calculated as the percentage point difference between the credit-to-GDP ratio and its long-term trend, where the trend is based on a one-sided Hodrick-Prescott filter with a smoothing parameter of 400,000. Sources: Bank of England, ONS and Bank calculations.
- (p) Twelve-month growth rate of nominal credit. Credit is defined as above. Sources: Bank of England, ONS and Bank calculations.
- (q) As per cent of annual GDP (four-quarter moving sum). Sources: ONS and Bank calculations.
- (r) Excluding derivatives. Non-debt liabilities are equity liabilities in the form of either foreign direct or portfolio investment. Ratios computed using a four-quarter moving sum of GDP. MFIs are monetary financial institutions, and cover banks and building societies resident in the United Kingdom. Sources: ONS and Bank calculations.
- (s) As per cent of quarterly GDP. Sources: ONS and Bank calculations.
- (t) Five-year real interest rates five years forward, derived from the Bank's index-linked government liabilities curve. Source: Bank of England.
- (u) The VIX is a measure of market expectations of 30-day volatility as conveyed by S&P 500 stock index options prices. Series starts in 1990. One-month moving averages. Sources: Bloomberg and Bank calculations.
- (v) Option-adjusted spreads, which are the number of basis points the matched-maturity government spot curve is shifted in order to match a bond's present value of discounted cash flows. One-month moving averages.
- (w) Global corporate bond spreads refers to the global broad market industrial spread. This tracks the performance of non-financial, investment-grade corporate debt publicly issued in the major domestic and eurobond markets. Index constituents are capitalisation-weighted based on their current amount outstanding. The series starts in 1997. Sources: Bank of America Merrill Lynch, Bloomberg and Bank calculations.
- (x) Global securitised and collateralised debt spreads refers to the global broad market collateralised spread. This tracks the performance of investment-grade securitised and collateralised debt, including mortgage-backed, asset-backed, commercial mortgage-backed, covered bond, pfandbrief and US mortgage pass-through securities publicly issued in the major domestic and eurobond markets. Qualifying currencies are US dollars, Australian dollars, Canadian dollars, euros, Japanese yen, sterling; subject to minimum size requirements. The series starts in 1997. Sources: Bank of America Merrill Lynch, Bloomberg and Bank calculations.
- (y) The UK mortgage spread is a weighted average of quoted mortgage rates over safe rates, using 90% LTV two-year fixed-rate mortgages and 70% LTV tracker, two and five-year fixed-rate mortgages. Spreads are taken relative to gilt yields of matching maturity for fixed-rate products until August 2009, after which spreads are taken to OIS of matching maturity. Spreads are taken to Bank Rate for the tracker product. Series starts in 1997. Sources: Bank of England, CML and Bank calculations.
- (z) The UK corporate lending spread is a weighted average of: SME lending rates over Bank Rate; CRE lending rates over Bank Rate; and, as a proxy for the rate at which banks lend to large, non-CRE corporates, UK investment-grade company bond spreads over maturity-matched government bond yields (adjusted for any embedded option features such as convertibility into equity). Series starts in 2002 Q4. Sources: Bank of America Merrill Lynch, Bank of England, BBA, BIS, Bloomberg, De Montfort University and Bank calculations.

Table A.2 Core indicator set for sectoral capital requirements^(a)

Indicator	Average, 1987–2006 ^(b)	Average 2006 ^(c)	Minimum since 1987 ^(b)	Maximum since 1987 ^(b)	Previous value (oya)	Latest value (as of 17 June 2013)
Bank balance sheet stretch^(d)						
1 Core Tier 1 capital ratio ^(e)	6.6%	6.3%	6.1%	11.0%	10.3%	11.0% (2012)
2 Leverage ratio ^(f)						
Simple	4.7%	4.1%	2.9%	5.4%	5.1%	5.2% (2012)
Basel III	n.a.	n.a.	n.a.	n.a.	4.0%	4.1% (Dec. 2012)
3 Average mortgage risk weights ^(g)	n.a.	n.a.	18.9%	22.5%	21.2%	20.2% (2012)
4 Balance sheet interconnectedness ^(h)						
Intra-financial lending growth ⁽ⁱ⁾	13.8%	13.0%	-15.3%	78.7%	-11.2%	1.5% (2012)
Intra-financial borrowing growth ⁽ⁱ⁾	14.5%	14.0%	-19.3%	37.7%	-7.5%	-13.7% (2012)
Derivatives growth (notional) ^(k)	37.7%	34.2%	-18.0%	67.5%	-5.3%	-7.5% (2012)
5 Overseas concentration indicator: countries to which UK banks have 'large' and 'rapidly growing' non-bank private sector exposures ^(l)		In 2006 Q4: ES, FR, IE, JP, NL			In 2011 Q4: CN, DE	In 2012 Q4: CA, CN, DE, FR, SG
Non-bank balance sheet stretch						
6 Credit growth						
Household ^(m)	10.1%	11.6%	0.0%	19.9%	1.0%	2.3% (2012 Q4)
Commercial real estate ⁽ⁿ⁾	15.3%	18.4%	-9.7%	59.8%	-2.9%	-4.4% (2013 Q1)
7 Household debt to income ratio ^(o)	115.1%	160.6%	88.1%	172.1%	147.9%	142.5% (2012 Q4)
8 PNFC debt to profit ratio ^(p)	285.4%	391.3%	189.2%	498.6%	437.9%	450.2% (2012 Q4)
9 NBFI debt to GDP ratio (excluding insurance companies and pension funds) ^(q)	64.2%	144.1%	15.8%	186.7%	175.0%	182.3% (2012 Q4)
of which short-term	49.7%	98.6%	14.2%	125.8%	110.1%	115.5% (2012 Q4)
Conditions and terms in markets						
10 Real estate price to rent indices						
Residential ^(r)	100.0	151.0	66.6	161.3	123.0	119.9 (2013 Q1)
Commercial ^(s)	100.0	128.1	77.7	131.6	94.2	90.9 (2013 Q1)
11 Residential mortgage terms						
Loan to value ratio ^(t)	n.a.	89.3%	80.4%	89.7%	82.4%	83.3% (2012 Q4)
Loan to income ratio ^(t)	n.a.	3.7	3.6	3.9	3.9	3.8 (2012 Q4)
12 Spreads on new lending						
Mortgage lending ^(u)	82 bps	52 bps	36 bps	352 bps	331 bps	289 bps (Apr. 2013)
Corporate lending ^(v)	103 bps	99 bps	89 bps	392 bps	346 bps	308 bps (2013 Q1)

(a) A spreadsheet of the series shown in this table is available at www.bankofengland.co.uk/financialstability/Pages/fpc/coreindicators.aspx.

(b) If the series starts after 1987, the average between the start date and 2006 and the maximum/minimum since the start date are used.

(c) 2006 was the last complete non-crisis year.

(d) Unless otherwise stated indicators are based on the major UK bank peer group defined as: Abbey National (until 2003); Alliance & Leicester (until 2007); Bank of Ireland (from 2005); Bank of Scotland (until 2000); Barclays; Bradford & Bingley (from 2001 until 2007); Britannia (from 2005 until 2008); Co-operative Bank (from 2005); Halifax (until 2000); HBOS (from 2001 until 2008); HSBC (from 1992); Lloyds TSB/Lloyds Banking Group; Midland (until 1991); National Australia Bank (from 2005); National Westminster (until 1999); Nationwide; Northern Rock (until 2011); Royal Bank of Scotland; Santander (from 2004); TSB (until 1994); Virgin Money (from 2012) and Woolwich (from 1990 until 1997). As Virgin Money has not yet reported its 2012 results, Northern Rock's 2011 results have been used for 2012. Accounting changes, eg the introduction of IFRS in 2005 result in discontinuities in some series. Restated figures are used where available.

(e) Major UK banks' aggregate end-year core Tier 1 capital as a percentage of their aggregate end-year risk-weighted assets. The series starts in 2000 and uses the major UK banks peer group as of end-2012 and their constituent predecessors. Data exclude Northern Rock/Virgin Money from 2008. From 2008, core Tier 1 ratios are as published by banks, excluding hybrid capital instruments and making deductions from capital based on PRA definitions. Prior to 2008, that measure was not typically disclosed and Bank calculations approximating it as previously published in the *Financial Stability Report* are used. Sources: Published accounts and Bank calculations.

(f) A simple leverage ratio calculated as aggregate end-year peer group equity (shareholders' claims) over aggregate end-year peer group assets (note a discontinuity due to the introduction from 2005 of IFRS accounting standards, which tends to reduce reported leverage ratios thereafter) and, in addition from 2011, a series corresponding to the proposed Basel III definition from PRA regulatory returns (aggregate peer group Tier 1 capital over aggregate leverage ratio exposure). Tier 1 capital includes some 'grandfathered' instruments which will no longer be eligible after the full transition to Basel III in 2019. Note that the simple series excludes Northern Rock/Virgin Money from 2008, and the Basel III series consists of Barclays, Co-operative Bank, HSBC, Lloyds Banking Group, Nationwide, RBS and Santander UK. Sources: PRA regulatory returns, published accounts and Bank calculations.

(g) Sample excludes Bank of Ireland; Britannia; National Australia Bank; Northern Rock; Virgin Money; and Nationwide for 2008 H2 only. Average risk weights for residential mortgages (exposures on the Retail IRB method only) are calculated as total risk-weighted assets divided by total exposure value for all banks in the sample. Calculated on a consolidated basis, except for Barclays before 2011 H2 where only solo data were available. Series starts in 2008. Sources: PRA regulatory returns and Bank calculations.

(h) The disclosures the series are based on are not currently sufficient to ensure that all intra-financial activity is included in these series, nor is it possible to be certain that no real-economy activity is included. Additional data collections would be required to improve the data in this area. The intra-financial lending and borrowing growth series are not adjusted for mergers/acquisitions. This contributes to large growth rates in some periods — eg 1992 (Midland/HSBC) and 2007 (RBS/ABN Amro) — as they can result in step changes in the size and interconnectedness of the major UK bank peer group.

(i) Lending to other banks and other financial corporations, annual series. Sources: Published accounts and Bank calculations.

(j) Wholesale borrowing, composed of deposits from banks and non-subordinated securities in issue. One weakness of the current measure is that it is not possible to distinguish between retail deposits from households and deposits placed by financial corporations on a consolidated basis. Sources: Published accounts and Bank calculations.

(k) Based on notional value of derivatives (some of which may support real-economy activity). The sample includes Barclays, HSBC and RBS who account for a significant share of UK banks' holdings of derivatives, though the sample could be adjusted in future should market shares change. Series starts in 2002. Sources: Published accounts and Bank calculations.

(l) This indicator highlights the countries where UK-owned monetary financial institutions' non-bank private sector exposures are greater than 10% of UK-owned monetary financial institutions' tangible equity on an ultimate risk basis and have grown by 10% or more as a proportion of UK-owned monetary financial institutions' tangible equity during the previous year. Foreign exposures as defined in BIS consolidated banking statistics. Overseas sectoral exposures cannot currently be broken down further than at the non-bank private sector level. The intention is to divide them into households and corporates when new data become available, which is expected to be in 2014. Tangible equity figures for 2005–07 are estimated. Series begins in 2005 Q4. Countries flagged in 2006 Q4 were Spain (ES), France (FR), Ireland (IE), Japan (JP) and Netherlands (NL). Countries flagged in 2011 Q4 were: People's Republic of China (CN) and Germany (DE). Countries flagged in 2012 Q4 were Canada (CA), People's Republic of China (CN), Germany (DE), France (FR) and Singapore (SG). Sources: Bank of England, published accounts and Bank calculations.

(m) Twelve-month nominal growth rate of total household and not-for-profit sector liabilities. Series starts in 1988. Sources: ONS and Bank calculations.

(n) Twelve-month nominal growth rate of UK-resident banks' and building societies' claims on the commercial real estate sector. Includes lending for development of buildings. Series starts in 1988. Sources: Bank of England and Bank calculations.

(o) Gross debt as a percentage of a four-quarter moving sum of disposable income. Includes all liabilities of the household sector. ONS data on household debt are used from 1989. Before then, due to limited data availability, a stable relationship is assumed between the ONS debt data and the Bank of England lending data. The household disposable income series is adjusted for financial intermediation services indirectly measured (FISIM). Sources: Bank of England, ONS and Bank calculations.

(p) Gross debt as a percentage of a four-quarter moving sum of gross operating surplus. Gross debt is measured as loans and debt securities excluding derivatives, direct investment loans and loans secured on dwellings. ONS data on private non-financial corporate (PNFC) debt are used from 1989 due to limited data availability. Before then, a stable relationship is assumed between the ONS debt data and the Bank of England lending data. The corporate gross operating surplus series is adjusted for financial intermediation services indirectly measured (FISIM). Sources: Bank of England, ONS and Bank calculations.

(q) Gross debt as a percentage of four-quarter moving sum of nominal GDP. Includes all liabilities of the non-bank financial intermediary and financial auxiliary (NBFI) sector (ie all financial corporations apart from monetary financial institutions), excluding insurance companies and pension funds. Short-term debt consists of currency and deposits, short-term money market instruments issued by other UK residents, short-term loans by UK monetary financial institutions (excluding loans on dwelling and financial leasing) and short-term loans by foreign monetary financial institutions, where short-term refers to instruments or loans with an original maturity of under one year. Long-term debt is defined as total liabilities less short-term debt. Sources: ONS and Bank calculations.

- (r) The residential house price to rent index is the ratio between an average of the Halifax and Nationwide house price indices and RPI housing rent. Sources: Halifax, Nationwide, ONS and Bank calculations.
- (s) The commercial property price to rent index is the ratio between the IPD All Property Capital Growth Index and the IPD All Property Rental Value Index. This series has been corrected from the original hard copy of the draft Policy Statement after the discovery of an error. Sources: Investment Property Databank and Bank calculations.
- (t) Total value of loans divided by total value of properties (respectively total value of incomes) on new advances above the median LTV (LTI) ratio, excluding remortgagors and advances with LTV above 130 (LTI above 10). Series start in 2005. Sources: FCA Product Sales Data and Bank calculations.
- (u) The UK mortgage spread is a weighted average of quoted mortgage rates over safe rates, using 90% LTV two-year fixed-rate mortgages and 70% LTV tracker, two and five-year fixed-rate mortgages. Spreads are taken relative to gilt yields of matching maturity for fixed-rate products until August 2009, after which spreads are taken to OIS of matching maturity. Spreads are taken to Bank Rate for the tracker product. Series starts in 1997. Sources: Bank of England, CML and Bank calculations.
- (v) The UK corporate lending spread is a weighted average of: SME lending rates over Bank Rate; CRE lending rates over Bank Rate; and, as a proxy for the rate at which banks lend to large, non-CRE corporates, UK investment-grade company bond spreads over maturity-matched government bond yields (adjusted for any embedded option features such as convertibility into equity). Series starts in 2002 Q4. Sources: Bank of America Merrill Lynch, Bank of England, BBA, BIS, Bloomberg, De Montfort University and Bank calculations.

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Glossary and other information

Glossary of selected data and instruments

CDS – credit default swap.
CLO – collateralised loan obligation.
CMBS – commercial mortgage-backed security.
CPI – consumer prices index.
CPI inflation – inflation measured by the consumer prices index.
GDP – gross domestic product.
HICP – harmonised index of consumer prices.
Libor – London interbank offered rate.
MBS – mortgage-backed security.
RPI – retail prices index.
RPI inflation – inflation measured by the retail prices index.
SONIA – sterling overnight index average.

Abbreviations

BBA – British Bankers' Association.
BCBS – Basel Committee on Banking Supervision.
BIS – Bank for International Settlements.
CCP – central counterparty.
CCS – Credit Conditions Survey.
CEIC – CEIC Data Company Ltd.
CET1 – common equity Tier 1.
CFO – chief financial officer.
CNAV – constant net asset value.
CPSS – Committee on Payment and Settlement Systems.
CRD4/CRR – Capital Requirements Directive and Regulation.
CRE – commercial real estate.
CTA – commodity trading advisor.
CVA – credit valuation adjustment.
DB – defined benefit.
D-SIB – domestic systemically important banks.
DVA – debt valuation adjustment.
ECB – European Central Bank.
EDTF – Enhanced Disclosure Task Force.
EL – expected loss.
EMIR – European Market Infrastructure Regulation.
ERP – equity risk premia.
ETF – exchange-traded fund.
EU – European Union.
FASB – Financial Accounting Standards Board.
FCA – Financial Conduct Authority.
FLS – Funding for Lending Scheme.
FMI – financial market infrastructure.
FPC – Financial Policy Committee.
FSA – Financial Services Authority.
FSB – Financial Stability Board.
FSOC – Financial Stability Oversight Council.
FTSE – Financial Times Stock Exchange.
G20 – The Group of Twenty Finance Ministers and Central Bank Governors.

GAAP – generally accepted accounting principles.
G-SIB – global systemically important bank.
G-SIFI – global systemically important financial institution.
HMT – Her Majesty's Treasury.
IASB – International Accounting Standards Board.
ICB – Independent Commission on Banking.
IFRS – International Financial Reporting Standard.
IMF – International Monetary Fund.
IOSCO – International Organization of Securities Commissions.
IRB – internal ratings based.
IRC – Incremental Risk Charge.
IT – information technology.
LBG – Lloyds Banking Group.
LCR – Liquidity Coverage Ratio.
LTV – loan to value.
MFI – monetary financial institution.
MMF – money market fund.
MPC – Monetary Policy Committee.
OECD – Organisation for Economic Co-operation and Development.
OFT – Office of Fair Trading.
OMT – Outright Monetary Transaction.
ONS – Office for National Statistics.
OTC – over the counter.
PD – probability of default.
PNFC – private non-financial corporation.
PPF – Pension Protection Fund.
PPI – payment protection insurance.
PRA – Prudential Regulation Authority.
PtB – price to book.
RBS – Royal Bank of Scotland.
REIT – real estate investment trust.
RoA – return on assets.
RWA – risk-weighted asset.
SME – small and medium-sized enterprise.
sVaR – stressed Value-at-Risk.
S&P – Standard & Poor's.
TARGET – Trans-European Automated Real-Time Gross Settlement Express Transfer System.
VaR – Value-at-Risk.
WEO – IMF *World Economic Outlook*.
WMBA – Wholesale Markets Brokers' Association.

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