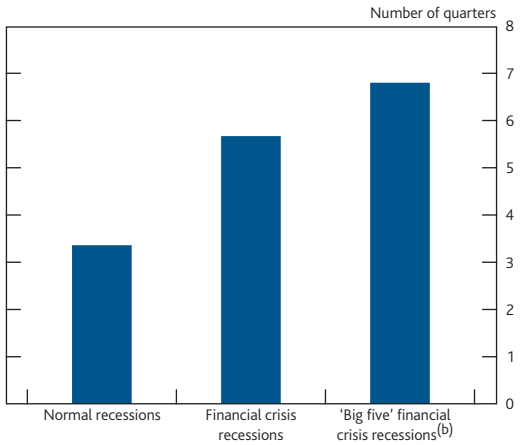
3 Medium-term risks to financial stability

Concerns about the persistence of weak global growth have increased and interest rates in advanced economies are expected to remain low for longer. A search for yield could contribute to an underpricing of risk in some markets, storing up problems should there be a shock to global interest rates — for example, in response to rising sovereign indebtedness.

Alongside these risks, structural vulnerabilities persist. In particular, increases in collateralised transactions may leave the financial system more vulnerable to procyclical fluctuations in asset prices. And questions over the reliability of measures of capital adequacy may contribute to uncertainty over banks' capital position.

Chart 3.1 Average duration of recessions[a]



Source: IMF *World Economic Outlook* (April 2009).

(a) From peak to trough in output levels. Sample includes recessions in 21 advanced economies since 1960.
(b) 'Big five' includes Finland (1990–93), Japan (1993), Norway (1988), Spain (1978–79) and Sweden (1990–93).

3.1 Medium-term risks from global financial developments

Weak growth may persist…

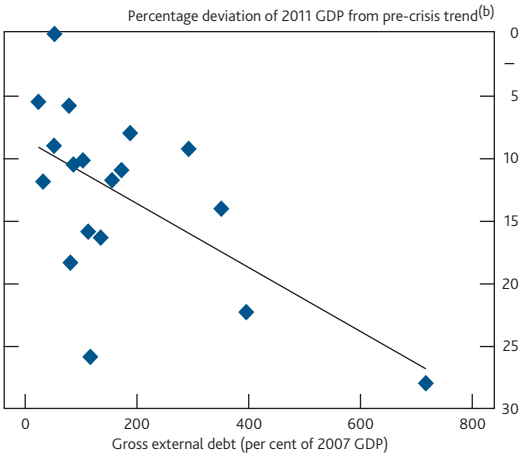
Recessions associated with financial crises typically last longer than others (**Chart 3.1**). That reflects the greater time it takes for economies to work through the imbalances that built up before the crises. Countries that went into the 2007–09 global financial crisis with high levels of gross external debt have tended to experience larger declines in output (**Chart 3.2**). And while current account imbalances have diminished significantly since 2008, there is uncertainty about the extent to which this reflects cyclically weak demand in debtor countries rather than more permanent structural factors. The IMF estimates that underlying current account imbalances are still greater than their desired levels. If attempts by countries to reduce their debt levels by constraining spending are not alleviated by greater spending in surplus countries, then there is a risk of persistently weak global growth.

…as public debt burdens rise…

Another channel through which financial crises may lead to persistently weak growth is through the accumulation of public debt. In advanced economies, public debt as a percentage of GDP has risen to its highest level since World War II (**Chart 3.3**); it exceeds 100% of GDP in Japan, the United States and several European countries. That level of public debt has historically been followed by periods of subdued economic growth.[1] Large refinancing needs can raise concerns about sovereign risk and hence borrowing costs, thereby constraining growth.

(1) Reinhart, C, Reinhart, V and Rogoff, K (2012), 'Debt overhangs: past and present', *NBER Working Paper No. 18015*.

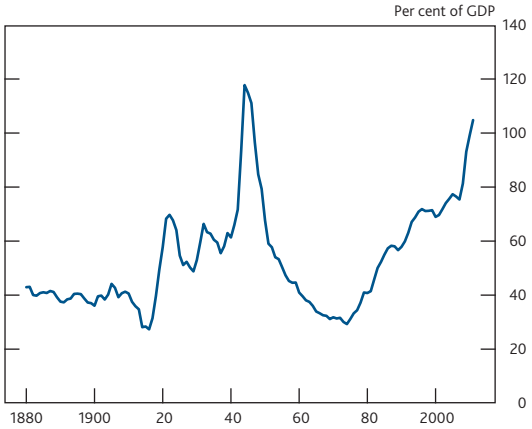
Chart 3.2 Declines in output and gross external debt positions[a]



Sources: IMF *World Economic Outlook* (October 2012), updated and extended version of 'External wealth of nations' data set constructed by Lane and Milesi-Ferretti (2007), World Bank and Bank calculations.

(a) For countries with negative net foreign assets at the beginning of the crisis in 2007. The 'line of best fit' shown indicates the relationship between gross external debt and the decline in GDP.
(b) GDP at constant prices. Pre-crisis trend is measured using growth between 1997 and 2007.

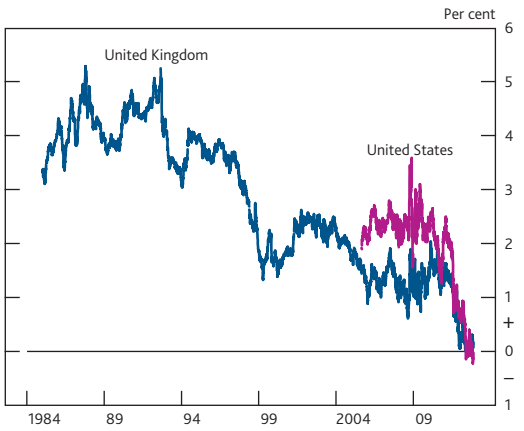
Chart 3.3 Gross public debt in advanced economies[a]



Source: IMF *World Economic Outlook* (October 2012).

(a) 2011 US dollar GDP-weighted average.

Chart 3.4 Real yields on UK and US government bonds[a]



Sources: Bloomberg and Bank calculations.

(a) Five-year real interest rates five years forward. Derived from index-linked government liabilities.

...currently eased by exceptionally low interest rates...

At present, growth is being supported, and the burden of public debt eased, by exceptionally low long-term interest rates (**Chart 3.4**). The likelihood of a prolonged low interest rate environment has increased since the June 2012 *Report*. The US Federal Reserve has now signalled that it is likely to maintain its exceptionally accommodative monetary policy stance until at least mid-2015. More generally, central banks have continued to engage in asset purchases to reduce yields on relatively safe assets and encourage investors to substitute into riskier assets with a higher return.

...potentially storing up problems further ahead...

Section 1 pointed to renewed capital flows into risky assets — for example, emerging market economy (EME) assets and US high-yield bonds — following the latest announcement by the US Federal Reserve. While these capital flows help support growth, persistently low interest rates could be influencing financial market behaviour in a way that is storing up problems further ahead. In searching for higher absolute returns, investors may invest in assets without fully appreciating, and appropriately pricing, the associated risks. If leveraged, that could expose them to significant losses — for example, if interest rates rose unexpectedly in response to concerns about rising sovereign debt levels.

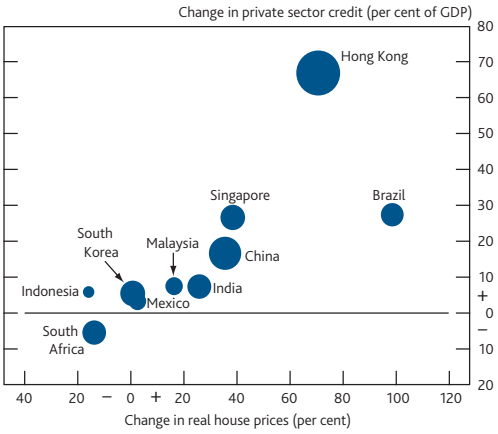
Some financial institutions may be under pressure to invest in riskier assets to match contractual commitments made during the previous higher interest rate environment. For example, pension funds and insurance companies need to match the yield they promised on their liabilities. As noted in Section 1, market contacts report that some insurance companies have increased allocations to corporate bonds and infrastructure investment in a search for yield. Nominal rate of return targets may also be 'sticky' if fund manager compensation schemes are linked to returns.

...for example in property markets...

Surveys of global fund managers indicate that their portfolios are currently most overweight, relative to their typical pattern, in real estate assets. In several EMEs, rapid credit growth in recent years has already been associated with high property price inflation (**Chart 3.5**). But weaker near-term prospects for growth in EMEs pose downside risks to property valuations. Among advanced economies, the UK banking system is the most exposed to Asia, in particular Hong Kong (**Chart 3.5**), where lending has increased rapidly since 2008.

House prices are also relatively high in some advanced economies, with price to rent ratios well above their long-run averages in Australia, Canada, the United Kingdom and some other European countries (**Chart 3.6**). Relatively high house prices are matched by high levels of household debt relative to disposable income, which, in many countries, have fallen little since the onset of the crisis (**Chart 3.7**). While very

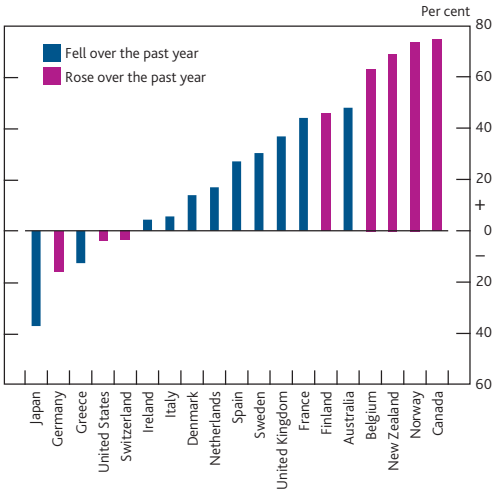
Chart 3.5 Credit growth and house prices in EMEs[a][b]



Sources: Bank of England and IMF *Global Financial Stability Report* (October 2012).

(a) Cumulative changes in credit and house prices between 2006 and 2011.
(b) The size of the data points is proportional to UK-owned MFIs' consolidated exposures as of end-June 2012.

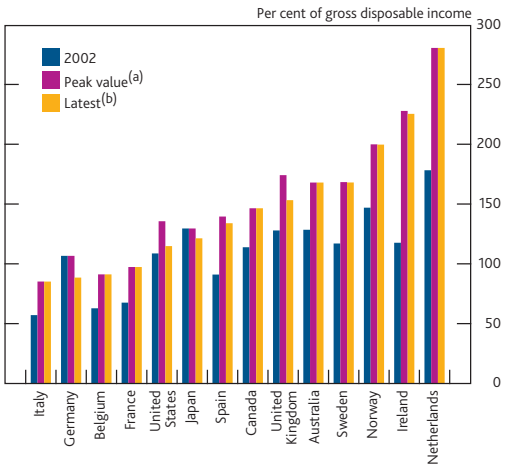
Chart 3.6 Deviations of house price to rent ratios from historical averages[a]



Sources: OECD *Economic Outlook* database and Bank calculations.

(a) The latest observation is 2012 Q1 for Italy and Japan, 2012 Q2 for Belgium, Denmark, France, Greece, New Zealand and the United States, and 2012 Q3 for other countries.

Chart 3.7 Household debt



Sources: OECD.Stat Extracts and Bank calculations.

(a) The highest value between 2002 and the latest value.
(b) End-2011 for Belgium, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden, the United Kingdom and the United States. End-2010 for Australia, Canada, Ireland and Japan.

low levels of long-term interest rates help to sustain high house prices and debt levels, an unexpected rise in interest rates would increase debt-servicing burdens and might induce a fall in property prices. That would pose credit risks to banks.

…should interest rates 'snap back' as sovereign risk is repriced…

A 'snap back' in global interest rates could be provoked by a reassessment of sovereign risk. For example, the United States and Japan have high government debt financing needs, which in Japan are largely met by the domestic banking system (**Chart 3.8**). These risks may not be adequately reflected in current market prices. One indication of this is the sovereign CDS premia for the United States and Japan (**Chart 3.8**), which remain extremely low. The United States and Japan account for around half of global sovereign debt, so a shift in their risk premia could have a significant impact on global sovereign risk premia.

Higher sovereign risk premia could affect interest rates faced by the private sector through their impact on the balance sheets of financial institutions. For example, **Chart 3.9** illustrates that advanced-economy banking systems' holdings of sovereign debt are large relative to their capital, exposing them to potential losses. For Japanese banks, simple, partial estimates indicate that mark-to-market losses on domestic bond holdings from a 100 basis point increase in yields could be around 15% of Tier 1 capital.(1)

Losses on sovereign bond holdings could constrain banks' ability to lend to the real economy and raise banks' funding costs. During the financial crisis, perceptions about sovereign and bank risk have become more interlinked. For example, over the past four years, correlations between CDS premia for banks and sovereigns have tended to increase (**Chart 3.10**). Higher bank funding costs, if passed through to lending rates, could place strains on household and corporate balance sheets, in turn posing credit risks to banks.

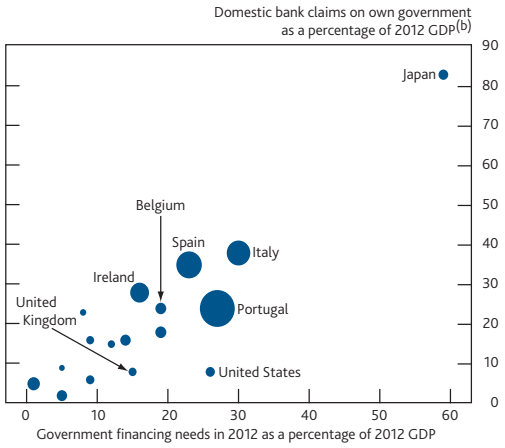
Shocks to sovereign bond yields could also be transmitted to the corporate sector via the corporate bond market. In vulnerable euro-area countries, credit ratings for companies have tended to fall as sovereigns have been downgraded, raising corporate borrowing costs. And since the crisis, larger companies have become more dependent on bond markets as a source of finance, following the restriction in credit provided by the banking system.

…and the dollar's reserve currency status is questioned.

Shifts in perceptions of sovereign risk could also have more wide-ranging effects were they to trigger a fundamental reappraisal of US Treasuries as the key global 'safe' asset. 'Safe' financial assets are important to the global financial

(1) Bank of Japan *Financial System Report*, October 2012.

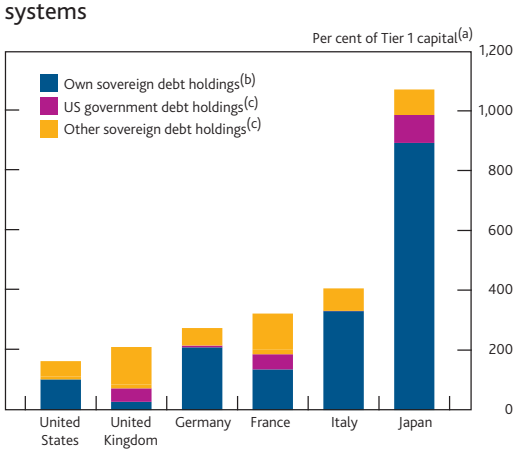
Chart 3.8 Government financing needs and domestic bank claims on government[a]



Sources: IMF *Global Financial Stability Report* (October 2012), Thomson Reuters Datastream and Bank calculations.

(a) The size of the data points is proportional to five-year sovereign CDS premia.
(b) Domestic depository institutions' (excluding the central bank) claims on their own general government (central government for New Zealand and public sector for the United Kingdom).

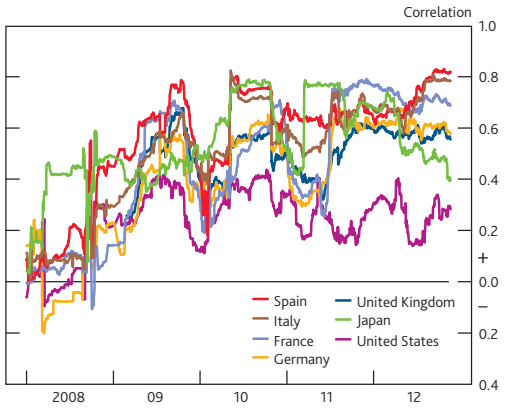
Chart 3.9 Sovereign debt holdings by selected banking systems



Sources: BIS, ECB, IMF and Bank calculations.

(a) Except for Germany which is tangible equity.
(b) End-2011 claims on general government for France, Germany and Italy, on central, state and local governments for Japan and the United States, and on central government and official entities for the United Kingdom.
(c) End-June 2012 claims on public entities on an ultimate risk basis.

Chart 3.10 Correlation of risk between selected sovereigns and their domestic banking systems[a]



Sources: Bloomberg, Markit Group Limited and Bank calculations.

(a) Average six-month rolling-window correlation between daily changes in five-year sovereign CDS premia and five-year senior unsecured CDS premia for major banks.

system as they are used as collateral in financial transactions. US government securities are used widely as collateral in global wholesale funding markets. Ratings downgrades and the associated greater volatility and lower liquidity in US securities markets would increase the haircuts applied by transacting counterparties, constraining the availability of secured financing. For example, in bilateral OTC derivatives markets, estimates suggest that about US$850 million of additional collateral might be required for every 50 basis point increase in haircuts on US-backed collateral. And dollar securities are estimated to account for around two thirds of global sovereign reserves. The search for alternative global 'safe' assets could cause a destabilising round of portfolio rebalancing and higher margin requirements on transactions. These effects could be amplified by the structural shift to secured transactions in derivatives markets, discussed in the next subsection.

Nearly 40% of UK-resident banks' external assets and liabilities are denominated in dollars, and these gross exposures are very large relative to bank capital (**Chart 3.11**). In part that reflects the cross-border activities of foreign large complex financial institutions operating in London. So any disruptions in US dollar markets would have a direct impact on UK financial stability via the banking system, through lower asset values and disruptions to dollar funding markets.

Global bond yields might also rise because of a more optimistic outlook for economic growth, rather than in response to concerns about sovereign risk. That would likely have more benign implications for financial stability.

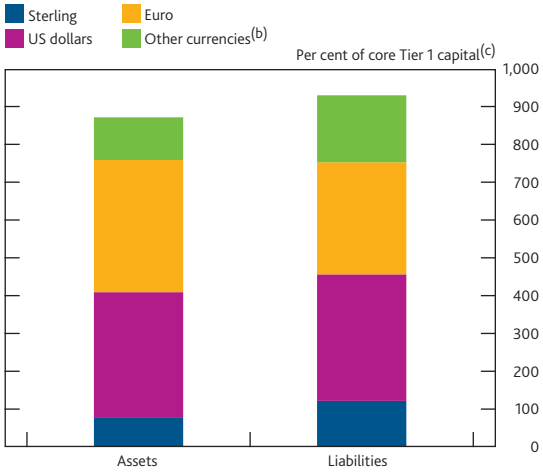
3.2 Structural vulnerabilities

An increase in collateralised transactions may strengthen procyclicality.

The impact of a snap back of interest rates could be amplified through changes to the price of assets used as collateral. Were assets to fall in value, then lenders who hold these assets as collateral might demand additional collateral. Secured borrowers might have to sell other assets to meet these demands, leading to further price falls and further losses. Other lenders may choose to withdraw funding altogether, rather than lend against risky or illiquid collateral.

The scale of any procyclical rise in collateral demand would depend on the overall use of collateral in the system and on the level at which haircuts are set. Reforms in OTC derivatives markets are expected to require the provision of collateral to cover counterparty exposures in certain classes of transactions between financial firms, and also for standardised trades subject to central clearing obligations. This is one factor expected to increase the reliance upon collateralised transactions. The reduction in system-wide counterparty

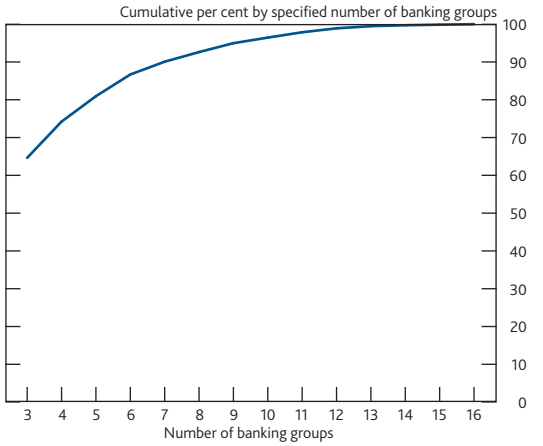
Chart 3.11 Currency breakdown of UK-resident banks' external assets and liabilities[a]



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

(a) As of 2012 Q2.
(b) Includes amounts unallocated by currency.
(c) End-June 2012 data where available, otherwise end-2011.

Chart 3.12 Concentration of UK-resident MFIs' repo activity at end-2011[a][b][c]



Sources: Bank of England and Bank calculations.

(a) Cumulative repo activity as a proportion of total repo activity for a sample of 16 banking groups.
(b) The sample of banking groups covers 80% of repo activity (excluding UK-resident intragroup repo activity) reported to the Bank of England.
(c) Repo activity is defined as the sum of outstanding reverse repo lending and repo borrowing at 31 December 2011. Excludes UK-resident intragroup activity. MFIs are all financial institutions (except for the Bank of England) recognised by the Bank of England as UK monetary financial institutions for statistical purposes (www.bankofengland.co.uk/statistics/Pages/iadb/notesiadb/mfis_exlcb.aspx).

credit risk due to these reforms may be accompanied by increased system-wide liquidity risk unless institutions have ready access to sufficient liquid collateral assets. If such access is insufficient, and these counterparties are obliged to sell other assets to meet margin calls, this may depress asset prices further, creating an adverse feedback effect. These effects will be more pronounced if haircuts also respond procyclically, as they did during the crisis. The Financial Stability Board's (FSB's) recommendations for strengthened oversight and regulation of shadow banks published recently include minimum standards for haircut practices which may limit the build-up of procyclicality.[1] Box 3 sets out some of the challenges in the reform of the OTC derivatives market.

Reliance on collateral may also be influenced by other factors, such as the proportion of financial institutions' balance sheets that is funded on a secured basis. As the FSB has noted, the so-called shadow banking sector — entities involved in credit intermediation outside the regular banking system — can use sources of collateralised funding, such as repurchase agreements (repo), to increase leverage.[2] Should activity shift from the banking sector to (non-deposit funded) shadow banks as prudential standards for banks tighten, the stock of such transactions could increase.

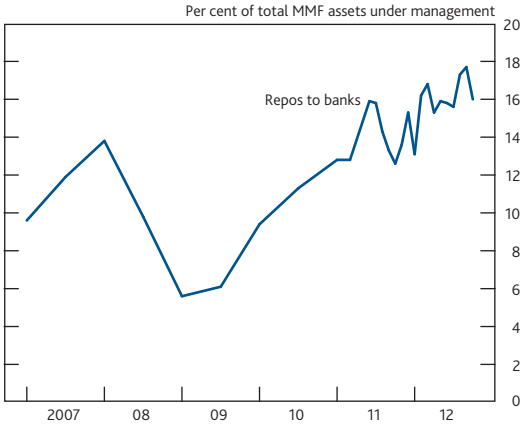
Market structure may play a role in the degree of amplification of shocks. Some segments of the secured financing markets are concentrated. For example, a handful of UK-resident monetary financial institutions (MFIs) account for the majority of all repo transactions of UK MFIs with other counterparties (**Chart 3.12**). The response of those firms to shocks could therefore have a particularly significant effect on broader market stability. Non-banks, such as money market funds (MMFs), together with other banks, are key counterparties for UK banks. More generally, repos to banks are an important part of MMFs' portfolios, representing around 16% of assets under management for the largest MMFs (**Chart 3.13**). And US MMFs account for 35% of total 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.

Money market funds are a source of risk…

Dependence on MMF funding may exacerbate procyclicality risk. Some MMFs accept some types of collateral which they would not be permitted to own outright, increasing the risk of fire sales of assets in the event of counterparty failure. More broadly, MMFs also face risks from maturity mismatch themselves, often offering investors same-day access, but investing in longer-term securities. This makes them

(1) 'Strengthening oversight and regulation of shadow banking', consultative documents by the Financial Stability Board, November 2012.
(2) 'Shadow banking: strengthening oversight and regulation, recommendations of the Financial Stability Board', October 2011. 'Securities lending and repos: market overview and financial stability issues', Financial Stability Board, April 2012.

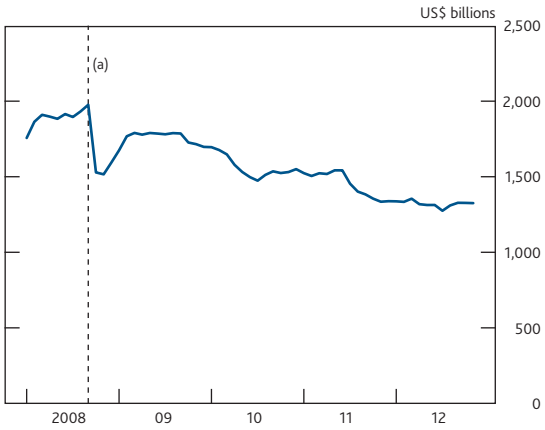
Chart 3.13 Global bank repo lending by top ten US prime MMFs[a][b]



Sources: Fitch Ratings and Bank calculations.

(a) Data are based on a sample comprising the ten largest US prime MMFs representing about 45% of all US prime MMFs by assets under management as of 30 September 2012.
(b) Data are semi-annual until January 2011, and monthly thereafter (absent data points for January 2011 and March-April 2011).

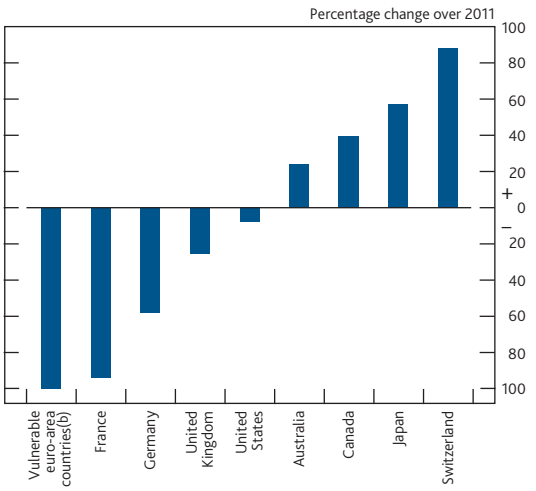
Chart 3.14 US prime MMFs' assets under management



Sources: Crane data and Bank calculations.

(a) Lehman Brothers Holdings files for Chapter 11 bankruptcy protection.

Chart 3.15 Changes in US prime MMFs' exposures to international banking systems over 2011[a]



Sources: Fitch Ratings and Bank calculations.

(a) Data are based on a sample comprising the ten largest MMFs, representing about 45% of all US prime MMFs by assets under management as of 30 September 2012.
(b) Refers to Ireland, Italy, Portugal and Spain. There were no exposures to Greece reported in the MMF sample.

vulnerable to flight risk, and potentially a source of run risk to others in turn. This is exacerbated by accounting practices that do not mark-to-market some assets — in stressed circumstances, this may give early redeemers a first-mover advantage as they can get a larger share of the remaining assets.

Risks from maturity mismatch are particularly pronounced for constant net asset value (CNAV) funds. These offer deposit-like contracts to their investors, promising to return the full value of the deposit. US regulations permit such funds to use 'penny rounding', which means that the fund can continue to report full value until their asset value falls below 99.5%, increasing first-mover advantage. Flight risk became evident in 2008 when US MMFs' assets under management declined rapidly after Lehman Brothers filed for Chapter 11 bankruptcy protection (**Chart 3.14**). Their response was to reduce their own investments in short-term paper, exacerbating banking system fragility.

MMF funding to euro-area banking systems and, to a lesser degree, in the United Kingdom, fell sharply in 2011 (**Chart 3.15**). And the composition of funding shifted towards collateralised transactions — for UK banks, repos now represent around half of the total funding by the largest US MMFs (**Chart 3.16**). These changes appear to reflect high sensitivity to risk. More recently, improvements in market conditions in the euro area have led US MMFs to increase investment and reduce their reliance on collateral.

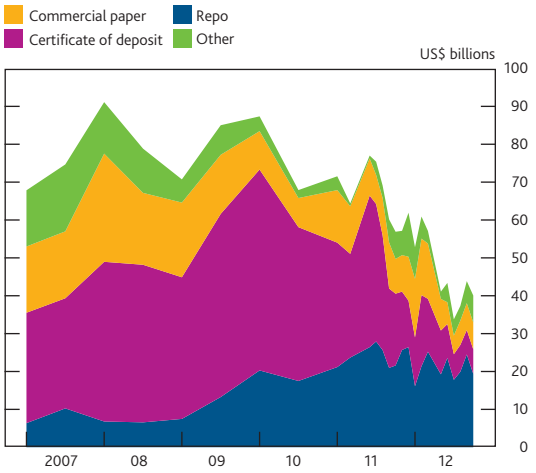
…reflected in proposals to strengthen their oversight and regulation.

Strengthened prudential requirements for liquidity will reduce banks' vulnerability to unstable sources of funding. Reforms to improve MMFs' oversight and regulation are being considered as well. The International Organization of Securities Commissions (IOSCO) recently recommended potential policy measures. These included prudential requirements and conversion to floating net asset value, where workable. For funds which continue to promise constant net asset value, safeguards such as capital buffers are also being considered. The majority of the Commissioners of the US Securities and Exchange Commission, which is responsible for regulation of around 60% of the global market by assets under management, did not support the publication of the IOSCO report. Since then, the US Financial Stability Oversight Council has published recommendations for structural reform of MMFs for consultation. Options include conversion to floating net asset value and capital buffers for CNAV funds.

Concerns over the adequacy of capital persist due to inadequate accounting for provisions…

In parallel to reforms to mitigate funding vulnerabilities, concern over banks' resilience has prompted a number of initiatives. Since the onset of the crisis, many banks have increased their equity buffers and reduced leverage. But, as set

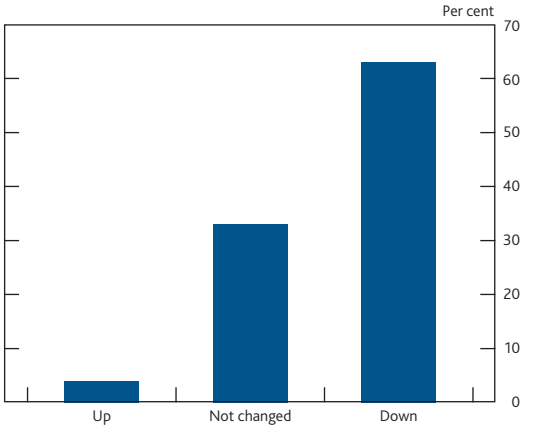
Chart 3.16 Decomposition of US prime MMFs' funding to UK banks[a][b]



Sources: Fitch Ratings and Bank calculations.

(a) Data are based on a sample comprising the ten largest US prime MMFs, representing about 45% of all US prime MMFs by assets under management as of 30 September 2012.
(b) Data are semi-annual until January 2011, and monthly thereafter (absent data points for January 2011, March-April 2011 and March 2012).

Chart 3.17 Investor perceptions: has your confidence in risk-weighted assets gone up or down?[a]



Source: Barclays Research.

(a) Based on survey responses of over 130 investors carried out in 2012 H1, of perceptions over the past year.

out in Section 2, the current accounting regime may prevent banks from provisioning in a timely manner against losses that they expect to suffer. And as the experience of Japan shows (Box 2), slow recognition of provisions could be associated with credit misallocation problems.

The need to move to an international accounting regime that uses forward-looking provisioning on an expected loss basis has been recognised internationally for some time.(1) But progress towards convergence on an agreed forward-looking framework between the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) has been much slower than requested by G20 leaders. New proposals are expected to be introduced shortly. But, even if agreed, implementation would come later, so problems will persist in the short term. The impact of this fault line may be particularly acute in the current low interest rate environment, should forbearance be high. Forborne loans may not incur a measurable loss or evidence of impairment and thus may not be provisioned for under the 'incurred loss' framework. This could increase uncertainty over UK banks' capital positions (Section 2) and act as a drag on lending.

…and opacity and variability of model-based estimates of capital adequacy.

The treatment of unexpected losses is an additional source of uncertainty over banks' capital adequacy positions. Banks' loss-absorbing capital requirements against credit risk are calculated on the basis of estimated risk weights attached to each asset. These in turn depend on estimates of probability of default and loss given default. Under the current system, larger banks can use their own models to estimate these default risk parameters.

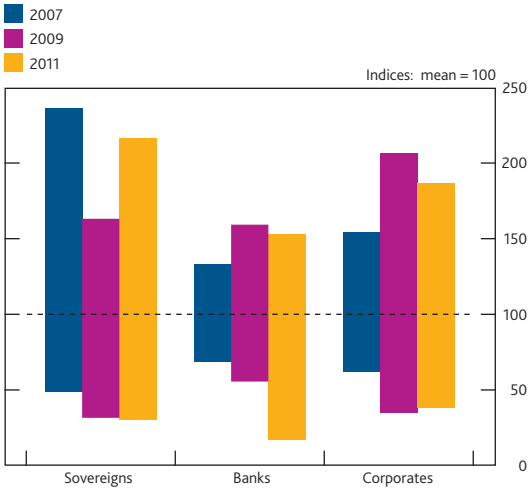
There is increasing doubt among investors over the robustness of these estimates due to their complexity and opacity. Investors find risk-weight calculations particularly difficult to scrutinise and appear to be losing confidence in the accuracy of risk-weighted assets (RWAs) as a result (**Chart 3.17**).

Portfolio exercises appear to justify market concern as they show a high degree of variability between banks…

Part of the difficulty in assessing banks' RWA calculations is distinguishing between differences that arise from portfolio risk and asset quality and those that arise from differences in models. To identify differences between banks' internal models, regulators have undertaken a number of exercises in which banks applied internal models to estimate key risk-weight parameters for a hypothetical portfolio of assets. This ensures that differences in calculated risk weights are down to differences in banks' modelling approaches, rather than differences in the risk of the portfolios being assessed. In

(1) G20 leaders communiqué of 2 April 2009 and 'Overview of progress in the implementation of the G20 recommendations for strengthening financial stability: report of the Financial Stability Board to G20 leaders', 18 June 2010.

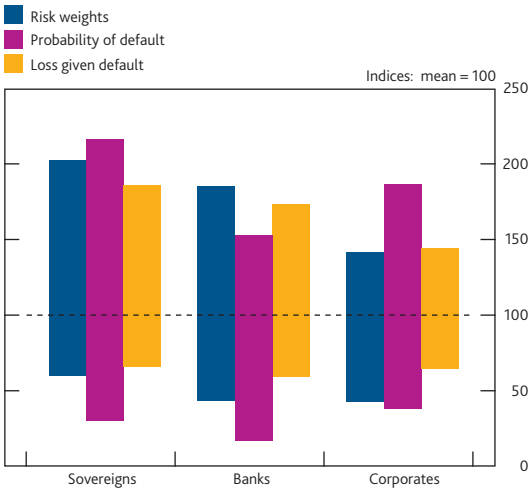
Chart 3.18 Variability of probability of default estimates from 2007–11[a][b][c][d]



Sources: FSA and Bank calculations.

(a) Based on the results of the FSA's hypothetical portfolio exercises for 2007, 2009 and 2011.
(b) Results are based on portfolios comprising assets rated by all respondents in the sample (co-rated).
(c) Portfolios differ between the exercises in 2007, 2009 and 2011. Results have been normalised to mean = 100 to improve comparability between years and categories. Chart shows minimum-maximum ranges.
(d) Sample sizes (of respondents) differ: six to twelve in 2007; seven to thirteen in 2009, depending on portfolio; and eight in 2011.

Chart 3.19 Variability of overall risk weights, probability of default and loss given default estimates in 2011[a][b][c][d]



Sources: FSA and Bank calculations.

(a) Based on the results of the FSA's hypothetical portfolio exercise for 2011. 'Risk weights' are estimated proxy risk-weighted asset statistics.
(b) Within a category (sovereigns, banks, corporates), portfolios for each of the metrics (risk weights (RW), probability of default (PD) and loss given default (LGD)) differ. Portfolios for each metric in each category comprise only co-rated assets.
(c) Results have been normalised to mean = 100. Chart shows minimum-maximum ranges.
(d) Sample sizes (of respondents) differ by metric: eight for PD, six for LGD and RW.

all three hypothetical portfolio exercises (HPE) undertaken to date by the FSA, variability of probability of default estimates has been very high (**Chart 3.18**). For example, the estimated probability of default for the sovereign portfolio at the most prudent bank was around seven times higher than that of the most aggressive in 2011. The 2011 HPE also revealed high levels of variability for estimates of loss given default. Overall risk-weighted assets calculated using the HPE data showed very high variation (**Chart 3.19**), with estimated capital requirements for the most prudent banks that were well over three times as high as those of the most aggressive banks for the same portfolios of exposures. This could imply that banks are financing portfolios of similar risk with widely varying amounts of equity capital.

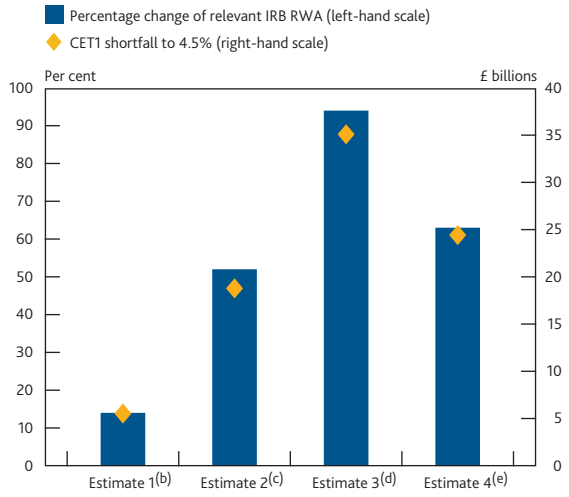
There is also some evidence that certain banks may assign systematically lower risk weights across portfolios relative to their peers. This could indicate a less conservative approach to assessing risk for these portfolios. Should this be indicative of risk-weight calculations for their own portfolios, there is a risk that these banks' capital positions are overstated. Variability in RWA calculations that is not due to differences in portfolio risk is also likely to increase market participants' uncertainty over banks' capacity to absorb losses. More generally, even if banks and regulators agree on the appropriate calculation of risk, that might still understate the true level of risk.

…potentially contributing to overstated capital ratios.

There are practical and conceptual difficulties in estimating the degree to which capital ratios may be overstated through inconsistencies in risk weights. First, the information available through exercises such as the HPE offers comparisons between banks rather than an absolute view on the true level of risk. Second, comparative information is only available for the hypothetical portfolios included in the exercise, and thus captures a limited proportion of banks' balance sheets. Nevertheless, some illustrative experiments drawing on the portfolio information available can be useful in illustrating the impact of an understatement of RWAs on capital ratios. **Chart 3.20** summarises the results of such an exercise, based on replacing banks' own RWA estimates with alternative approaches.

The first estimate draws on data submitted to the FSA's 2011 HPE. This controls for portfolio risks, but only covers a proportion of balance sheets, excluding important exposures such as mortgage books. The second approach identifies the most conservative risk weights for internally rated portfolios based on banks' actual average risk weights across those portfolios, but does not control for portfolio variation. And finally, estimates are presented for regulatory-specified risk weights (Basel I and Basel II standardised risk weights). These latter two estimates relate more directly to the actual portfolios than the first approach, and control for portfolio risk to some degree, but are based on strong assumptions.

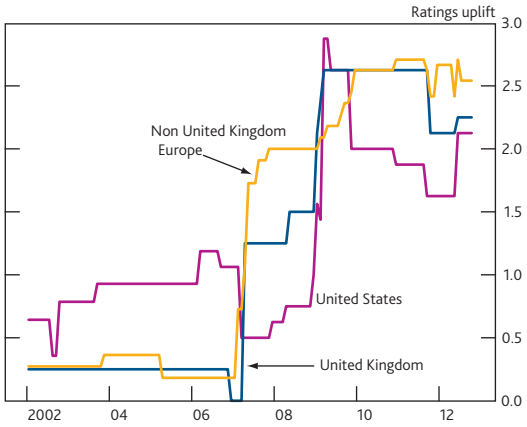
Chart 3.20 Capital increases required for alternative assessments of risk weights[a]



Sources: FSA hypothetical portfolio exercise (HPE) 2011, FSA regulatory returns, published accounts and Bank calculations.

(a) Experiments cover Barclays, HSBC, LBG and RBS. Trading book assets are excluded from the experiment.
(b) This estimate uses the FSA's HPE to scale up banks' own risk weights to that of the most conservative bank in the sample of four banks.
(c) This estimate uses actual average risk weights of banks across portfolios, replacing their risk weights with the most conservative estimate for each portfolio.
(d) This estimate applies Basel I risk weights to banks' internal ratings-based (IRB) portfolios.
(e) This estimate applies Basel II standardised risk weights to banks' IRB portfolios.

Chart 3.21 Average 'ratings uplift' for US, UK and European global systemically important banks[a][b][c]



Sources: Financial Stability Board, Moody's and Bank calculations.

(a) Ratings uplift for all banks is calculated as the number of rating notches equivalent to Senior Unsecured (Domestic) debt rating minus Banks' Financial Strength.
(b) Where these indicators are not available, where possible, alternatives have been used such as Senior Unsecured (Foreign) or Senior Unsecured MTN (Foreign).
(c) Where a merger has taken place, the ratings for the largest constituent bank involved were used for the period prior to the merger.

Underestimated risk weights due to miscalibration of trading book risks would add to these results. Nevertheless, relative to a 4.5% common equity target, these alternative scenarios suggest that capital ratios for the largest banks in the United Kingdom could be overstated by the equivalent in capital terms of between £5 billion and £35 billion.

Shortcomings of the current resilience framework may impede banks' access to capital markets.

Uncertainty over banks' solvency positions due to backward-looking provisioning methodologies and opaque risk-weighting practices may be a factor explaining banks' low market valuations and may impair their ability to raise capital.

In addition to work by the IASB and FASB on improvements to provisioning, a number of other international initiatives to mitigate these issues are also under way. The Enhanced Disclosure Task Force, a private sector group initiated by the FSB, has published a comprehensive report that sets out measures to improve the disclosure of risks by banks and other financial institutions. And the Basel Committee is carrying out a detailed review of the calculation of risk-weighted assets, which is expected to finish shortly. The recent Liikanen Group report has also encouraged further investigation, and the EBA is also considering this issue.

Rating agencies continue to include potential for government solvency support in bank ratings…

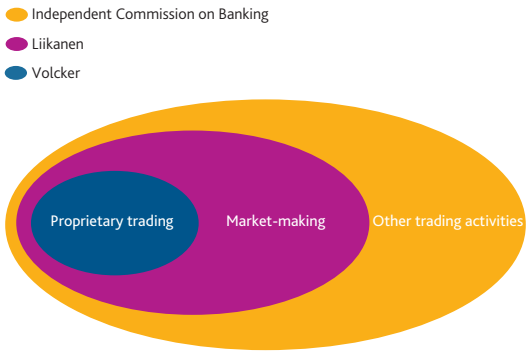
The existence of systemically important banks raises a number of policy concerns that cannot be mitigated through improvements to capital and funding frameworks alone. As discussed in the December 2010 *Report*, these are institutions whose size, interconnectedness, complexity, lack of substitutability or global scope makes them difficult to resolve. Credit rating agency commentary indicates that the possibility of solvency support is still being factored in for many of these banks. And the difference between 'stand-alone' and overall ratings including public support remains higher than before the crisis. **Chart 3.21** shows this for a set of global systemically important banks as recently listed by the FSB. Some rating agencies have reduced the ratings uplift for UK banks, reflecting reforms under way. But larger banks still benefit from higher overall ratings, reflecting a possibility of future solvency support.

…but reforms are under way.

Initiatives are under way to tackle the problem of banks being considered too important to fail. The FSB, as part of its work for G20 Leaders, developed a set of 'Key attributes of effective resolution regimes for financial institutions'. These aim to make the resolution of banks feasible, without severe systemic disruption and without exposing taxpayers to loss.

Complementary to this, proposals to change banks' structure have been developed. While they differ in design and intent, a

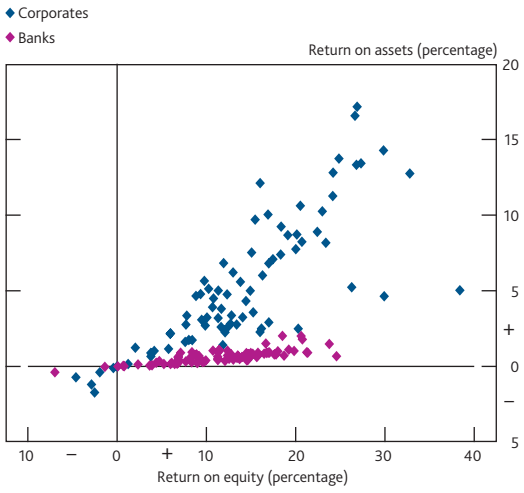
Chart 3.22 Comparison of activities prohibited for deposit-taking entities under different structural reform proposals(a)



Sources: Bank of England, High-level Expert Group on reforming the structure of the EU banking sector, Dodd-Frank Wall Street Reform and Consumer Protection Act and Independent Commission on Banking (2011), *Final Report: Recommendations*.

(a) This diagram illustrates trading activities that would typically be prohibited from being undertaken by a deposit-taking entity, though they may be permissible in other parts of banking groups, or where required for the efficient provision of services permitted to the deposit-taking entity. It does not reflect geographical restrictions.

Chart 3.23 Historical return on equity and return on assets for banks and non-bank corporates(a)



Sources: Bloomberg and Bank calculations.

(a) This shows return on assets and return on equity over the period 2000–11 for a global sample of the largest 80 banks and 80 non-bank corporate institutions by assets for which data were available.

common feature is ring-fencing or separation of activities to reduce risk transmission from investment banking to deposit-taking activities. The main proposals in this area are: the Volcker rule, which prohibits banking entities from engaging in proprietary trading; the recommendations of the Independent Commission on Banking in the United Kingdom, which require legal, economic and financial separation of deposit-taking activities,(1) and for which draft legislation has entered into pre-legislative scrutiny; and, more recently, the Liikanen Group report, which proposes that trading activities be placed in a separate legal entity within the same European banking group. **Chart 3.22** illustrates the relationship between these sets of proposals.

Measures to deal with non-banks of potential systemic importance are also being developed.

Looking beyond banks, other entities, such as insurers and central counterparties (CCPs), have potential to be systemically important. This is reflected in work by the International Association of Insurance Supervisors, under the purview of the FSB, to identify global systemically important insurers and develop policy recommendations. The Committee on Payment and Settlement Systems, together with IOSCO, has recently published its 'Principles for financial market infrastructures' that raise resilience standards for CCPs.

In the United Kingdom, HM Treasury has introduced draft legislation to extend resolution powers to CCPs, as well as certain other non-banks. And the European Commission has issued a consultation paper on a possible framework for the recovery and resolution of non-bank financial institutions, including CCPs and insurers, drawing on the FSB 'Key attributes of effective resolution regimes for financial institutions'.

Some limited progress on performance metrics has improved incentives, but distortions remain.

As noted in the June 2012 *Report*, banks may face other incentive distortions through flawed performance targets, potentially inducing them to make decisions without considering the full implications for long-term business performance. Common issues are a lack of risk adjustment and overly short time periods over which performance is judged. For example, over the 2000–11 period, banks pursued return on equity targets by taking risk through high leverage given a low return on assets (**Chart 3.23**). Such distortions are also reflected in some remuneration contracts. For example, variable pay can sometimes be contingent on non risk-adjusted performance measures, such as return on equity or earnings per share, skewing incentives towards excessive risk-taking. And deferral periods may be short relative to the impact of decisions taken, making it difficult to evaluate performance correctly. This can be exacerbated by poor malus arrangements, where they are not robust enough

(1) *Financial Stability Report*, December 2011, page 54.

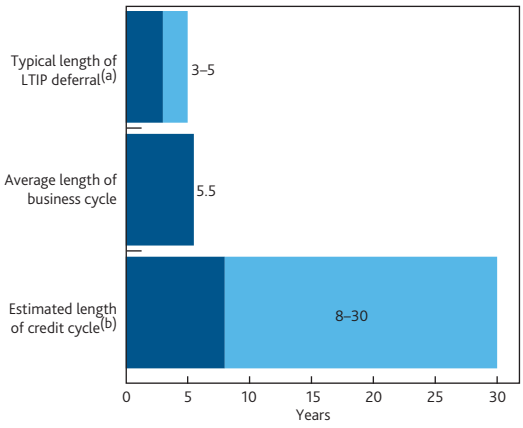
to ensure that pay can be reduced retrospectively. Incentive distortions may also arise as a consequence of the composition of pay — that is, the proportion of pay paid in cash and in non-cash instruments such as shares, share-linked instruments or debt.

Some of the shortcomings of current performance metrics may be due to short-termism, where managers, shareholders and investors prioritise short-term gain to the detriment of longer-term performance. A typical example is banks' treatment of earnings, where short-term action to avoid a negative return may be at the expense of longer-term investment. Research suggests a number of factors driving such actions.(1) One of these is pressure by capital markets to meet specific short-term performance benchmarks.

Recently, certain banks have announced changes to performance metrics, and remuneration contracts in particular, which lean against short-termism — for example, longer deferral periods, restrictions on selling stock awarded as pay, and greater power to apply malus. It is an open question whether these improvements are a reflection of the current economic environment and low bank profitability or a structural shift to a longer-term, more risk-sensitive approach. Short-termist approaches remain an issue despite these improvements. For example, as **Chart 3.24** shows, the typical assessment periods for long-term incentive plans remain shorter than the period over which the full impact of decisions and transactions might be identified. The mean business cycle — fluctuations in investment, spending and output across an economy — has been estimated at five and a half years. And the medium-term credit cycle — fluctuations in lending and other types of credit provision across an economy — has been estimated to last between eight and 30 years.

Internationally, the FSB has developed 'Principles and standards for sound compensation practices' designed to align compensation with prudent risk-taking. This has been reflected in the United Kingdom through a remuneration code transposing EU legislation covering remuneration practices at banks. The recent report by the High-level Expert Group on reforming the structure of the EU banking sector also discusses remuneration structures, proposing that debt instruments that could be written down and/or converted in a bank resolution should form part of top management remuneration.

Chart 3.24 Typical length of deferral in long-term incentive plans (LTIPs) relative to cycles



Sources: Drehmann, M, Borio, C and Tsatsaronis, K (2012), 'Characterising the financial cycle: don't lose sight of the medium term!', *BIS Working Paper No. 380*, NBER, published accounts and Bank calculations.

(a) LTIPs paid to executive directors at the following UK banking groups: Barclays, HSBC, LBG and RBS. The range of deferral length is shown by the light blue bar.
(b) The minimum and maximum estimates for the length of the medium-term credit cycle are represented by the light blue bar.

(1) Graham, J R, Harvey, C R and Raigopal, S (2005), 'The economic implications of corporate financial reporting', *Journal of Accounting and Economics*, Vol. 40, pages 3–73; Bhojraj, S, Hribar, P, Picconi, M and McInnis, J (2009), 'Making sense of cents: an examination of firms that marginally miss or beat analyst forecasts', *Journal of Finance*, Vol. 64, pages 2,360–88; Burgstahler, D and Dichev, I (1997), 'Earnings management to avoid earnings decreases and losses', *Journal of Accounting and Economics*, Vol. 24, pages 99–126; and DeGeorge, F, Patel, J and Zeckhauser, R (1999), 'Earnings management to exceed thresholds', *Journal of Business*, Vol. 72, No. 1, pages 1–33.

Box 3
Implementation of reforms to OTC derivatives markets

In 2009, G20 leaders agreed a number of improvements to over-the-counter derivatives (OTCD) markets. These included a requirement that standardised products be traded on exchanges or electronic platforms where appropriate, and cleared through central counterparties (CCPs), as well as a requirement that transactions be reported to trade repositories. These reforms should help to mitigate systemic risk in OTCD markets by improving risk management, reducing interconnectedness and improving transparency. Legislation to underpin many of these measures has now been passed in major jurisdictions and they are beginning to be implemented.(1)

This box examines some of the key remaining challenges to be tackled in the reform of OTCD markets. It discusses margin requirements for non-centrally cleared OTCD; challenges from the expansion of central clearing; requirements to use trading platforms for OTCD, where legislative reforms are yet to be completed; and the cross-border application of the reforms.

Margin requirements for non-centrally cleared derivatives

Not all OTCD transactions will be sufficiently standardised to be centrally cleared. Exposures between market participants arising from these non-centrally cleared transactions may act as a source of systemic risk. In addition, non-standardised contracts might be used to evade central clearing mandates.

To mitigate these risks, the Basel Committee on Banking Supervision (BCBS) and the International Organization of Securities Commissions (IOSCO) have proposed margin requirements for OTCD that are not cleared by CCPs. BCBS and IOSCO released a consultative report in July.(2) This proposed that, for all non-centrally cleared OTCD, both 'variation' and 'initial' margin should be exchanged on a two-way basis between all financial firms and certain non-financial firms.(3) Variation margin secures the gains on one party's positions as they arise. Initial margin is held to protect a party against the potential future exposures it faces following the default of its counterparty.

Although the exchange of variation margin between market participants is already common, the proposal to require universal two-way exchange of initial margin is a substantial change from current market practice.

The aggregate amount of collateral needed to meet these requirements may be significant. The June 2012 *Report* presented a Bank staff estimate of an additional collateral requirement of between US$50 billion and US$200 billion for non-centrally cleared interest rate swaps (IRS) and credit default swaps (CDS) under certain assumptions.(4) But in this and other studies, significantly higher numbers are obtained when different assumptions are used, in particular about the degree to which positions can be netted.

The key financial stability benefit of imposing margin requirements on these transactions is that it lowers the probability that losses will spill over to the defaulter's surviving counterparties and to the broader financial system. Posting collateral will also increase the cost of transacting in non-centrally cleared OTCD markets, helping to correct the mispricing of risk that was evident during the 2007/08 crisis. This may encourage market participants to reduce activity in these markets. To the extent that this limits the build-up of leverage through OTCD positions and reduces intra-financial sector interdependencies, this should have financial stability benefits.(5)

The shift to securing these exposures with collateral may, however, have implications for other sources of risk.

As discussed in Section 3.2, relying on collateral can introduce new risks, replacing counterparty credit risk with liquidity and credit risk on the collateral. Falls in collateral value may trigger additional margin calls in a procyclical way, potentially forcing market participants to sell assets to meet these calls and exacerbating market stress. This risk may be greater if collateral holdings are concentrated in a narrow range of assets. Setting margin and haircut requirements prudently can help to reduce this risk.

Greater collateralisation may also lead to new interconnections being created — for example, as counterparties without ready access to eligible collateral source such collateral from elsewhere in the system. These 'collateral upgrade' trades may increase financial system opacity.(6) In addition, greater reliance on collateral may reduce the overall level of capital requirements in the system and increase asset encumbrance, as discussed in the June 2012 *Report*.

Some of these issues were recognised in BCBS-IOSCO's consultative report. For example, comment was sought on the use of an exposure threshold before initial margin is required to be called, which might mitigate the collateral impact of the proposals while still achieving the key financial stability benefits. BCBS and IOSCO are now working to finalise the requirements.

Expansion of central clearing

Mandatory central clearing is beginning to be introduced in some jurisdictions.[7] As well as expanding the scope and volume of transactions cleared through CCPs, clearing mandates will also require 'buy-side' firms (eg asset managers, hedge funds, insurers, non-exempt non-financial firms) that have not traditionally participated in central clearing of OTC products to begin doing so. These firms are not generally expected to join CCPs directly. Rather, they will most likely access CCPs as clients of clearing members.

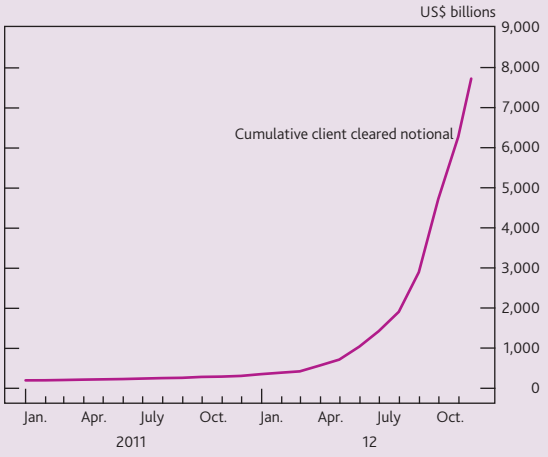
CCP clearing increases the scope for multilateral netting, whereby networks of bilateral exposures are replaced by single exposures to the CCP. Client clearing also allows buy-side firms to benefit from the risk management practices of CCPs. But it may also give rise to risks. Market contacts suggest that client clearing may become concentrated among a small number of direct clearing members, increasing the risk of disruption should such a clearing member fail. Further, some client positions may be large. If these large positions become more concentrated in a few clearing members, this may increase risks to those clearing members and to the CCP if the viability of a clearing member is threatened.

In anticipation of rules mandating the central clearing of certain OTCD in the United States and the EU becoming effective from 2013, volumes of trades submitted for clearing by clearing members on behalf of their clients have increased (**Chart A**). But client clearing volume in OTCD such as IRS and CDS generally remains low in absolute terms. The outstanding size of inter-dealer trades cleared by LCH.Clearnet Ltd, the largest IRS CCP, is more than 100 times higher than client transactions cleared. Some commentators have expressed concern about the readiness of many clients for the start of mandatory clearing; and about the operational capacity of clearing members to accept all clients that require access to central clearing.

Anticipation of mandatory clearing obligations, and of lower capital charges for trades that are centrally cleared, may also be contributing to changes in the structure of the clearing industry. There is evidence of an increase in the number of CCPs clearing or preparing to clear the same OTCD products, particularly IRS and CDS. Some CCPs have been designed to serve a particular market; others will operate globally. An increase in the number of CCPs serving a market may lead to a loss of netting benefits. Competition between CCPs could also create an incentive for a weakening of risk controls over time, as they compete for business. However, the presence of multiple CCPs may mitigate single point of failure risk.

Regulators have recognised that the G20 commitments may concentrate risks in CCPs, thereby increasing reliance on the safe functioning of these infrastructures. In January 2012, the FSB identified four 'safeguards' for a resilient and efficient global framework for central clearing: (i) fair and open access by market participants to CCPs, based on transparent and objective criteria; (ii) co-operative oversight arrangements between all relevant authorities, both domestically and internationally, that result in robust and consistently applied regulation and oversight of global CCPs; (iii) resolution and recovery regimes that ensure the core functions of CCPs are maintained during times of crisis and that consider the interests of all jurisdictions where the CCP is systemically important; and (iv) appropriate liquidity arrangements for CCPs in the currencies they clear.[8]

Chart A LCH.Clearnet Ltd IRS client clearing volumes[a]



Source: LCH.Clearnet Ltd.

(a) Monthly cumulative cleared notional.

Trading platforms

As part of the G20 reforms, many OTCD will have to be traded on exchanges or electronic trading platforms. Legislation specifying the scope of the trading obligation as well as the set of eligible trading venues is currently being developed. A key challenge is to achieve this migration to electronic trading platforms without impairing market liquidity. A wide range of trading models currently exists to trade OTCD, thus offering market participants a choice both in trade execution and transparency. This choice is often most valuable during periods of episodic illiquidity.[9]

Cross-border implementation

The OTCD market is global in nature. Inconsistencies in national regulatory regimes therefore have the potential to disrupt the effectiveness of the market by prompting fragmentation and, in the extreme, by making some cross-border trades impossible. There are, for example, reports that some market participants are reluctant to execute OTCD with US-based entities to avoid falling under certain requirements of the Dodd-Frank Act. Differences in regulatory

approach across jurisdictions also risk regulatory arbitrage, which may frustrate the achievement of the G20 objectives. In its latest report on the implementation of the OTCD market reforms, the FSB called for greater co-ordination regarding the cross-border application of national regulations.(10)

(1) For example, in the United States, the Dodd-Frank Act was enacted in July 2010. The EU Regulation on OTC Derivatives, Central Counterparties and Trade Repositories (EMIR) came into effect in August 2012. The 2012 FSB report 'OTC derivatives market reforms: fourth progress report on implementation' describes progress made by the G20 jurisdictions to implement the reforms.
(2) BCBS and IOSCO (2012), *Margin requirements for non-centrally-cleared derivatives*.
(3) Comment was sought on the case for exempting FX swaps and forwards.
(4) Sidanius, C and Zikes, F (2012), 'OTC derivatives reform and collateral demand impact', *Bank of England Financial Stability Paper No. 18*.
(5) But, to the extent that increased costs discourage end-users from using OTCD to hedge risks, or incentivise them to use standardised derivatives that offer less perfect hedges, these entities may be more exposed to financial risk.
(6) *Bank of England Financial Stability Report*, June 2012.
(7) In Japan, mandatory central clearing for index-based CDS and certain plain vanilla yen-denominated IRS came into effect on 1 November 2012. And in a recent speech, the CFTC indicated that clearing obligations may start to become effective in the United States as early as February 2013 (Gensler, G (2012), 'The new era of swaps market reform', 10 October). FSB (2012), 'Jurisdictions' declared approaches to central clearing of OTC derivatives', provides further information.
(8) FSB (2012), 'OTC derivatives market reforms: third progress report on implementation'.
(9) Smyth, N and Wetherilt, A (2011), 'Trading models and liquidity provision in OTC derivatives markets', *Bank of England Quarterly Bulletin*, Vol. 51, No. 4, pages 331–40.
(10) FSB (2012), 'OTC derivatives market reforms: fourth progress report on implementation'.