

# Financial Stability Report

July 2015 | Issue No. 37



BANK OF ENGLAND



On 17 May 2016 the values for 'Spreads on new residential mortgage lending — Buy-to-let mortgages' in Table A.3 on page 58 were corrected for errors in the time series.



BANK OF ENGLAND

# Financial Stability Report

Presented to Parliament pursuant to Sections 9W(10) and 9K(3) of the Bank of England Act 1998 as amended by the Financial Services Act 2012.

July 2015





BANK OF ENGLAND

# Financial Stability Report

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The primary responsibility of the Financial Policy Committee (FPC), a sub-committee of the Bank of England's Court of Directors, is to contribute to the Bank of England's objective for maintaining financial stability. It does this primarily by identifying, monitoring and taking action to remove or reduce systemic risks, with a view to protecting and enhancing the resilience of the UK financial system. Subject to that, it supports the economic policy of Her Majesty's Government, including its objectives for growth and employment.

This *Financial Stability Report* sets out the FPC's view of the outlook for UK financial stability, including its assessment of the resilience of the UK financial system and the current main risks to financial stability, and the action it is taking to remove or reduce those risks. It also reports on the activities of the Committee over the reporting period and on the extent to which the Committee's previous policy actions have succeeded in meeting the Committee's objectives. The *Report* meets the requirement set out in legislation for the Committee to prepare and publish a *Financial Stability Report* twice per calendar year.

In addition, the Committee has a number of duties, under the Bank of England Act 1998. In exercising certain powers under this Act, the Committee is required to set out an explanation of its reasons for deciding to use its powers in the way they are being exercised and why it considers that to be compatible with its duties.

## **The Financial Policy Committee:**

Mark Carney, Governor

Jon Cunliffe, Deputy Governor responsible for financial stability

Andrew Bailey, Deputy Governor responsible for prudential regulation

Ben Broadbent, Deputy Governor responsible for monetary policy

Martin Wheatley, Chief Executive of the Financial Conduct Authority

Alex Brazier, Executive Director for Financial Stability Strategy and Risk

Clara Furse

Donald Kohn

Richard Sharp

Martin Taylor

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

This document was delivered to the printers on 30 June 2015 and, unless otherwise stated, uses data available as at 19 June 2015.

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



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# Executive summary

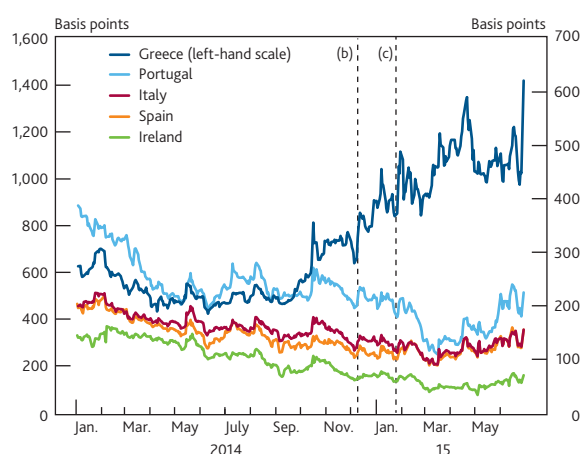
The Financial Policy Committee assesses the outlook for financial stability by identifying the risks faced by the financial system and weighing them against the resilience of the system. Part A of this *Report* identifies the major risks which, in the Committee's judgement, are facing the UK financial system and Part B reports on the resilience of the system. The composition of risks has shifted and the resilience of the system has continued to improve since the December *Report*. Overall, the Committee judges that challenges remain. It judged the outlook for financial stability to have been broadly unchanged over much of the period since December but, as risks associated with Greece began to crystallise in recent days, the outlook had worsened.

The Financial Policy Committee (FPC) has identified the main risks facing the financial system in the United Kingdom as: the global environment; the reduction in market liquidity in some markets; the United Kingdom's current account deficit; the housing market in the United Kingdom; consequences of misconduct in the financial system; and cyber attack. Some risks, particularly around Greece and emerging market economies, have increased since December. Some other risks have declined. Notably, some risks associated with low growth in advanced economies moderated as growth prospects in the euro area improved following actions by the European Central Bank (ECB).

These risks are weighed against the resilience of the financial system, which, as Part B highlights, has continued to strengthen. There has been a modest improvement in the distribution of household debt. Major UK banks have continued to improve capital and funding positions and now report an average common equity Tier 1 (CET1) capital position above 11%. The average leverage ratio is 4.4%. This capital position reflects, in part, the actions taken in response to the 2014 stress test of the major UK banks that captured some of the main risks judged by the FPC to be facing the system.

The FPC has completed its annual review of risks beyond the core banking sector by considering the channels through which activities undertaken by the non-bank financial system could affect UK financial stability. It has concluded on evidence currently available not to recommend a change in how these activities are regulated. But as discussed below it has concerns over market liquidity and it intends to undertake a regular deep analysis of a range of activities. This will start over the next year with the investment activity of investment funds and hedge funds, the investment and non-traditional, non-insurance activities of insurance companies, and securities financing and derivatives transactions.

**Chart A** Greek government bond spreads have risen sharply  
Selected ten-year government bond spreads to German bunds<sup>(a)</sup>



Sources: Thomson Reuters Datastream and Bank calculations.

- (a) Data up to 29 June.  
(b) Greek Prime Minister Samaras announces early elections.  
(c) Syriza wins election.

## Global environment (pages 12–15)

Some risks from advanced economies have diminished since December. In the euro area, policy action by the ECB has reduced tail risks associated with deflation and high indebtedness. However, at the time of its meeting on 24 June, the FPC judged that the risks in relation to Greece and its financing needs were particularly acute (**Chart A**). Subsequently, those risks began to crystallise. Following the Greek government's decision to call a referendum on the terms of the creditors' proposal, negotiations over an extension to the European Financial Stability Facility (EFSF) programme of financial assistance for Greece, expiring on 30 June, broke off. The Eurogroup then decided not to extend that programme beyond 30 June and the ECB subsequently decided not to raise the ceiling on its Emergency Liquidity Assistance. Just before this *Report* was finalised, Greek authorities imposed a bank holiday and associated capital controls.

The direct exposures of UK banks to Greece are very small. Exposures to peripheral euro-area economies are more significant,

amounting to 60% of CET1 capital. The institutional changes and development of policy tools in the euro area since 2012, alongside economic recovery, the reduction in fiscal deficits in a number of other euro-area Member States and strengthening of banking systems, have all contributed to a reduction in the risk of contagion. On 27 June, euro-area Finance Ministers stated their intent to make full use of all the instruments available to preserve the integrity and stability of the euro area. The ECB Governing Council also stated its determination to use all the instruments available within its mandate.

Nevertheless, the situation remains fluid. The FPC will continue to monitor developments and remains alert to the possibility that a deepening of the Greek crisis could prompt a broader reassessment of risk in financial markets.

The Bank has worked closely with HM Treasury, the FCA and European counterparts to put in place contingency plans. The UK authorities will continue to monitor developments and will take any actions required to safeguard financial stability in the United Kingdom.

After a period of strong capital inflows and rising private sector debt, a number of emerging market economies are experiencing slower growth and may face more difficult financing conditions (**Chart B**). In a number of these countries, businesses have issued a large volume of US dollar-denominated debt. The strengthening of the US dollar, alongside a potential eventual rise in US dollar interest rates, may pose a threat to the ability of those businesses to meet their obligations. Over the past year, the US dollar has appreciated by 18% against a basket of major emerging market economy currencies.

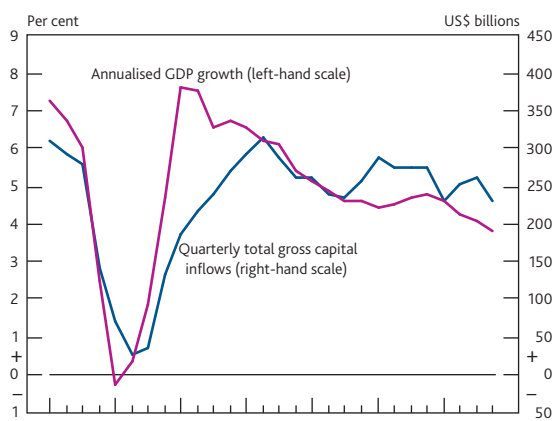
In China, growth has continued to slow since the December *Report* after a rapid build-up of indebtedness. Chinese equity markets have recently been very volatile following rapid increases over the past year. Policymakers continue to face challenges in sustaining growth, managing financial stability and moving towards greater openness. A sharp slowdown in China would be likely to have significant spillovers to the global economy.

UK banks' exposures to China, Hong Kong and emerging market economies amount to about 3.5 times CET1 capital (**Chart C**). So the FPC remains alert to developments and has incorporated stresses in Europe, China and emerging market economies into the 2015 stress test of major UK banks (see Box 3 on pages 38–39).

## Market liquidity (pages 16–19)

Some fixed-income markets have become less liquid. Average trade sizes and market depth have fallen and prices are more volatile, as manifest especially in some very sharp intraday price changes in important markets. Greater volatility does not itself threaten financial stability and, to the extent it reflects the introduction of prudential requirements on market-making

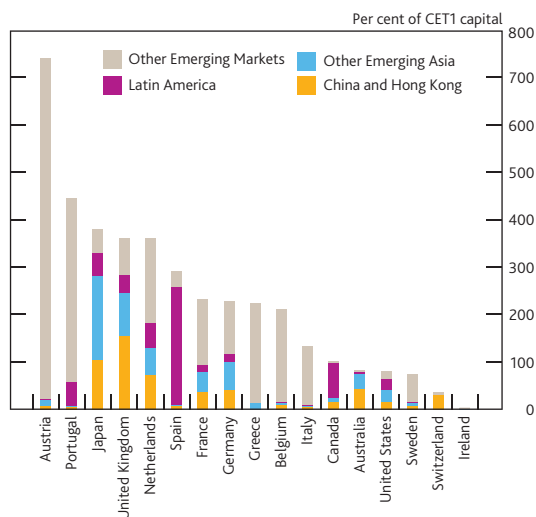
**Chart B Capital inflows to EMEs have moderated**  
EME GDP growth and capital inflows<sup>(a)</sup>



Source: IIF.

(a) Four-quarter moving averages.

**Chart C UK banks have significant exposures to Emerging Asia and Latin America**  
Major advanced economies' bank claims on EMEs<sup>(a)</sup>

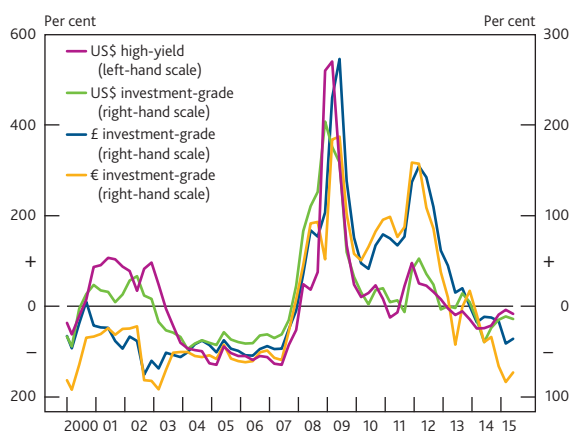


Sources: BIS Consolidated Banking Statistics, SNL Financial and Bank calculations.

(a) Foreign claims of domestically owned banks on an ultimate risk basis, as at 2014 Q4. CET1 capital as at 2014 H2, with the exception of Japan, where it is as at 2014 H1.

### Chart D Corporate bond liquidity risk premia remain below historical averages

Deviations of estimated corporate bond liquidity risk premia from historical averages<sup>(a)(b)</sup>



Sources: Bloomberg, BofA Merrill Lynch Global Research, Thomson Reuters Datastream and Bank calculations.

- (a) Implied liquidity risk premia are estimated using a Merton model as in Leland, H and Toft, K (1996), 'Optimal capital structure, endogenous bankruptcy, and the term structure of credit spreads', *Journal of Finance*, Vol. 51, pages 987–1,019, to decompose corporate bond spreads.
- (b) Quarterly averages of deviations of implied liquidity risk premia from sample averages. Sample averages are from 1999 Q4 for £ investment-grade and 1997 Q1 for US\$ investment-grade and US\$ high-yield.

intermediaries, it is associated with a welcome increase in the resilience of the core of the financial system.

However, the pricing of a range of securities seems at present to presume that they could be sold in an environment of continuous market liquidity. Estimates of the compensation investors require to bear liquidity risk are similar to before the crisis (**Chart D**). This could be a part of an ongoing search for yield in an environment of low risk-free interest rates and large-scale purchases of assets by central banks across advanced economies. Some reallocation of portfolios is an intended consequence of the stance of monetary policy. However, the compensation for bearing credit and liquidity risk in some markets has declined by more than may be warranted by the future economic and financial environment.

A repricing of risk would threaten financial stability if it were to generate sustained illiquidity in, and dislocation of, important financing markets for financial intermediaries and the real economy. This could also affect the resilience of the core banking system. The Committee is alert to this possibility. Market participants should also be alert to these risks, price liquidity appropriately and manage it prudently.

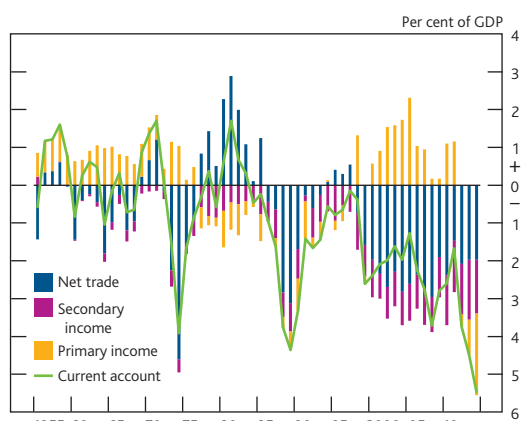
Recognising the risks, the Committee set out in March 2015 a programme of work to clarify the extent of any macroprudential risks associated with market liquidity. The final report from that work will be presented to the Committee in September. The Bank is also actively participating in a programme of international work through the Financial Stability Board (FSB) to assess these risks globally.

### UK current account deficit (pages 20–22)

The UK current account deficit, at 5.5% of GDP in 2014, is large by historical and international standards (**Chart E**). The United Kingdom continues to run a trade deficit, with weak demand in its major trading partners limiting export demand, but it is now also experiencing a primary income deficit, as the income earned by UK residents on their overseas investments has fallen in recent years. The United Kingdom has had a current account deficit for most of the period since the 1980s. The continued ease in financing these deficits rests on the credibility of the United Kingdom's macroeconomic policy framework and continuing openness to trade and investment. Analysis of the nature of the capital flows financing the deficit does not suggest a particular vulnerability in addition to the size of the deficit: most of the financing is from foreign direct investment, equity and longer-term debt including gilts. It is not currently associated with rapid growth of bank lending. There is no growing currency mismatch in the UK balance sheet, or in particular sectors of the financial system, so the United Kingdom's flexible exchange rate is able to act as a stabilising mechanism in the event of a shock. And the resilience of the UK banking system to an abrupt adjustment of the United Kingdom's external imbalance was assessed as part of the

### Chart E The UK current account deficit has widened in recent years

Decomposition of the UK current account<sup>(a)</sup>

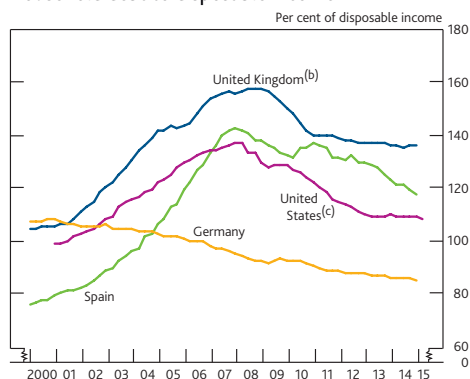


Sources: ONS and Bank calculations.

- (a) Primary income mainly consists of compensation of employees and net investment income. Secondary income consists of transfers.

## Chart F Household debt to income is high compared with other developed economies

Household debt to disposable income<sup>(a)</sup>

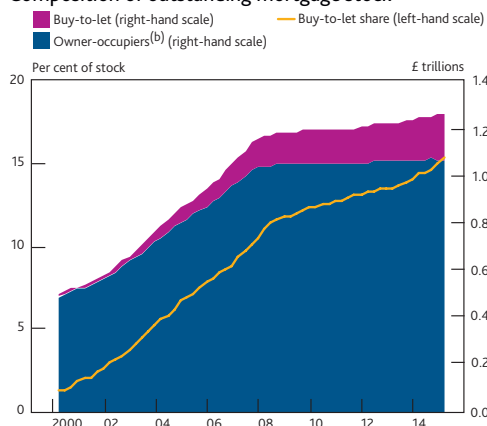


Sources: ECB Statistical Data Warehouse, Federal Reserve, ONS and Bank calculations.

- (a) Households' and non-profit institutions' total financial liabilities as a percentage of a four-quarter moving sum of their disposable income.  
 (b) Includes all liabilities of the household sector except for the unfunded pension liabilities and financial derivatives of the non-profit sector. The household disposable income series is adjusted for financial intermediation services indirectly measured.  
 (c) US debt to income measure not directly comparable with other countries due to inconsistent definitions of household sector as discussed in [www.statcan.gc.ca/pub/13-605-x/2012005/article/11748-eng.htm](http://www.statcan.gc.ca/pub/13-605-x/2012005/article/11748-eng.htm).

## Chart G Buy-to-let lending has accounted for most of the growth in mortgage stock since 2008

Composition of outstanding mortgage stock<sup>(a)</sup>

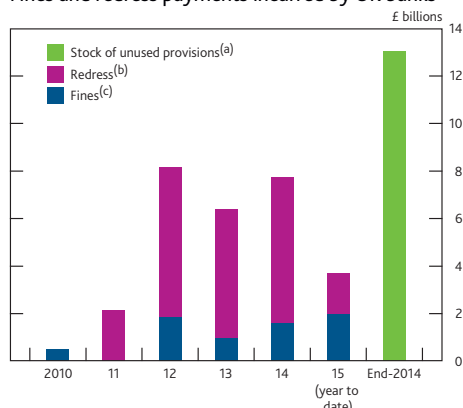


Sources: Bank of England, Council of Mortgage Lenders and Bank calculations.

- (a) Data are non seasonally adjusted.  
 (b) Lending to owner-occupiers is calculated as outstanding lending to individuals secured on dwellings less outstanding lending secured on buy-to-let properties.

## Chart H UK banks have continued to incur costs related to past misconduct

Fines and redress payments incurred by UK banks



Sources: European Commission, FCA, *Financial Times*, firm submissions, FSA and Bank calculations.

- (a) Major UK banks.  
 (b) For mis-selling PPI and interest rate hedging products, includes a small amount of redress paid by non-banks.  
 (c) Levied by US authorities, the FSA/FCA and the European Commission.

2014 stress test. But the FPC will continue to monitor the nature of capital inflows that finance the deficit.

## UK housing market (pages 23–26)

The FPC continues to monitor closely conditions in UK property markets given high household indebtedness. Aggregate UK household debt to income, while falling gradually since 2010, remains high compared to historical and international norms (Chart F). The distribution of debt has improved marginally, with the tail of households with debt to income ratios greater than 4.0 falling in early 2015. House prices and activity in the housing market have increased again recently, and mortgage rates on many mortgage products are historically low. House prices grew at an annual rate of 5.6% in the three months to May 2015, compared with 3% in 2014 Q4; and 68,000 mortgages were approved in April, compared with 60,000 per month in 2014 Q4. Given this, the FPC judges that the policies it introduced in June 2014 to insure against the risk of a marked loosening in underwriting standards and a further significant rise in the number of highly indebted households remain warranted. In the buy-to-let mortgage market, lending has continued to grow, with buy-to-let mortgage lending now accounting for 15% of the stock of outstanding mortgages and nearly 20% of the flow in 2015 Q1 (Chart G). As it set out in October 2014, HM Treasury will consult later this year on giving to the FPC the power of Direction to limit residential mortgage lending at high loan to value or high debt to income ratios, including interest coverage ratios, for buy-to-let lending. Parliament provided the equivalent powers to the FPC for owner-occupied lending in April this year.

## Misconduct (pages 27–30)

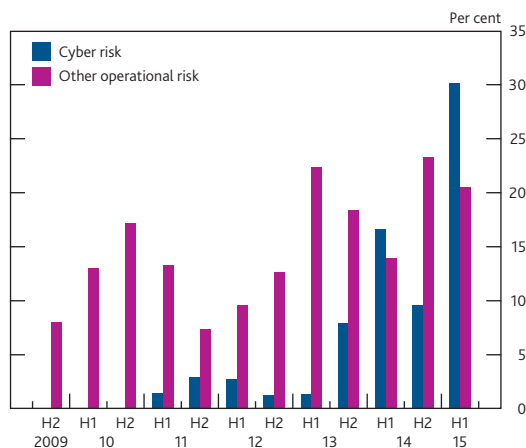
Addressing misconduct is essential for rebuilding confidence in the financial system. Misconduct has undercut public trust and hindered progress in rebuilding the banking sector after the crisis. It has also posed risks to systemic stability, with direct economic consequences. The fines and redress costs paid by UK banks, at £30 billion, are equivalent to around all of the capital that they have raised privately since 2009. Substantial progress has been made in identifying and addressing misconduct, including through reform both of regulation and market and firm-level structures, systems and controls. Further initiatives are set out in the Fair and Effective Markets Review, and the United Kingdom is leading work to shape standards internationally through the FSB. Firms must continue to make adequate provisions for the cost of additional redress (Chart H), align remuneration policy with risk-taking and ensure that accountability of key individuals is clear. The FPC will review the adequacy of sector-wide projections of future misconduct costs in the 2015 stress test.

## Cyber risk (pages 31–33)

The financial system continues to face operational risk from frequent cyber attacks and awareness of this risk continues to grow (Chart I). A UK Government survey in 2015 found that 90% of large businesses across all sectors had experienced a

### Chart I Concern about cyber risk has grown

*Systemic Risk Survey: proportion of respondents highlighting operational/cyber risk as a key concern*



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

malicious IT security breach in the previous year. These breaches can disrupt the financial sector's operational capacity to provide critical services to the economy. While in some areas the financial sector is leading efforts to combat cyber crime, the adaptive nature of the threat means that ways of managing this risk must evolve. As well as looking to build defensive resilience to threats, firms must build the capability to recover quickly from cyber attack, given the inevitability that attacks will occur. The evolving nature of the threat means that strong governance at the most senior levels of banks is required to build this capability in defensive resilience and recovery across technology and personnel.

With this in mind, the FPC has replaced its existing Recommendation with a new Recommendation to regulators that focuses on establishing a regular assessment of the resilience to cyber attack of firms at the core of the financial system. This will include the use of penetration testing developed in response to the FPC's June 2013 Recommendation (known as 'CBEST' tests).

The FPC recommends that:

The Bank, the PRA and the FCA work with firms at the core of the UK financial system to ensure that they complete CBEST tests and adopt individual cyber resilience action plans. The Bank, the PRA and the FCA should also establish arrangements for CBEST tests to become one component of regular cyber resilience assessment within the UK financial system.

The FPC is also asking the Bank, the PRA, FCA and HM Treasury to work together to consider how evolving capabilities in both defensive resilience and recovery would be best established across the financial system and at those firms that provide critical services to the financial system. This will also require effective co-operation with international authorities. The FPC will consider the need for further action based on the outcome of this work programme and has asked for a report by Summer 2016.

### Capital framework and countercyclical capital buffer decision

Most of the prudential regulatory reform requirements for banks have been set out — including through the FPC's formal implementation of the leverage ratio requirements it announced last year. The FPC will consider the methodology to determine capital buffers for ring-fenced banks and large building societies, and the overall capital framework for UK banks more broadly, in 2015 H2. This is as part of its medium-term priority of establishing the medium-term capital framework for UK banks that it set out in 2014 (see Box 4 on pages 40–41).

The FPC also has the responsibility for setting cyclical capital requirements, in the form of the countercyclical capital buffer (CCB), on a quarterly basis. The countercyclical capital buffer is a macroprudential instrument that enables the FPC to put banks in a better position to withstand stress through the financial cycle, by requiring them to raise capital ratios as threats to financial stability increase and allowing them to run them down if risks crystallise or if risks ease.

In considering the appropriate setting for the CCB, the FPC considered the risks facing the UK financial system set against the still modest recovery in credit extended to UK households and companies, increased resilience of the financial system and the action taken in response to the 2014 stress test of major UK banks. In the light of these, it decided at its June meeting to leave the countercyclical capital buffer rate for UK exposures unchanged at 0% (see Box 6 on page 51).

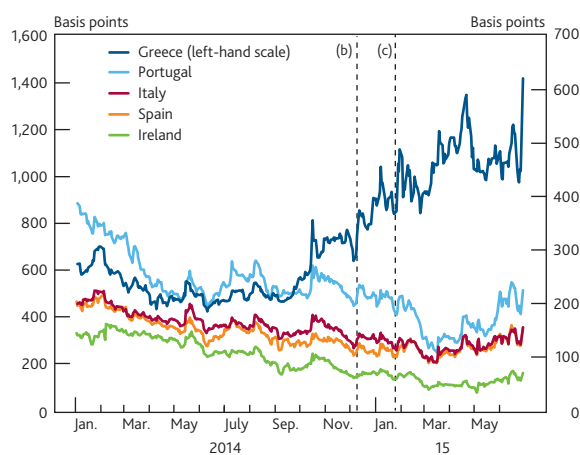


# A Global environment

Since the December 2014 *Report*, the launch of the European Central Bank's Public Sector Purchase Programme has meant that some risks to financial stability stemming from low growth in advanced economies have diminished. At the time of its meeting, however, the FPC judged that the risks in relation to Greece and its financing needs were particularly acute. The UK authorities will continue to monitor developments in relation to Greece and will take any actions required to safeguard financial stability in the United Kingdom. Risks associated with emerging markets have increased as growth has slowed and financing conditions tightened. In a number of countries, businesses have issued a large volume of US dollar-denominated debt, and the strengthening of the US dollar may pose a threat to their ability to meet their obligations. In China, growth continues to slow after a period of rapidly increasing debt and policymakers face challenges in sustaining growth, managing financial stability and moving towards greater openness. The FPC will assess UK banks' vulnerability to an EME downturn as part of the 2015 stress test.

**Chart A.1** Greek government bond spreads have risen sharply

Selected ten-year government bond spreads to German bunds<sup>(a)</sup>



Sources: Thomson Reuters Datastream and Bank calculations.

- (a) Data up to 29 June.  
 (b) Greek Prime Minister Samaras announces early elections.  
 (c) Syriza wins election.

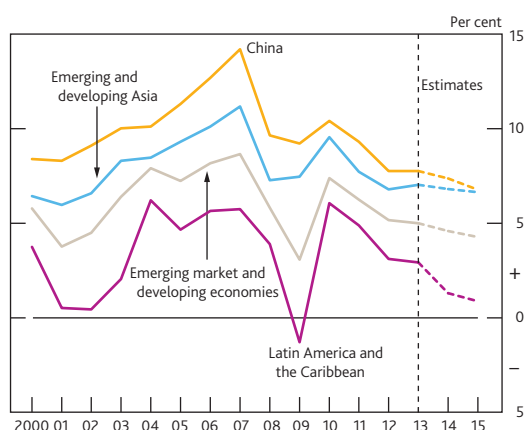
*The outlook for the euro area is showing signs of stabilisation but the risks in relation to Greece are acute.*

The ECB's Public Sector Purchase Programme, which commenced in March 2015, has reduced tail risks associated with a period of weak nominal growth in an environment of high indebtedness. Euro-area GDP growth was 0.4% in 2015 Q1, and the recovery is broadening as growth in Italy and France has strengthened.

At the time of its meeting, the FPC judged that the risks in relation to Greece and its financing needs were particularly acute. These risks were reflected in the spread of Greek sovereign bonds over bunds (**Chart A.1**), which had risen sharply, and in the liquidity position of Greek banks whose resilience is closely linked to the solvency of the Greek government and the maintenance of Emergency Liquidity Assistance (ELA) provided by the Bank of Greece.

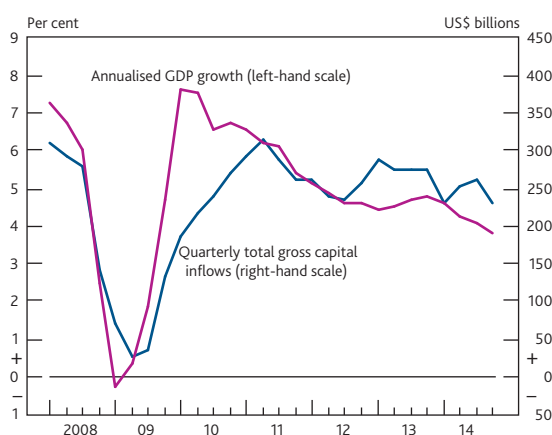
After the Committee's meeting on 24 June, those risks began to crystallise. Following the Greek government's decision to call a referendum on the terms of the creditors' proposal, negotiations over an extension to the European Financial Stability Facility (EFSF) programme of financial assistance for Greece, expiring on 30 June, broke off. The Eurogroup then decided not to extend that programme beyond 30 June and the ECB subsequently decided not to raise the ceiling on its ELA. Just before this *Report* was finalised, Greek authorities imposed a bank holiday and associated capital controls.

**Chart A.2 Growth in EMEs has continued to moderate**  
EME annual GDP growth



Source: IMF World Economic Outlook (April 2015).

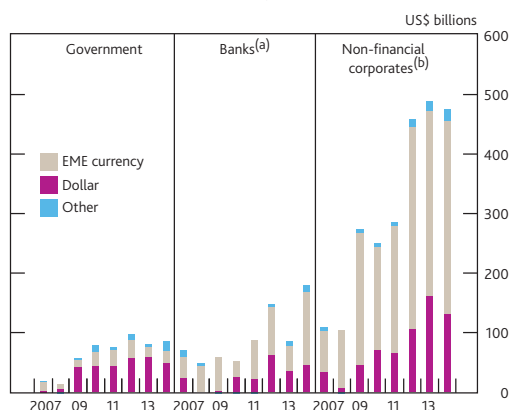
**Chart A.3 Capital inflows to EMEs have moderated**  
EME GDP growth and capital inflows<sup>(a)</sup>



Source: IIF.

(a) Four-quarter moving averages.

**Chart A.4 Issuance of dollar-denominated debt securities by EMEs has been strong**  
Annual net issuance of debt by EME borrowers



Sources: Dealogic and Bank calculations.

(a) Includes public and private sector banks.

(b) Non-financial corporates consists of non-financial public and private sector firms and finance vehicles of industrial and utility firms.

*The direct exposures of the UK banking system to Greece are small and the likelihood of contagion has fallen since 2012...*

Exposures to Greece are now less than 1% of UK banks' aggregate common equity Tier 1 (CET1) capital, and the Greek economy accounts for less than 2% of euro-area GDP (and 0.6%<sup>(1)</sup> of UK exports). At an aggregate level, major counterparties of UK banks are also not heavily exposed to Greece.

UK banks' exposures to peripheral euro-area economies are more significant, amounting to 60% of CET1 capital. The likelihood of contagion to other euro-area peripheral economies has fallen relative to the previous period of heightened stress in 2012. The euro-area economy is stronger and the ECB is undertaking large-scale purchases of euro-area sovereign bonds under its quantitative easing programme. Stronger policy tools and regulatory arrangements have also been put in place, including asset purchases by the ECB, Outright Monetary Transactions, the European Stability Mechanism, the Banking Recovery and Resolution Directive and the Single Supervisory Mechanism. The strengthening of banking systems and reduction in fiscal deficits in a number of euro-area Member States should further reduce the risk of contagion. On 27 June, euro-area Finance Ministers stated their intent to make full use of all the instruments available to preserve the integrity and stability of the euro area. The ECB Governing Council also stated its determination to use all the instruments available within its mandate.

*...nonetheless, some effects on other markets are to be expected and the possibility of broader impact remains.*

At the time of the Committee's meeting, the deterioration in risk sentiment towards Greece had not spilled over materially to other euro-area economies, though spreads of sovereign bonds over bunds had risen over the month (Chart A.1). Nevertheless, the situation remained fluid. Bulgarian, Italian, Portuguese, Romanian and Spanish sovereign bond spreads to bunds increased by around 30 to 45 basis points on 29 June.

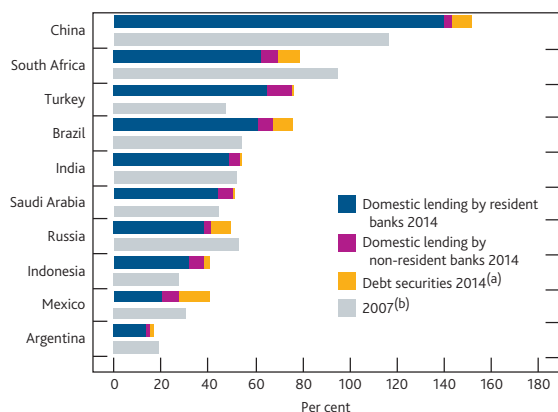
The FPC will continue to monitor developments and remains alert to the possibility that a deepening of the Greek crisis could prompt a broader reassessment of risk in financial markets. The associated reallocation of portfolios could test the liquidity of some markets (see Market liquidity section).

The Bank has worked closely with HM Treasury, the FCA and European counterparts to put in place contingency plans. The UK authorities will continue to monitor developments and will take any actions required to safeguard financial stability in the United Kingdom.

(1) There was an error in UK export percentage in the printed version of the Report published on 1 July 2015. This has been amended in the current version, republished online on 15 July 2015.

**Chart A.5 Private sector indebtedness has risen since 2007**

Non-bank private sector credit to GDP



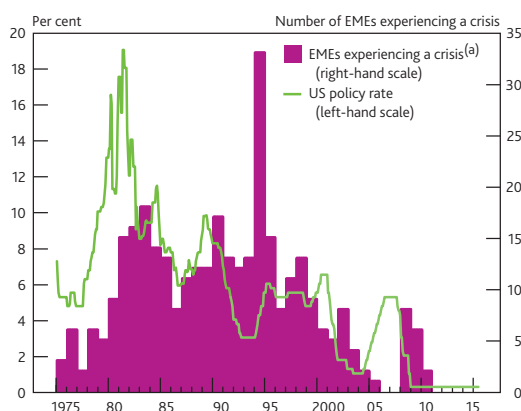
Sources: BIS, IMF (*International Financial Statistics* and *World Economic Outlook*) and Bank calculations.

(a) Outstanding domestic and international debt securities on a residency basis. Domestic debt securities data for India and Saudi Arabia are not available.

(b) 2007 bars are based on the same data as 2014 but are coloured grey for ease of read.

**Chart A.6 Normalisation of US monetary policy has been associated with an increase in incidences of EME crises**

US policy rate and incidences of EME crises

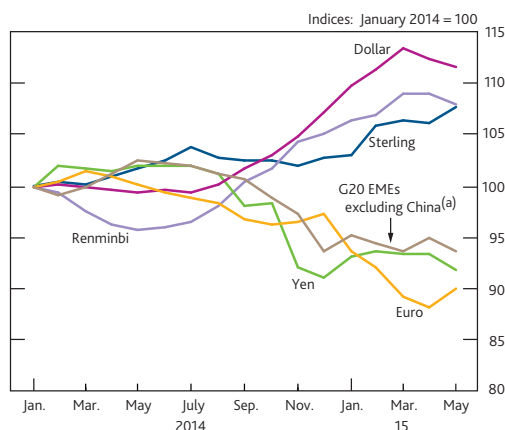


Sources: Laeven, L and Valencia, F (2012), 'Systemic banking crises database: an update', Thomson Reuters Datastream and Bank calculations.

(a) Data up to 2011.

**Chart A.7 The US dollar has appreciated against a basket of currencies**

Nominal effective exchange rates



Sources: BIS, IMF *World Economic Outlook* (April 2015) and Bank calculations.

(a) Weighted by annual GDP.

### *Growth continues to slow in emerging market economies.*

Following a strong initial recovery in the wake of the global financial crisis, aggregate GDP growth of emerging market economies (EMEs) has slowed gradually since 2010, and is now projected to be just 4.3% in 2015 (**Chart A.2**). Capital inflows to EMEs have also moderated (**Chart A.3**), which could contribute to an increase in the cost of financing for EME borrowers and affect their ongoing ability to refinance debt.

### *A reduction or a reversal of capital inflows could expose the build-up of vulnerabilities in some EMEs...*

Strong capital inflows to EMEs in recent years have been associated with lower costs of borrowing, rising private sector indebtedness and increased property prices. EME non-financial companies in particular increased their net issuance of debt securities in both local currency and in US dollars (**Chart A.4**), and are reliant on continued access to international capital markets to refinance maturing debt liabilities.

Across EMEs, the ratio of private sector credit to GDP averages 64% (**Chart A.5**). In 2007 it was 54%, and has risen particularly sharply in China, Brazil and Turkey. Real residential property prices have also increased by more than 20% over the past five years in some emerging Asian and Latin American economies. Rising debt-servicing costs could trigger a rise in defaults, lead to a potentially disorderly correction in property markets, and contribute to an increase in impairments on local banks' balance sheets.

### *...with issuers of dollar-denominated debt additionally exposed to an appreciation of the US dollar.*

Issuers of US dollar-denominated debt, whose own income streams are in local currency, are additionally at risk of exchange rate movements. Since 2009, the stock of EME non-financial companies' US dollar-denominated debt securities has doubled and is now around US\$900 billion.

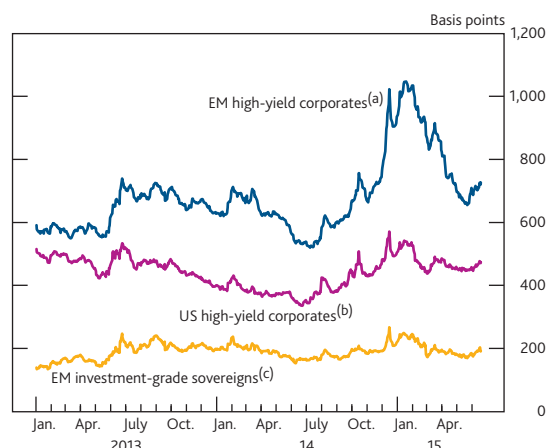
While an increase in US interest rates in response to an improving US domestic economy should benefit EME growth over the medium term, it could nevertheless contribute to an appreciation of the US dollar and an increase in the costs of debt servicing on US dollar-denominated liabilities. Previous episodes of increasing US interest rates have tended to coincide with higher incidences of emerging market crises (**Chart A.6**), and the seeds of the 1980s Latin American and the 1990s Asian crises were also all sown, at least in part, in large US dollar-denominated liabilities.

Divergent economic prospects and monetary policy stances have already been reflected in significant movements in exchange rates. The US dollar has appreciated by 12% in effective terms over the past year (**Chart A.7**), and by 18% against the currencies of the major EMEs. Meanwhile, the resources that some governments could utilise to offset any



**Chart A.8 EME bond yields have become more volatile over the past year**

Option-adjusted spreads on selected bond indices



Source: BofA Merrill Lynch Global Research.

- (a) High Yield USD EM Liquid Corporate Plus Index.  
 (b) US High Yield Master II Index.  
 (c) BBB USD EM Sovereign Index.

US dollar shortfall for domestic borrowers have deteriorated. Since reaching an all-time high of US\$8.2 trillion in June 2014, EMEs' foreign exchange reserves have fallen by nearly US\$600 billion. Dollar Brent crude oil prices remain around 50% below their mid-2014 peak, which will have also eroded the effectiveness of natural hedges upon which EME energy sector borrowers in Latin America and Russia might otherwise have relied.

Reflecting these developments, EME bond spreads have become more volatile, rising sharply around the turn of the year before falling back somewhat as the oil price recovered, highlighting EME borrowers' vulnerability to external funding conditions (Chart A.8).

*A sharper-than-expected slowdown in China could be an additional trigger of vulnerabilities in EMEs.*

Chinese GDP growth has continued to moderate since the December 2014 *Report*, accompanied by a further deceleration in credit growth. Although still up by around 110% compared to a year ago, the Shanghai composite equity index had fallen by 20% in the two weeks to 26 June. A sharp slowdown in China would be likely to have significant spillovers to the global economy, with the Chinese contribution to world GDP averaging 14% over the past decade. Rising corporate defaults or a disorderly correction in the property market in particular could be the catalyst for such a slowdown. Chinese policymakers continue to face challenges in sustaining growth, managing financial stability and moving towards greater openness. Over the weekend of 27–28 June, the People's Bank of China announced that it would lower the reserve requirement ratio for targeted financial institutions, as well as lower the benchmark interest rates by 25 basis points, which should provide additional liquidity to the interbank market and help to lower the financial burden for borrowers.

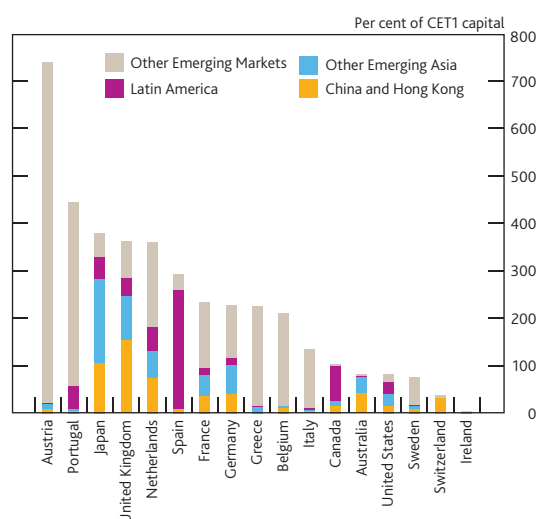
*Adverse developments in EMEs pose a number of risks to UK financial stability.*

The UK financial system is highly international, and banks and other financial institutions operating in the United Kingdom have material exposures to EMEs via direct lending to households and firms and via holdings of securities. UK banks have claims on China, Hong Kong and other EMEs of around 360% of their CET1 capital (Chart A.9), and are therefore directly exposed to defaults and a deterioration of economic activity in these countries.

Credit losses on private sector lending, especially in emerging Asia and Latin America, would impact UK banks' capital, and a downturn in EMEs will likely lead to lower earnings growth for some UK banks. The FPC will assess UK banks' vulnerability to an EME downturn as part of the 2015 stress test of major UK banks (Box 3).

**Chart A.9 UK banks have significant exposures to Emerging Asia and Latin America**

Major advanced economies' bank claims on EMEs<sup>(a)</sup>



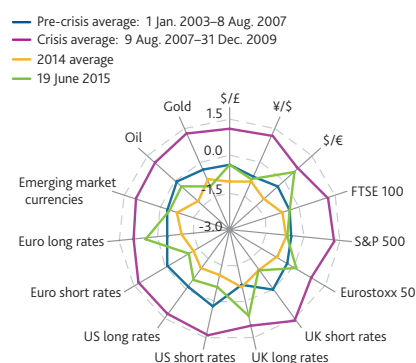
Sources: BIS Consolidated Banking Statistics, SNL Financial and Bank calculations.

- (a) Foreign claims of domestically owned banks on an ultimate risk basis, as at 2014 Q4. CET1 capital as at 2014 H2, with the exception of Japan, where it is as at 2014 H1.

# A Market liquidity

Some fixed-income markets have become less liquid. Recent episodes of market volatility highlight changes in market dynamics that are not yet well understood. Potential drivers of these changes include the evolution of intermediary business models and growth of electronic, automated trading. Despite this, the pricing of a range of securities seems, at present, to presume that they could be sold in an environment of continuous market liquidity. The FPC is alert to the possibility that a repricing of credit and liquidity risk could generate sustained illiquidity in, and dislocation of, important financing markets for the real economy. The FPC has implemented a work plan to examine developments in market liquidity. Market participants should also be alert to these risks, price liquidity appropriately and manage it prudently.

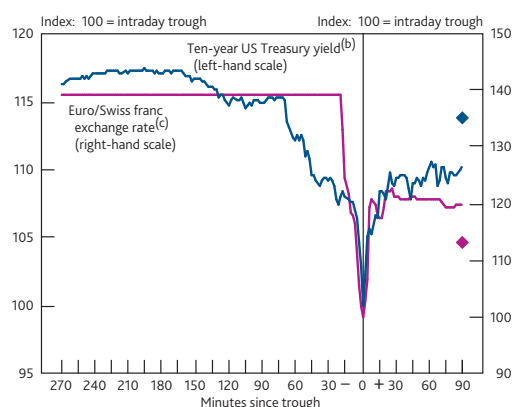
**Chart A.10 Implied volatilities have increased recently**  
Differences from averages, in standard deviations, of three-month option-implied volatilities<sup>(a)</sup>



Sources: Barclays Live, Bloomberg, Chicago Mercantile Exchange, NYSE Liffe and Bank calculations.

(a) Three-month option-implied volatilities for international short (one-year) and long (ten-year) interest rates, equities, exchange rates and commodities.

**Chart A.11 Episodes of market volatility have increased in frequency and magnitude**  
Intraday moves in Swiss franc and US Treasuries<sup>(a)</sup>



Sources: Bloomberg and Bank calculations.

(a) Diamonds show closing index value on relevant day.

(b) 15 October 2014.

(c) 15 January 2015. Exchange rate ceiling was removed at 9:30 GMT.

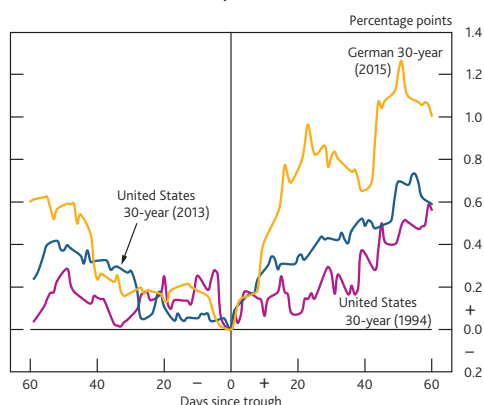
## *Episodes of short-lived but high market volatility...*

Implied volatilities have risen across certain markets since the previous *Report* and, in some long-term interest rate and currency markets, are either equal to or above their pre-crisis averages (**Chart A.10**). This follows a number of periods of intense short-term market volatility. In October 2014, ten-year US Treasury yields fell by 29 basis points in just over an hour — a move equivalent to almost seven standard deviations of historical daily changes — before retracing most of the fall by the end of the day. On 15 January 2015, the Swiss franc appreciated by 28% against the euro in 20 minutes, before ending the day 19% below its intraday high (**Chart A.11**). Over a longer time frame, between April and May 2015, there was a large and rapid rise in German government bond yields, which exceeded that seen in US Treasury yields during the market turbulence of both 1994 and mid-2013 (**Chart A.12**).

The movements in all three markets likely constituted adjustments to market prices justified by a reassessment of central bank actions, though only the sharp appreciation of the Swiss franc aligned with the release of economic news — that is, the Swiss National Bank's abandonment of its exchange rate ceiling against the euro. Movements in other markets likely reflected a reversal of prices that had become misaligned with economic fundamentals. They may also have been amplified by 'crowded trades' — where a large proportion of assets are held by investors with correlated trading strategies. For example, the increase in long-dated German government bond yields from mid-April 2015 more than offset the marked falls that continued following the anticipated announcement of an expanded asset purchase programme by the European Central Bank in January 2015. In contrast, long-term US and UK yields did not see further falls following similar announcements by the Federal Reserve and

### Chart A.12 There has been a rapid increase in German government bond yields

Changes in the 30-year German government bond yield versus US Treasuries in earlier episodes<sup>(a)(b)</sup>

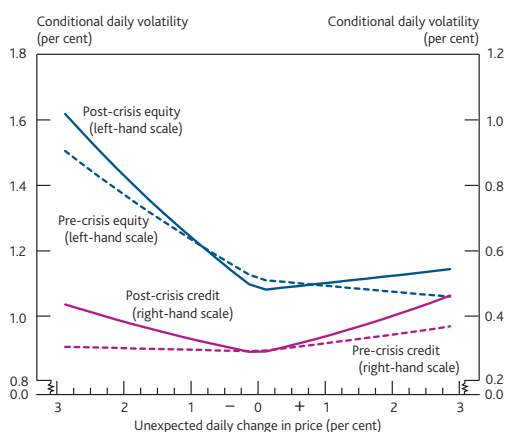


Sources: Bloomberg and Bank calculations.

- (a) Series show difference, in percentage points, from lowest value over relevant period.  
 (b) Troughs reached on 10 January 1994, 2 May 2013 and 20 April 2015.

### Chart A.13 Volatility in a number of markets has become more sensitive to news

Impact of asset price news on volatility in UK equity/credit markets<sup>(a)(b)</sup>

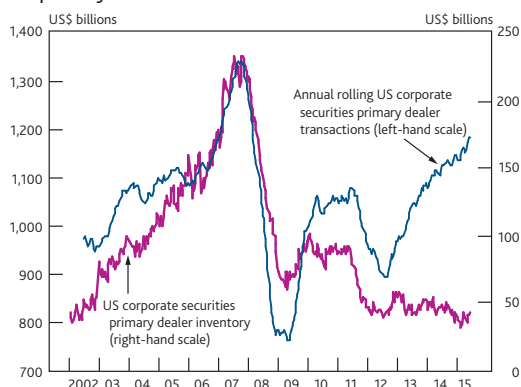


Sources: BofA Merrill Lynch Global Research, Thomson Reuters Datastream and Bank calculations.

- (a) Based on exponential GARCH (EGARCH) model, which allows for conditional volatility to react differently to negative and positive shocks to returns. UK equity refers to FTSE All-Share, UK credit to sterling investment-grade corporate bonds.  
 (b) Pre-crisis: Jan. 2001–June 2007. Post-crisis: April 2009–Jan. 2015.

### Chart A.14 Dealer inventories of corporate securities have fallen with transaction volumes unaffected

US primary dealer inventories and transaction volumes<sup>(a)</sup>



Sources: Federal Reserve Bank of New York and Bank calculations.

- (a) Inventories measured as US primary dealer net positions in US corporate securities, which include corporate bonds, non-agency RMBS and CMBS, with a remaining maturity of at least twelve months.

the Bank of England in November 2008 and January 2009 respectively.

### ...have underscored concerns about fragile secondary market liquidity...

Greater volatility does not itself threaten financial stability and can be positive for market functioning. But the frequency and speed of these movements, albeit short-lived, underscores growing concerns about fragile secondary market liquidity. Over the past few years, there has been a reduction in both average trade sizes and turnover in corporate bond markets, with the average size of a large trade in US investment-grade corporate bonds declining by almost 30% since 2007.<sup>(1)</sup> And market depth, a measure of the size of orders that a market can sustain without impacting the price of a security, has declined recently for US Treasuries.<sup>(2)</sup> These developments suggest that it might have become more difficult for market participants to transact in quantity without affecting prices. Perhaps reflecting this, volatility in some markets appears to have become more sensitive to news (Chart A.13).<sup>(3)</sup>

### ...as market dynamics appear to be changing.

The likely causes of reduced secondary market liquidity have yet to be fully understood, but may in part be due to underlying changes in market structure. In the past, many financial markets, including corporate bond markets, have relied upon the activities of core intermediaries, such as dealers, to provide liquidity through their market-making activities. But, in response to regulation necessary to bolster their resilience, there is evidence that dealers have become less willing to expand their inventories and to take directional positions, particularly in less liquid assets. For example, while in the five years preceding the crisis US primary dealers' holdings of corporate securities increased almost fivefold, these now stand at around 2002 levels (Chart A.14). The fall in inventories has reduced dealers' exposure to market risk and will have contributed to a significant strengthening of the resilience of the core of the financial system (see Section B.3).

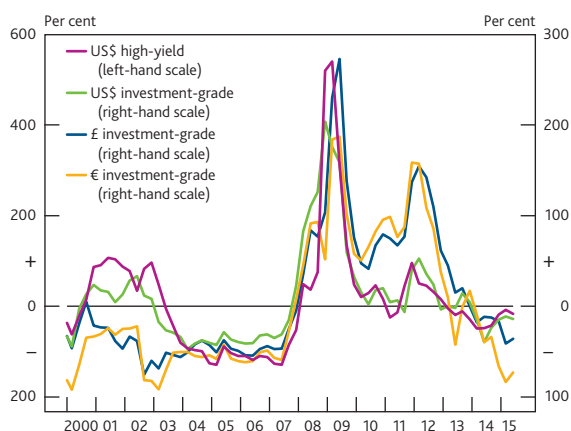
To date, transaction volumes have been unaffected; rather, inventories have been worked harder — the value of transactions per unit of inventory stock for corporate securities now stands at around 30 compared to six at the time of the crisis.<sup>(4)</sup> But dealers' willingness to expand their inventories to alleviate the price impact of a large sell-off has yet to be properly tested in the post-crisis period.

An increase in automated trading could also have contributed to the speed of developments in the Swiss franc and

- (1) 'Large' trade is defined as a trade with a par value of at least US\$1 million and remaining maturity of greater than one year.  
 (2) The average volume available on BrokerTec at the three best bids and asks each day for ten-year US Treasuries declined from US\$218 million in the first four months of 2014 to US\$121 million in the first four months of 2015 (source: JPMorgan).  
 (3) See Salmon, C (2015), 'Financial market volatility and liquidity — a cautionary note', [www.bankofengland.co.uk/publications/Documents/speeches/2015/speech809.pdf](http://www.bankofengland.co.uk/publications/Documents/speeches/2015/speech809.pdf).  
 (4) The churn rate of 1.06 at the time of the crisis cited in the Open Forum document published by the Bank in June is based on dealers' holdings of corporate securities of all maturities; [www.bankofengland.co.uk/markets/Pages/openforum.aspx](http://www.bankofengland.co.uk/markets/Pages/openforum.aspx).

### Chart A.15 Corporate bond liquidity risk premia remain below historical averages

Deviations of estimated corporate bond liquidity risk premia from historical averages<sup>(a)(b)</sup>



Sources: Bloomberg, BofA Merrill Lynch Global Research, Thomson Reuters Datastream and Bank calculations.

- (a) Implied liquidity risk premia are estimated using a Merton model as in Leland, H and Toft, K (1996), 'Optimal capital structure, endogenous bankruptcy, and the term structure of credit spreads', *Journal of Finance*, Vol. 51, pages 987–1,019, to decompose corporate bond spreads.  
 (b) Quarterly averages of deviations of implied liquidity risk premia from sample averages. Sample averages are from 1999 Q4 for € investment-grade and 1997 Q1 for £ investment-grade, US\$ investment-grade and US\$ high-yield.

US Treasury markets, as banks' electronic pricing systems shut down almost simultaneously once price moves had been triggered. While prudent from the perspective of each individual institution, this resulted in a rapid and sharp reduction in market liquidity.<sup>(1)</sup>

### *Reductions in market liquidity do not appear to be priced...*

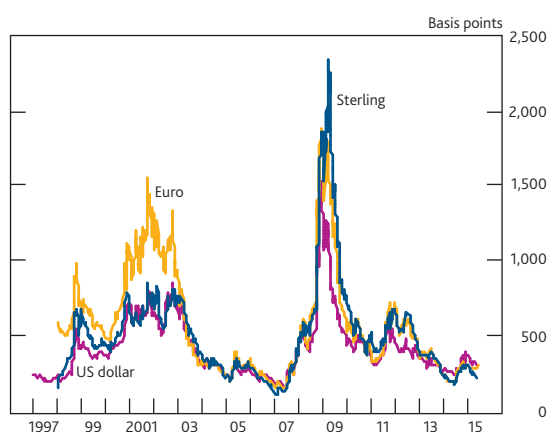
Risks associated with this more fragile secondary market liquidity may not be fully reflected in market prices. For example, model-based estimates of the compensation that investors require to bear the liquidity risk inherent in corporate bonds globally remain below their long-run averages, with some lower than before the crisis (**Chart A.15**). This may suggest that pricing presumes securities could be sold in an environment of continuous market liquidity.

### *...reflecting an ongoing search for yield...*

This could be part of an ongoing 'search for yield', with investors being more willing to accept higher credit and liquidity risk in order to improve investment returns, in an environment of low risk-free interest rates and large-scale purchases of assets by central banks across advanced economies. Some reallocation of portfolios is an intended consequence of the stance of monetary policy, but the compensation for bearing credit and liquidity risks in some markets has declined by more than may be warranted by the future economic and financial environment.

### Chart A.16 The difference between high-yield and investment-grade corporate bond spreads has narrowed

Difference in spread of high-yield versus investment-grade corporate bonds<sup>(a)</sup>



Sources: BofA Merrill Lynch Global Research and Bank calculations.

- (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 refer to bonds issued in domestic or eurobond markets in the respective currencies.

The apparent disconnect between credit risk and its pricing can be seen most clearly in high-yield corporate bond markets, where credit spreads have fallen below a level commensurate with long-run rates of corporate defaults. And the difference between high-yield and investment-grade corporate bond spreads has narrowed (**Chart A.16**). This may reflect a lack of differentiation by investors in terms of the compensation they require for bearing different levels of credit risk.

### *...and raising risks of a material adjustment.*

A repricing of risk would threaten financial stability if it were to generate sustained illiquidity in, and dislocation of, financing markets for the real economy that have become increasingly important over the past few years (see Section B.4). This repricing could be triggered by a number of shocks, including recent developments in Greece, the crystallisation of risks in emerging market economies or a reappraisal of the likely path of monetary policy in advanced economies (without an accompanying improvement in macroeconomic prospects) (see Global environment section).

The FPC is alert to this risk and has implemented a work plan to examine market liquidity (see Box 1), including market structure. Market participants should also be alert to this risk, price liquidity appropriately and manage it prudently.

(1) See Bailey, A (2015), 'Financial markets: identifying risks and appropriate responses', [www.bankofengland.co.uk/publications/Documents/speeches/2015/speech814.pdf](http://www.bankofengland.co.uk/publications/Documents/speeches/2015/speech814.pdf).

## Box 1

### Financial Policy Committee work plan on market liquidity

Financial stability is threatened when a market adjustment, such as a repricing of risk, generates sustained illiquidity in, and dislocation of, important financing markets for financial intermediaries and the real economy. This could also affect the resilience of the core banking system.

In its March 2015 Statement, the FPC noted that 'investment allocations and pricing of some securities may presume that asset sales can be performed in an environment of continuous market liquidity, although liquidity in some fixed-income markets has become more fragile' and asked Bank and FCA staff to investigate.<sup>(1)</sup> This box summarises the work delivered to the FPC as part of the interim report requested for June, which focused on understanding:

- how and why liquidity in relevant markets has become more fragile, drawing on evidence from recent episodes of heightened market volatility;
- the strategies of asset managers in the United Kingdom for managing the liquidity of their funds in normal and stressed conditions; and
- the reliance of UK corporate finance and economic activity on market-based sources of finance.

The Bank is also actively participating in a programme of international work through the Financial Stability Board to assess these issues globally.<sup>(2)</sup> This is important as the resilience of market-based finance in the United Kingdom is heavily dependent on the global market environment (see Section B.3).

### Causes of more fragile market liquidity

There are a number of plausible reasons why the underlying resilience of market liquidity may have been undermined in recent years (see Market liquidity section). The Committee has asked Bank and FCA staff to investigate in particular the impact of automated trading, including high-frequency trading, and of the significant increase in passive trading strategies on financial markets. Further, the Bank will hold an Open Forum in the autumn, at which changes in market structure will be explored.<sup>(3)</sup>

The Committee has also asked Bank and FCA staff to assess the circumstances under which different market participants would be able and willing to step into weak secondary markets to alleviate potential illiquidity events.

### Strategies for managing liquidity of funds

Funds can manage stressed redemptions in various ways, including:

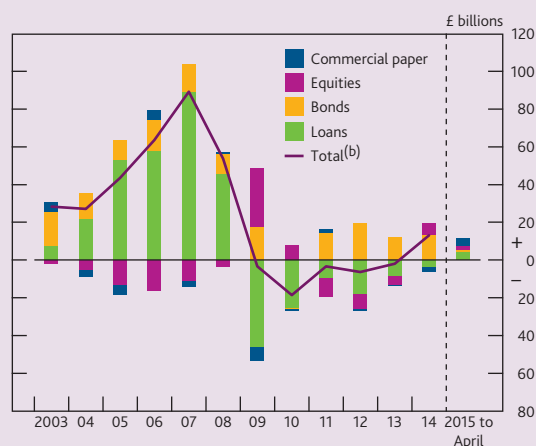
- through tools that allow them to alter the terms of redemptions to investors, such as so-called 'swing pricing' and 'dilution levies' (to ensure that redeeming investors bear the price effects of their withdrawals), payment in specie rather than cash, and deferrals to a later date; and
- by using, for short periods, cash and usually-liquid securities like government bonds.

Information collected since the March 2015 Statement suggests that most funds undertake stress testing and, to varying degrees, hold cash and securities that are usually liquid. The Committee has asked FCA and Bank staff to investigate further funds' stress-testing practices, the information provided to investors about possible use of tools to manage stressed redemptions, and the effects this may have on investors' incentives and behaviour.

### Reliance of UK corporate finance on market-based sources

Since the crisis, UK private non-financial corporations (PNFCs) have continued to raise net finance from corporate bond markets (**Chart A**). These markets have proved an important source of diversification for companies seeking to raise funding, as bank lending has retrenched. The Committee will consider the links between secondary market liquidity, the core banking system and the primary issuance markets for corporate and financial institution debt.

**Chart A** Net finance raised by UK PNFCs<sup>(a)</sup>



Source: Bank of England.

- (a) Finance raised by PNFCs from UK monetary financial institutions and from capital markets. Data cover funds raised in both sterling and foreign currency, converted to sterling. Seasonally adjusted. Bonds, equity and commercial paper are non seasonal.  
 (b) Owing to the seasonal adjustment methodology, this series may not equal the sum of its components.

(1) Available from [www.bankofengland.co.uk/publications/Pages/news/2015/021.aspx](http://www.bankofengland.co.uk/publications/Pages/news/2015/021.aspx).  
 (2) Summarised in Annex 1 of the Open Forum document published by the Bank in June; [www.bankofengland.co.uk/markets/Documents/openforum.pdf](http://www.bankofengland.co.uk/markets/Documents/openforum.pdf).  
 (3) See [www.bankofengland.co.uk/markets/Pages/openforum.aspx](http://www.bankofengland.co.uk/markets/Pages/openforum.aspx).

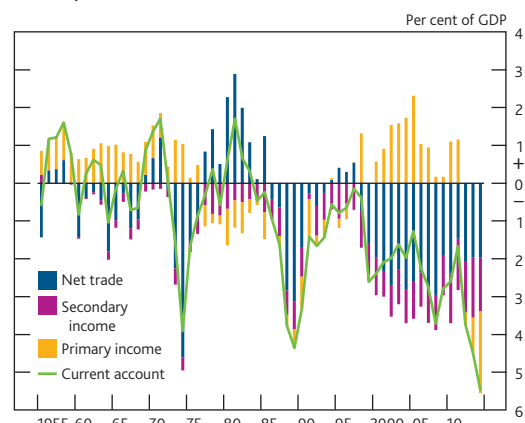


# A UK current account

The UK current account deficit is large by historical and international standards. It could narrow through a stronger recovery in global growth, but there is also the risk of a more disruptive adjustment, through a sudden slowing of capital inflows, with adverse consequences for UK financial stability. The nature of the capital flows financing the deficit does not suggest a particular vulnerability in addition to its size, however, and the external balance sheet has become more resilient to shocks. The resilience of the UK banking system to an abrupt adjustment of the United Kingdom's external imbalance was assessed as part of the 2014 stress test. The FPC will continue to monitor the nature of capital flows that finance the deficit.

**Chart A.17** The UK current account deficit has widened in recent years

Decomposition of the UK current account<sup>(a)</sup>

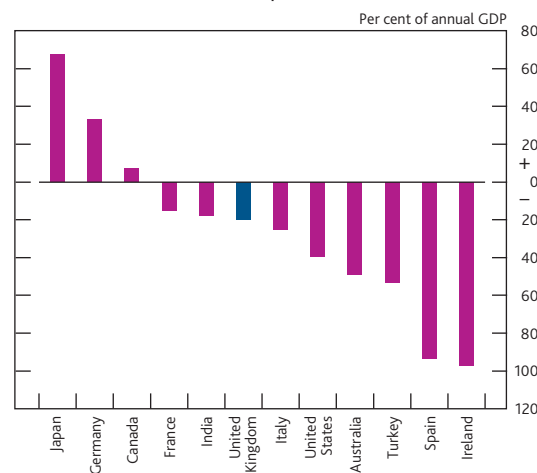


Sources: ONS and Bank calculations.

(a) Primary income mainly consists of compensation of employees and net investment income. Secondary income consists of transfers.

**Chart A.18** The UK net international investment position is not unusually low by international standards

Net international investment positions at end-2014



Sources: Eurostat, IMF World Economic Outlook, ONS and Bank calculations.

*The UK current account deficit is at record levels...*

The UK current account deficit has widened since 2011 and averaged 5.5% of GDP in 2014, the highest annual deficit since official records began in 1955 (Chart A.17).<sup>(1)</sup> As explained in the May 2014 *Inflation Report*, this deterioration has not been caused by a wider trade deficit.<sup>(2)</sup> Rather, income earned by UK residents on their foreign direct investment (FDI) has fallen in recent years. Empirical evidence does not show a particularly clear relationship between the current account deficit and future financial crises. But IMF analysis does suggest a greater vulnerability when advanced economies have current account deficits of 6% of GDP or more.<sup>(3)</sup> This section assesses the threat posed by the United Kingdom's large current account deficit to UK financial stability, building on the box presented in the December 2014 *Report*.<sup>(4)</sup>

*...but the net international investment position is not especially low by international standards.*

The UK net international investment position (NIIP) measures the difference between the United Kingdom's external assets (UK residents' claims on foreign assets) and its external liabilities (overseas residents' claims on UK assets). The UK NIIP has fallen since 2011, as net capital gains have been too small to offset the sequence of UK current account deficits. At end-2014, it stood at around -20% of GDP.<sup>(5)</sup> That does not appear low by international standards (Chart A.18). Further, the current account deficit could narrow, and the UK NIIP improve, if economic growth in the

(1) The data cut-off for this section was 19 June, so it does not reflect the revisions contained in the Quarterly National Accounts release on 30 June.

(2) See the box on pages 22–23 of the May 2014 *Inflation Report*; [www.bankofengland.co.uk/publications/Documents/inflationreport/2014/ir14may.pdf](http://www.bankofengland.co.uk/publications/Documents/inflationreport/2014/ir14may.pdf).

(3) IMF *World Economic Outlook*, October 2014, Chapter 4.

(4) See the box on pages 29–31 of the December 2014 *Financial Stability Report*; [www.bankofengland.co.uk/publications/Documents/fsr/2014/fsrfull1412.pdf](http://www.bankofengland.co.uk/publications/Documents/fsr/2014/fsrfull1412.pdf).

(5) This calculation uses official data on the NIIP, with FDI at book value. Measuring FDI at market value gives a NIIP of around 30% of GDP for 2014 Q4. For more information, see the box on pages 22–23 of the May 2014 *Inflation Report*.

euro area were to pick up, leading to higher returns on the United Kingdom's euro-area assets and boosting exports.

*The United Kingdom relies on net capital inflows from abroad...*

Nevertheless, the United Kingdom's large current account deficit remains a vulnerability. A current account deficit indicates that UK domestic expenditure is higher than its income, leaving a shortfall to be met by net borrowing from abroad. This can be achieved either by UK residents reducing their external assets (by lending less abroad or divesting foreign assets) or increasing their external liabilities. And any increase in external liabilities can only continue for as long as foreign investors are willing to acquire them. If overseas demand for these liabilities were to fall, perhaps because of a change in the risk environment, there could be a sudden slowing of capital inflows. This could lead to financial instability and cause domestic expenditure to fall sharply.

*...so it needs to retain the confidence of foreign investors.*

Ease in financing the current account deficit rests on the credibility of the United Kingdom's macroeconomic policy framework and continuing openness to trade and investment. The United Kingdom has maintained this confidence in recent years, but it is important that this continues.

The 2014 UK banking system stress test assessed the impact of a hypothetical scenario in which concerns over the sustainability of the United Kingdom's internal and external debt positions led to a reassessment of the prospects for the economy, a sharp depreciation of sterling and a rise in borrowing costs.<sup>(1)</sup> At the time, the FPC judged that the stress-test results and banks' capital plans, taken together, suggested that the banking system would have the capacity to maintain its core functions in such a stress scenario.

*Recent capital flows do not appear to be creating large refinancing risks...*

Countries that rely on an increase in short-term bank lending to finance a current account deficit are particularly vulnerable to a loss of confidence because of the ongoing need to refinance the loans. If the loans cannot be refinanced, the country may need to run a current account surplus, forcing domestic residents to cut expenditure to below income levels.

The composition of recent capital inflows to the United Kingdom should make it less vulnerable to a sudden loss of confidence. The United Kingdom has been reducing its foreign short-term bank loan liabilities, included within 'other investment' (Table A.1). In order to finance the deficit, however, the United Kingdom has had to incur new external liabilities. These new liabilities have been mostly longer term and include FDI, equity and longer-term debt (including gilts).

**Table A.1 The composition of recent financing flows is not a major source of vulnerability**

Financing flows behind the current account deficit, 2013–14

£ billions, 2013–14 annual averages

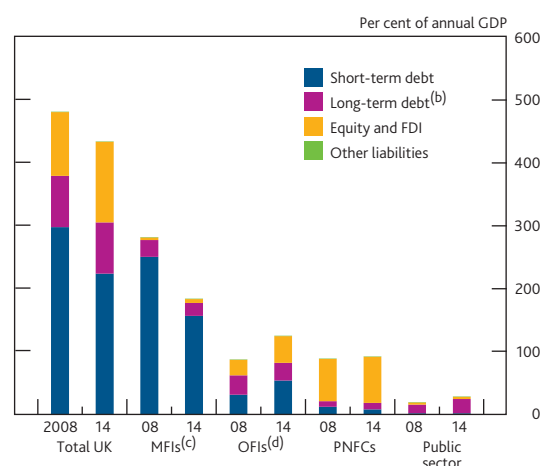
	Inward investment (net acquisition of foreign liabilities by UK residents)	Outward investment (net acquisition of foreign assets by UK residents)	Net inward financing flow <sup>(a)</sup>
Direct investment	22	-38	60
Portfolio investment	76	9	67
of which equity and investment fund shares	31	-18	49
of which debt securities	45	27	18
of which Government debt	21	n.a.	n.a.
of which other debt securities	24	n.a.	n.a.
Other investment (loans and deposits)	-90	-48	-42
Other (reserves and net derivatives)	n.a.	6	-6
Total	8	-71	79

Sources: ONS and Bank calculations.

(a) This is the change in UK foreign liabilities, less the change in UK foreign assets, for each category of flow. The total net inward financing flow is equal in magnitude to the current account deficit (plus net errors and omissions).

**Chart A.19 The United Kingdom's external liabilities are smaller than in 2008**

UK gross external liabilities by sector<sup>(a)</sup>



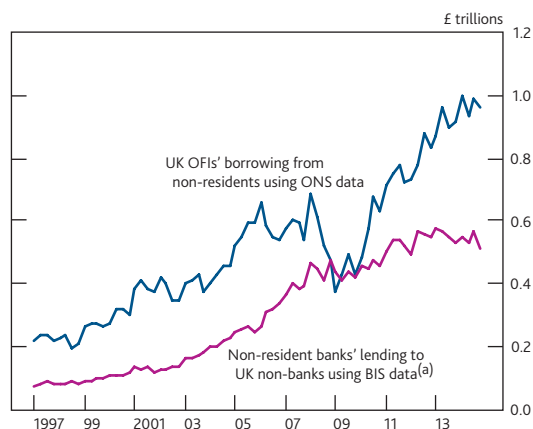
Sources: ONS and Bank calculations.

(a) Derivatives are not included.  
 (b) Original maturity of greater than twelve months.  
 (c) Monetary financial institutions (banks and building societies).  
 (d) Other financial institutions (financial corporations excluding MFIs and insurance companies and pension funds).

(1) [www.bankofengland.co.uk/financialstability/Documents/fpc/results161214.pdf](http://www.bankofengland.co.uk/financialstability/Documents/fpc/results161214.pdf).

**Chart A.20 Official data may overstate the recent growth of OFIs' external borrowing**

OFIs' borrowing abroad compared with lending to UK non-banks reported by non-resident banks

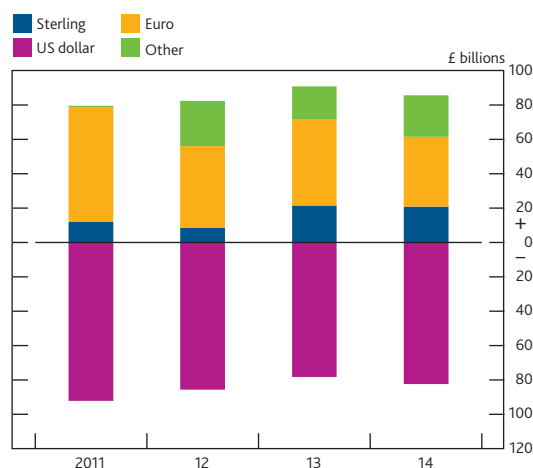


Sources: Bank of England, BIS, ONS and Bank calculations.

(a) Lending from non-resident banks to the whole UK economy, excluding UK-resident banks. It is not possible to construct a more granular breakdown of lending to the United Kingdom using BIS data.

**Chart A.21 Broker-dealer currency mismatches are not growing significantly**

Net currency positions (assets less liabilities) of the largest UK-resident broker-dealers (a)(b)(c)



Sources: Regulatory returns and Bank calculations.

(a) Broker-dealers include Citigroup Global Markets Limited, Credit Suisse International, Goldman Sachs International, Merrill Lynch International, Mitsubishi UFJ Securities International plc and Nomura International plc.

(b) Positions at end-year.

(c) Net derivatives are excluded.

While these financing flows could still be susceptible to a sudden slowing or repricing, they are less vulnerable to refinancing risk. Empirical studies show that net capital inflows are more likely to be a risk to financial stability if they are associated with rapid domestic credit growth.<sup>(1)</sup> But present levels of UK credit growth are modest (Section B.4).

*...and the UK external balance sheet has become more resilient.*

Studies also suggest greater risk to financial stability from capital inflows in countries with large external liabilities, particularly bank debt. UK external liabilities have fallen since 2008, as banks' balance sheets have shrunk (Chart A.19), though they remain high as a share of GDP by international standards.

The currency composition of a country's external balance sheet also matters. A sudden loss of confidence in a country can lead to a depreciation in the exchange rate. If that were to occur, institutions that have borrowed in foreign currency to finance assets denominated in domestic currency could incur losses. The United Kingdom, in aggregate, is in the opposite position: a greater share of external liabilities is denominated in sterling than external assets.<sup>(2)</sup> A depreciation of sterling should therefore boost the NIIP, with the exchange rate acting as a stabilising mechanism.

Nonetheless, while the aggregate position may be reassuring, fragilities can still exist in particular sectors or institutions. The December 2014 *Report* showed that, based on official data, the 'other financial institutions' (OFI) sector was a net borrower from the rest of the world, and could be increasing its net short-term foreign currency borrowing.<sup>(3)</sup> However, it also noted the poor quality of official data on OFIs and that further analysis was needed. Additional work since December 2014, using a variety of information sources, suggests a lesser degree of fragility in the OFI sector than the official data. For example, official data suggest that OFIs' external borrowing has more than doubled since 2009 (Chart A.20). But data collected from banks resident abroad, which should account for the majority of this, show that their recent lending to the UK non-bank sector has increased only modestly. And regulatory data collected from large broker-dealers, the component of the OFI sector with the largest stock of outstanding debt, show that while those institutions have net US dollar borrowing, their currency mismatches have not worsened materially (Chart A.21).

(1) See, for example, al-Saffar, Y, Ridlinger, W and Whitaker, S (2013), 'The role of external balance sheets in the financial crisis', *Bank of England FS Paper No. 24*; [www.bankofengland.co.uk/financialstability/Documents/fpc/fspapers/fs\\_paper24.pdf](http://www.bankofengland.co.uk/financialstability/Documents/fpc/fspapers/fs_paper24.pdf).

(2) See Broadbent, B (2014), 'The UK current account'; [www.bankofengland.co.uk/publications/Documents/speeches/2014/speech750.pdf](http://www.bankofengland.co.uk/publications/Documents/speeches/2014/speech750.pdf).

(3) The OFI sector includes a range of non-bank financial firms, including broker-dealers, special purpose vehicles, hedge funds, finance companies and central counterparties.

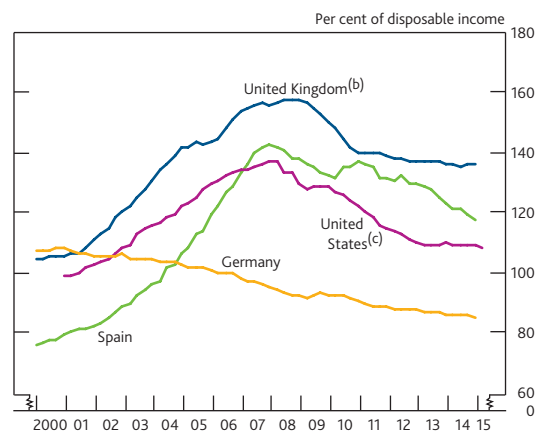


# A UK housing market

UK household debt remains high relative to income. And recent house price and mortgage activity data, together with historically low interest rates on many mortgage products, suggest that the vulnerability from high and rising household indebtedness identified in June 2014 remains. So the FPC's June 2014 Recommendations remain warranted. The buy-to-let segment of the housing market has continued to grow rapidly. HM Treasury will consult on tools related to buy-to-let lending later in 2015. The FPC will continue to monitor this sector closely.

**Chart A.22 Household debt to income is high compared with other developed economies**

Household debt to disposable income<sup>(a)</sup>



Sources: ECB Statistical Data Warehouse, 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.  
 (b) Includes all liabilities of the household sector except for the unfunded pension liabilities and financial derivatives of the non-profit sector. The household disposable income series is adjusted for financial intermediation services indirectly measured.  
 (c) US debt to income measure not directly comparable with other countries due to inconsistent definitions of household sector as discussed in [www.statcan.gc.ca/pub/13-605-x/2012005/article/11748-eng.htm](http://www.statcan.gc.ca/pub/13-605-x/2012005/article/11748-eng.htm).

**Table A.2 The share of new mortgages with high loan to income ratios has fallen**

Mortgage lending by loan to income ratio<sup>(a)</sup>

Period	Share of new mortgages for which LTI ratio is greater than or equal to (per cent)		
	4	4.5	5
2011	17.9	7.8	2.1
2012	19.4	8.8	2.5
2013	21.4	9.3	2.0
2014 H1	24.0	10.7	2.5
2014 Q3	24.0	10.8	2.7
2014 Q4	22.9	9.7	1.9
Three-year projections published in June 2014 Report	32.7	15.3	0.5

Sources: FCA Product Sales Database and Bank calculations.

- (a) Data include regulated mortgages for first-time buyers and homemovers for which borrower income is available. Unregulated mortgages, lifetime mortgages, remortgages, and loans extended for unknown reasons are excluded.

*A year ago the FPC made two housing market Recommendations...*

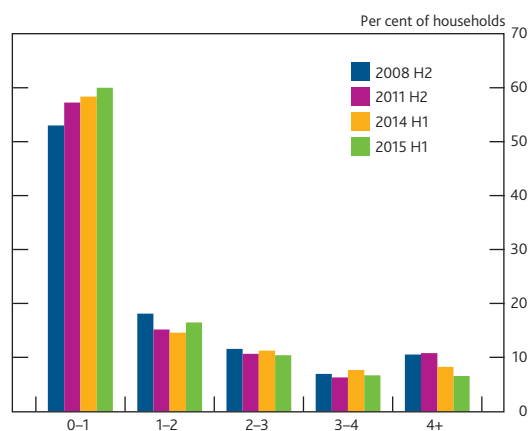
In the June 2014 Report, the FPC outlined two risks from high and rising levels of household indebtedness: a direct risk to the resilience of the UK banking system, and an indirect risk via its impact on economic stability.

Aggregate UK household debt to income, while falling gradually since 2009, remains high compared with historical and international norms (Chart A.22). Long-term risk-free real interest rates in the United Kingdom have fallen by over 250 basis points since the early 2000s. Other things equal, lower risk-free rates increase the sustainable level of household debt by reducing debt-servicing costs. But lower risk-free rates have been partly offset by higher spreads on mortgage lending, which have risen by around 90 basis points over the same period, and to some extent may also reflect weaker long-run growth expectations. As discussed in the May 2015 Inflation Report, the outlook for UK productivity growth is particularly uncertain. While expected to pick up gradually, weaker productivity growth would mean slower real income growth, which would affect the sustainable level of household debt.

The pickup in the UK housing market during 2013 had been associated with a marked rise in the share of mortgages extended at high loan to income (LTI) multiples that was expected to continue (Table A.2). At higher levels of indebtedness, households are more likely to encounter payment difficulties in the face of shocks to income and interest rates. In June 2014, the FPC judged that household indebtedness did not pose an imminent threat to stability, but that it was prudent to insure against the risk of a marked loosening in underwriting standards and a further significant rise in the number of highly indebted households. This insurance was provided in the form of two FPC Recommendations (Table A.3).

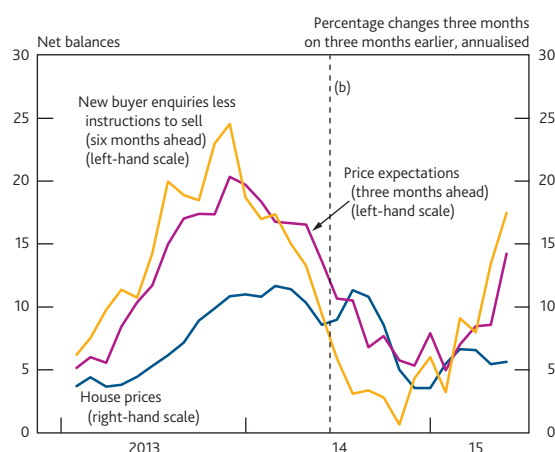
**Table A.3** June 2014 FPC housing market Recommendations

The affordability test	When assessing affordability, mortgage lenders should apply an interest rate stress test that assesses whether borrowers could still afford their mortgages if, at any point over the first five years of the loan, Bank Rate were to be 3 percentage points higher than the prevailing rate at origination.
The loan to income flow limit	The Prudential Regulation Authority and the Financial Conduct Authority should ensure that mortgage lenders do not extend more than 15% of their total number of new residential mortgages at loan to income ratios at or greater than 4.5.

**Chart A.23** The distribution of debt to income has improved marginallyTotal debt to income ratios for UK households<sup>(a)</sup>

Sources: NMG Consulting and Bank calculations.

(a) Calculations exclude households with no debt.

**Chart A.24** Forward-looking indicators suggest momentum in the housing market is buildingForward-looking indicators of house prices<sup>(a)</sup>

Sources: Halifax, Nationwide, Royal Institution of Chartered Surveyors (RICS) and Bank calculations.

(a) RICS series adjusted to have the same mean and variance as the house prices series.

(b) June 2014 Financial Stability Report.

*...since then debt to income has remained flat as the housing market slowed...*

Over the past year, aggregate debt to income has been broadly flat. The distribution of debt, which is potentially more important, has improved marginally, with the tail of households with debt to income ratios greater than 4.0 falling in early 2015 (Chart A.23). The share of new mortgages extended with high LTI ratios also fell back very slightly in the most recent data (Table A.2).

Recent movements in household indebtedness reflect, in part, the slowdown in the housing market in 2014. Annualised house price growth moderated to 3% in 2014 Q4, from 10% in 2014 Q2. Mortgage approvals also slowed.

*...driven by a number of factors, including a small impact from the FPC Recommendations.*

A number of factors are likely to have contributed to the housing market slowdown in 2014, including: operational constraints associated with the introduction of the FCA's Mortgage Market Review; weakness in the supply of existing homes to the market; and weaker sentiment and house price expectations (Chart A.24). The FPC's Recommendations may have also contributed, both via a direct impact on some banks' lending and an indirect impact on borrower and lender behaviour.

The direct effect of the Recommendations has been small. A number of major lenders introduced their own LTI restrictions either immediately prior to, or after, the announcement of the Recommendations (Table A.4). These restrictions were generally more stringent than the FPC's Recommendation, imposing hard limits and, in some cases, on lending at loan to income multiples less than 4.5. Based on these firms' previous lending patterns, the restrictions would only have affected 3% of mortgage advances in aggregate. But the effect on mortgage lending is likely to have been smaller as borrowers switched between lenders, and to mortgages with lower LTIs. The affordability test also appears to have had a negligible effect on larger lenders because they were already applying prudent interest rate stress tests. And while it is reported to have led to changes in the behaviour of some smaller lenders, in total, these lenders have grown their market share since it was introduced.

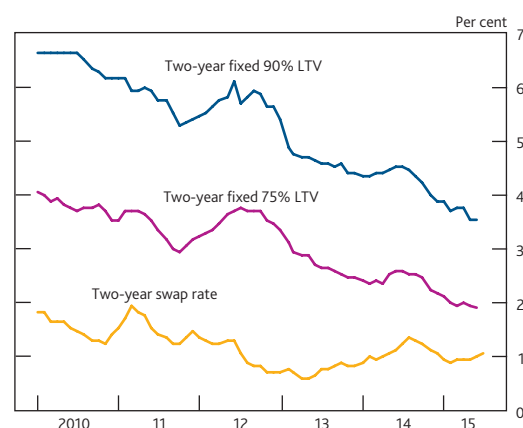
*The threat of renewed momentum and rising numbers of highly indebted households remains...*

Quoted rates for fixed-rate mortgages fell in 2015 Q1, continuing the decline since the middle of 2014. For 75% loan to value (LTV) fixed-rate mortgages, the declines in rates in the past year have largely reflected falls in swap rates, but spreads on higher LTV mortgages have fallen more sharply, suggesting increased competition among lenders (Chart A.25). House prices have picked up in recent months, to 5.6% on an annualised three-month on three-month basis

**Table A.4** Lenders have imposed their own loan to income restrictions

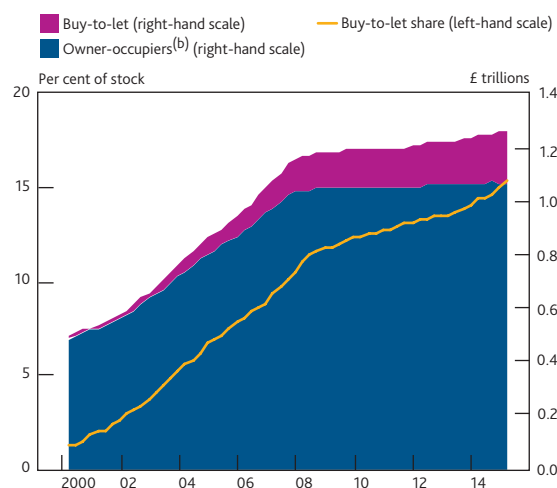
## Lenders' loan to income restrictions

Period	Lender	LTI restriction
2014	LBG	4 if loan value >£500,000
	RBS	4 if loan value >£500,000
	Santander	5 (down from 6)
	Nationwide	4.75
	HM Treasury Help to Buy: Mortgage Guarantee	4.5
2015	Barclays	Initially 4.5 for all, later relaxed to 4.5 if loan value <£300,000 and 5 if >£300,000
	Santander	4.49 for first-time buyers
	TSB	4.5

Sources: *Financial Times*, HM Treasury and Mortgage Strategy.**Chart A.25** Quoted rates on mortgages have fallenAverage quoted mortgage rates and swap rates<sup>(a)</sup>

Sources: Bank of England, Bloomberg and Bank calculations.

(a) Sterling-only month-end average quoted rates on mortgages. Quoted rates series are weighted averages of rates from a sample of up to 22 banks and building societies with products meeting specific criteria (see [www.bankofengland.co.uk/statistics/Pages/iadb/notesiadb/household\\_int.aspx](http://www.bankofengland.co.uk/statistics/Pages/iadb/notesiadb/household_int.aspx)). Quoted mortgages rate data are to May 2015 correct as at 29 June 2015. Swap rate data are to 22 June 2015. Data are non seasonally adjusted.

**Chart A.26** Buy-to-let lending has accounted for most of the growth in mortgage stock since 2008Composition of outstanding mortgage stock<sup>(a)</sup>

Sources: Bank of England, Council of Mortgage Lenders and Bank calculations.

(a) Data are non seasonally adjusted.

(b) Lending to owner-occupiers is calculated as outstanding lending to individuals secured on dwellings less outstanding lending secured on buy-to-let properties.

in May 2015. And activity has shown some signs of strengthening, with 68,000 mortgages for house purchase approved in April. Forward-looking indicators, such as those from the RICS survey, suggest that demand has strengthened (**Chart A.24**). With household debt to income still high, the vulnerability identified in June 2014 therefore remains. So the Committee judges that the insurance provided by the June 2014 Recommendations remains warranted.

In April 2015, the Government gave the FPC powers of Direction over the PRA and the FCA in relation to loan to value and debt to income limits in respect of owner-occupied mortgage lending. This decision followed Recommendations by the FPC, made in September 2014, in response to a request from the Chancellor. In line with its statutory requirements, the FPC has approved and published a Policy Statement on how it intends to use these powers.<sup>(1)</sup>

*...and lending for buy-to-let has continued to expand...*

The buy-to-let mortgage market has continued to grow rapidly. In the year to 2015 Q1, the stock of buy-to-let lending expanded by 8%. Buy-to-let lending now accounts for 15% of the stock of outstanding mortgages, and 18% of the total flow of new mortgage lending (**Chart A.26**). This strength is consistent with a structural trend towards a larger private rental sector, driven by demographic changes and higher house prices relative to incomes. The private rental sector accounted for 19% of households in 2013, compared with 11% in 2003 (**Chart A.27**).

*...supported by competition between lenders...*

The expansion of the buy-to-let mortgage market has been supported by strong competition between banks, primarily in lending rates. But there are signs of growing risk appetite spreading to underwriting standards. As noted in the April 2015 *Trends in Lending* publication, the number of advertised buy-to-let mortgage products at LTV ratios of 75% and above has increased since mid-2013.

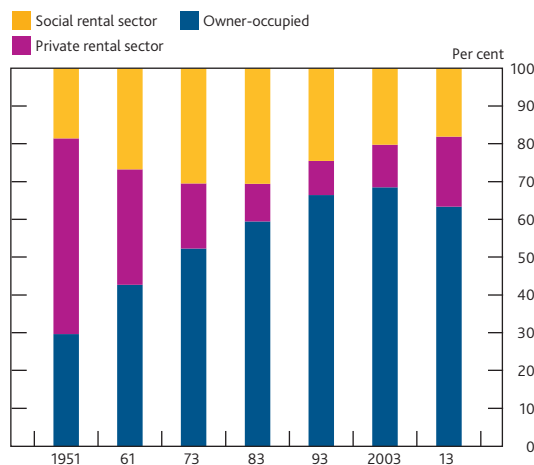
*...and could be boosted by recent pension reforms.*

The buy-to-let market could receive an additional stimulus from recent pension reforms, which give retirees more flexibility over how they use their defined contribution (DC) pension pots. In principle, this could lead to a decline in retirees' purchases of annuities and an increase in demand for other assets, including buy-to-let property. But the impact on the buy-to-let market is expected to be small because lender requirements on buy-to-let mortgages currently exclude most retirees. Borrowers are usually required to have at least £25,000 of annual income, not including potential rental income. The ONS's Wealth and Asset Survey suggests that only 7% of 55–64 year olds would have both sufficient income

(1) [www.bankofengland.co.uk/financialstability/Documents/fpc/policystatement010715.pdf](http://www.bankofengland.co.uk/financialstability/Documents/fpc/policystatement010715.pdf).

**Chart A.27 The private rental sector has been expanding recently**

Housing tenure



Sources: Department for Communities and Local Government and Bank calculations.

in retirement to qualify for a buy-to-let mortgage and a DC pension pot large enough to provide a deposit of at least £20,000, which — assuming an LTV ratio of 75% — would be required to buy a property worth £80,000. The majority of these retirees would already have had the flexibility to use their DC pension pots before the reforms were introduced, under an exclusion applied to individuals with other sources of income.

*Buy-to-let lending could pose a risk to financial stability.*

The actions of buy-to-let investors affect the broader housing and mortgage markets as individuals compete to buy the same pool of properties. Looser lending standards in the buy-to-let sector could contribute to general house price increases and a broader increase in household indebtedness. And in a downswing, investors selling buy-to-let properties into an illiquid market could amplify falls in house prices, potentially raising losses given default for all mortgages. This could be a particular concern in a rising interest rate environment, if properties become unprofitable given higher debt-servicing costs. Buy-to-let borrowers are potentially more vulnerable to rising interest rates because loans are more likely to be interest only and extended on floating-rate terms, and affordability tends to be tested at lower stressed interest rates than owner-occupied lending.

HM Treasury will consult on tools for the FPC related to buy-to-let lending later in 2015, with a view to building an in-depth evidence base on how the operation of the UK buy-to-let housing market may carry risks to financial stability. The FPC will continue to monitor this sector closely.

# A Misconduct

Misconduct imposes costs on society at large and has undermined trust in banks and financial markets, reducing the effectiveness of the financial system. Banks and the financial sector have primary responsibility for addressing these issues. The FPC supports the steps being taken by national and international authorities to address the root causes of misconduct including the recommendations of the Fair and Effective Markets Review in the United Kingdom and the work programmes announced by the Financial Stability Board (FSB) and the International Organization of Securities Commissions (IOSCO). The FPC continues to take a forward-looking assessment of misconduct costs in its capital assessments and stress testing of the UK banking system.

**Table A.5** Examples of misconduct by banks and their employees

**Mis-selling of retail financial products** such as payment protection insurance (PPI) to households and interest rate hedging products to companies.

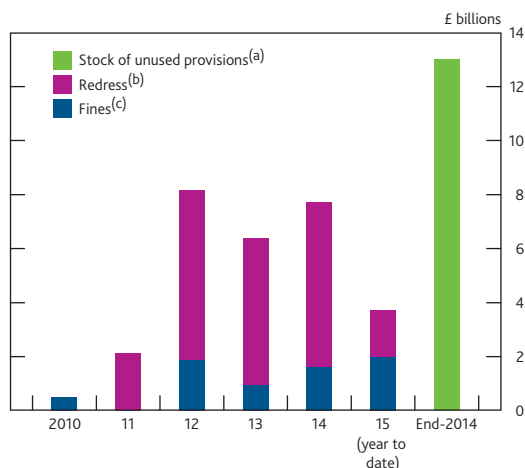
**Alleged mis-selling of wholesale financial products** such as US residential mortgage-backed securities to financial institutions and investors.

**Violation of rules, regulations and laws** such as tax rules, anti-money laundering rules and economic sanctions.

**Attempted manipulation of financial market benchmarks** such as Libor, Euribor and foreign exchange fixes.

**Chart A.28** UK banks have continued to incur costs related to past misconduct

Fines and redress payments incurred by UK banks



Sources: European Commission, FCA, *Financial Times*, firm submissions, FSA and Bank calculations.

- (a) Major UK banks.  
 (b) For mis-selling PPI and interest rate hedging products, includes a small amount of redress paid by non-banks.  
 (c) Levied by US authorities, the FSA/FCA and the European Commission.

## *Misconduct by banks has been widespread and costly...*

Over the past six years numerous examples of misconduct by banks and their employees have been uncovered (**Table A.5**). Since 2009, UK banks have paid almost £30 billion in fines and redress costs (**Chart A.28**), roughly equivalent to the private capital they have raised in the same period. Banks may have incurred further costs for households, companies and governments through attempted manipulation of financial market benchmarks.

Assessing the costs of past misconduct is an ongoing process. In November 2014, the UK Supreme Court ruled in 'Plevin vs Paragon Personal Finance Ltd' that a failure to disclose a large commission payment on a payment protection insurance (PPI) policy made the relationship between a lender and the borrower unfair.<sup>(1)</sup> In response, the FCA is considering whether additional rules and/or guidance are required to deal with complaints about PPI. UK banks further face civil litigation by private investors regarding allegations of misconduct, and are subject to a number of investigations by authorities internationally.

Reflecting these uncertainties, UK banks held significant provisions at end-2014 (**Chart A.28**). Potential future costs related to past misconduct will be assessed as part of the 2015 stress test of the UK banking sector (Box 3).

## *...undermining the effectiveness of the financial system.*

The costs to society of misconduct may be larger than the direct costs to customers and banks, particularly where it has impaired the effectiveness of the financial system. For example, in the run-up to the financial crisis, alleged mis-selling of US residential mortgage-backed securities contributed to excessive lending to sub-prime borrowers.

(1) See Supreme Court press summary; [www.supremecourt.uk/decided-cases/docs/UKSC\\_2014\\_0037\\_PressSummary.pdf](http://www.supremecourt.uk/decided-cases/docs/UKSC_2014_0037_PressSummary.pdf).

Mistrust between market participants, or of market benchmarks, can also impair the functioning of specific markets. And according to the *SME Finance Monitor*, in 2015 Q1, 75% of UK small businesses remained reluctant to borrow from banks. This is most likely to reflect economic conditions, but intelligence from the Bank's Agents suggests that it was also partly due to distrust of banks among smaller companies.<sup>(1)</sup>

Non-financial sanctions, such as restrictions on undertaking certain activities, are an essential supervision and enforcement tool. Where there are substitute providers, the wider impact of these actions should be limited. But if misconduct is widespread, non-financial sanctions could affect a significant proportion of a market, causing systemic risks. This issue is further explored in a report of the European Systemic Risk Board.<sup>(2)</sup>

To contribute fully to prosperity, banks and markets require a 'social licence' — the consent of society to operate and innovate.<sup>(3)</sup> That requires fairness and accountability. An erosion of trust and loss of social licence risks the imposition of rules or restrictions on banks and markets that are detrimental to their contribution to prosperity.

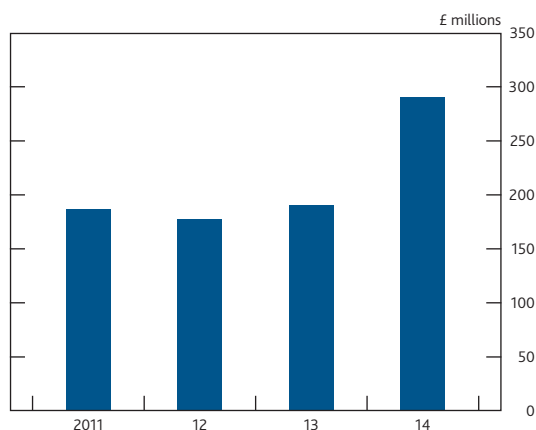
#### *Steps have been taken to strengthen accountability...*

Following the changes introduced by the Financial Services (Banking Reform) Act 2013, the PRA and the FCA have developed a Senior Manager Regime and a Certification Regime that will support a change in culture in banks, building societies, credit unions and PRA-designated investment firms. These regimes come into force on 7 March 2016. As part of the Senior Manager Regime, firms will be required to allocate specific responsibilities to the most senior individuals in banks.<sup>(4)</sup> If there is a regulatory breach by a firm, there will be a statutory requirement on the relevant Senior Manager to satisfy the PRA/FCA that (s)he took reasonable steps to prevent it. Failure to do so may subject the Senior Manager to regulatory sanctions, ranging from fines to a prohibition order. The Certification Regime, meanwhile, will require relevant firms to certify annually the fitness and propriety of employees who could pose a risk of significant harm to the firm or any of its customers.

The PRA and the FCA have also developed new enforceable 'Conduct Rules', to apply to Senior Managers and individuals in scope of the Certification Regime. The FCA will apply these

**Chart A.29 Bonuses have been reduced to reflect past misconduct**

Total reductions to unpaid deferred bonuses (malus) by major UK banks<sup>(a)</sup>



Sources: Published accounts — Barclays, HSBC, Lloyds, RBS and Standard Chartered.

(a) Excluding figures for individuals who resigned or had their contracts terminated.

(1) *Agents' summary of business conditions*, February 2015; [www.bankofengland.co.uk/publications/Documents/agentssummary/2015/feb.pdf](http://www.bankofengland.co.uk/publications/Documents/agentssummary/2015/feb.pdf).

(2) See 'Report on misconduct risk in the banking sector', June 2015; [www.esrb.europa.eu/pub/pdf/other/150625\\_report\\_misconduct\\_risk.en.pdf](http://www.esrb.europa.eu/pub/pdf/other/150625_report_misconduct_risk.en.pdf).

(3) See 'Building real markets for the good of the people', June 2015; [www.bankofengland.co.uk/publications/Pages/speeches/2015/821.aspx](http://www.bankofengland.co.uk/publications/Pages/speeches/2015/821.aspx).

(4) For the complete list of PRA prescribed responsibilities, see Table A on page 6 of *PRA Policy Statement PS3/15*, 'Strengthening individual accountability in banking and insurance — responses to CP14/14 and CP26/14', March 2015; [www.bankofengland.co.uk/pradocuments/publications/ps/2015/ps315.pdf](http://www.bankofengland.co.uk/pradocuments/publications/ps/2015/ps315.pdf).



rules to all employees except ancillary staff. The rules require covered individuals to act with integrity, due skill, care and diligence and be open and co-operative with regulators.

### ...and align incentives.

The PRA and the FCA have further strengthened rules on remuneration, aiming to align risk and reward.<sup>(1)</sup> In particular, the deferred portion of variable awards, which is up to 60%, must now be deferred over seven years for the most senior management and five years for other senior risk-takers. The previous minimum deferral period was three years. Since 2010, the major UK banks have applied malus (deductions from unvested deferred variable remuneration) on individuals implicated in misconduct (**Chart A.29**). Banks have also made significant deductions from their firm-wide bonus pools in respect of notable risk management failures. The PRA and the FCA further expect firms to use clawback of vested variable remuneration when appropriate.

Recent data suggest that fixed pay (salaries and certain types of allowance) is forming an increasing proportion of total pay for major banks operating in the European Union, including UK banks, with an accompanying fall in the proportion of variable pay (bonuses and long-term incentive plans) (**Chart A.30**). This may weaken the incentive effects of remuneration rules.

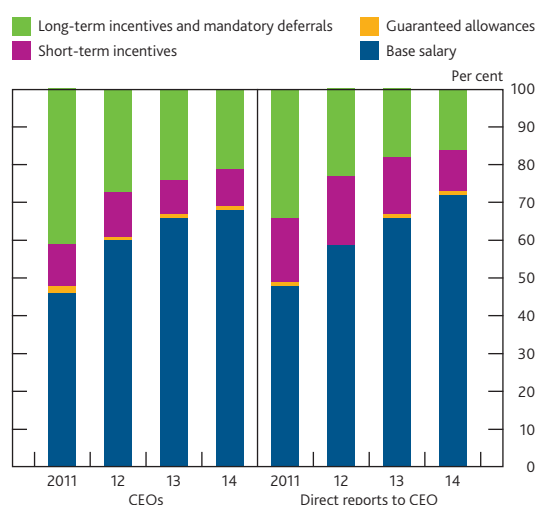
### More reforms are needed in financial markets.

The Fair and Effective Markets Review (FEMR),<sup>(2)</sup> published on 10 June 2015, reviewed misconduct in Fixed Income, Currency and Commodities (FICC) markets. It highlighted a number of root causes in particular markets and business models (**Table A.6**), noting that substantial progress had been made in identifying and addressing many of them (**Table A.7**). However, FEMR also identified a number of gaps that current reforms do not tackle and made a number of recommendations (see Box 2). These include principles to develop fairer and more effective FICC market structures, and identify and mitigate new or emerging risks.

The United Kingdom is also playing a leading role in shaping international conduct standards. The FSB is developing approaches that can mitigate conduct risks through improved market organisation, structure and behaviour of market participants, and making sure enforcement actions remain credible. An important aspect of this agenda is the IOSCO work programme on conduct in securities markets. The FPC supports the steps that are being taken to address the root causes of misconduct including the recommendations in FEMR and the work programmes announced by the FSB and IOSCO. The FPC continues to take a forward-looking assessment of misconduct costs in its capital assessments and stress testing.

**Chart A.30 Bonuses have been falling as a share of total pay**

Compensation structure of CEOs and direct reports to CEOs of major banks operating in the European Union<sup>(a)</sup>



Sources: Published accounts — Barclays, HSBC, Lloyds, RBS and Standard Chartered.

(a) Excluding figures for individuals who resigned or had their contracts terminated.

**Table A.6 FEMR: root causes of misconduct in FICC markets**

- **Market structures** that presented opportunities for abuse.
- **Standards of acceptable market practices** that were sometimes poorly understood or adhered to, short on detail or lacked teeth.
- **Systems of internal governance and control** that placed greater reliance on second and third lines of defence than on trading or desk heads and failed to ensure that conduct lessons learned in one business line were fully applied elsewhere.
- **Limited reinforcement of standards through bilateral market discipline.**
- **Remuneration and incentive schemes** that stressed short-term returns over longer-term value enhancement and good conduct.
- **A culture of impunity in parts of the market**, coloured by a perception that misconduct would go either undetected or unpunished.

**Table A.7 FEMR: steps already taken to address root causes of misconduct**

- The design and oversight of many key FICC benchmarks has been overhauled.
- Transparency in some FICC markets has improved, and is likely to improve further over time, reflecting a range of regulatory and technological changes.
- The FCA has been given new powers which enable it to enforce against breaches of competition law.
- Some standards of market practice have been clarified or strengthened.
- The framework for ensuring remuneration is aligned with risk has improved significantly through the work of the FSB.
- Substantial efforts have been made to improve firms' internal governance, accountability and control structures.
- Individuals' perceptions of the probability that misconduct will be detected, and the scale of punishment, has increased.

(1) See PRA Supervisory Statement SS27/15, 'Remuneration', June 2015; [www.bankofengland.co.uk/pras/Documents/publications/ss/2015/ss2715.pdf](http://www.bankofengland.co.uk/pras/Documents/publications/ss/2015/ss2715.pdf).

(2) Fair and Effective Markets Review, Final Report, June 2015; [www.bankofengland.co.uk/publications/Pages/news/2015/055.aspx](http://www.bankofengland.co.uk/publications/Pages/news/2015/055.aspx).

## Box 2

### FEMR policy recommendations

#### Near-term actions to improve conduct in FICC markets:

##### 1 Raise standards, professionalism and accountability of individuals

- a. Develop a set of globally endorsed common standards for trading practices in FICC markets, in language that can be readily understood, and which will be consistently upheld;
- b. Establish new expectations for training and qualifications standards for FICC market personnel, with a requirement for continuing professional development;
- c. Mandate detailed regulatory references to help firms prevent the 'recycling' of individuals with poor conduct records between firms;
- d. Extend UK criminal sanctions for market abuse for individuals and firms to a wider range of FICC instruments; and
- e. Lengthen the maximum sentence for criminal market abuse from seven to ten years' imprisonment.

##### 2 Improve the quality, clarity and market-wide understanding of FICC trading practices

- a. Create a new FICC Market Standards Board with participation from a broad cross-section of global and domestic firms and end-users at the most senior levels, and involving regular dialogue with the authorities, to:
  - Scan the horizon and report on emerging risks where market standards could be strengthened, ensuring a timely response to new trends and threats;
  - Address areas of uncertainty in specific trading practices, by producing guidelines, practical case studies and other materials depending on the regulatory status of each market;
  - Promote adherence to standards, including by sharing and promoting good practices on control and governance structures around FICC business lines; and
  - Contribute to international convergence of standards.

##### 3 Strengthen regulation of FICC markets in the United Kingdom

- a. Extend the UK regulatory framework for benchmarks to cover seven additional major UK FICC benchmarks — accepted and implemented by HM Treasury on 1 April 2015;
- b. Create a new statutory civil and criminal market abuse regime for spot foreign exchange, drawing on, among other things, work on a global code (see recommendation 4a);
- c. Ensure proper market conduct is managed in FICC markets through monitoring compliance with all standards, formal and voluntary, under the Senior Managers and Certification Regimes;
- d. Extend elements of the Senior Managers and Certification Regimes to a wider range of regulated firms active in FICC markets; and
- e. Improve firms' and traders' awareness of the application of competition law to FICC markets.

##### 4 Launch international action to raise standards in global FICC markets

- a. Agree a single global FX code, providing: principles to govern trading practices and standards for venues; examples and guidelines for behaviours; and tools for promoting adherence. The Review strongly welcomes the recent announcement by central banks to work towards those goals;
- b. As part of that work, improve the controls and transparency around FX market practices, including 'last look' and time stamping;
- c. Explore ways to ensure benchmark administrators publish more consistent self-assessments against the IOSCO Principles, and provide guidance for benchmark users; and
- d. Examine ways to improve the alignment between remuneration and conduct risk at a global level.

#### Principles to guide a more forward-looking approach to FICC markets:

##### 5 Promoting fairer FICC market structures while also enhancing effectiveness, through:

- a. Improving transparency in ways that also maintain or enhance the benefits of diverse trading models, including over-the-counter;
- b. Promoting choice, diversity and access by monitoring and acting on potential anti-competitive structures or behaviour; and
- c. Catalysing market-led reform held back by private sector co-ordination failures.

##### 6 Forward-looking conduct risk identification and mitigation, through:

- a. Timely identification of conduct risks (and mitigants) posed by existing and emerging market structures or behaviours;
- b. Enhanced surveillance of trading patterns and behaviours by firms and authorities; and
- c. Forward-looking supervision of FICC markets.



# A Cyber risk

Cyber attacks can threaten financial stability by disrupting the provision of critical functions from the financial system to the real economy. Progress has been made in understanding the resilience of the financial sector to cyber risk, in part through new vulnerability testing following an earlier FPC Recommendation. The FPC has now recommended that this testing be made a regular part of core firms' cyber resilience assessment. To strengthen their resilience, firms and authorities need to build the capability to recover quickly from attacks. Building these evolving capabilities will require strong governance at both board and executive level, given the adaptive nature of the threat.

## *Cyber attack is a growing threat to financial stability...*

Cyber attacks have the potential to threaten financial stability by disrupting the vital functions that the financial system performs for the real economy. Such disruption may occur even if firms providing the service remain solvent and otherwise operational. As with financial risk, cyber risk can be amplified by the interconnectedness of the financial system. In particular, a successful attack on a systemic institution or vital infrastructure (including non-financial infrastructure that the financial sector relies on, such as utilities) could cascade throughout the financial system.

The threat from cyber attack is growing, as financial services are increasingly offered via complex and interconnected IT platforms, while access to the technology and skills needed to commit cyber attacks has spread. A 2015 UK Government survey found that 90% of large businesses across all sectors had experienced a malicious IT security breach over the past year.<sup>(1)</sup> Attackers will change their strategies in response to defensive measures by firms and regulators. Further, cyber risk is a global issue: attacks often cross borders.

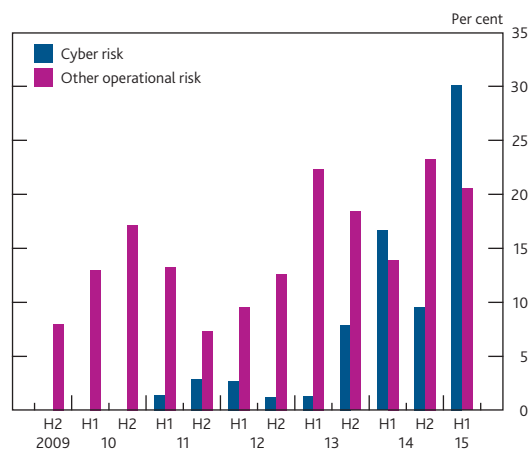
## *...but awareness of the risk is growing...*

Awareness of cyber risk has grown, with an increasing number of respondents to the Bank's *Systemic Risk Survey* naming cyber risk as a key concern over the past two years (**Chart A.31**). And the World Economic Forum has identified large-scale cyber attacks as one of the high-impact risks most likely to crystallise over the next ten years.<sup>(2)</sup>

## *...and action has already been taken.*

Many financial services firms and regulators have made progress in building cyber resilience. For example, a number of industry-led initiatives, such as 'Waking Shark', have been set

**Chart A.31 Concern about cyber risk has grown**  
*Systemic Risk Survey: proportion of respondents highlighting operational/cyber risk as a key concern*



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

(1) PwC (2015), '2015 Information Security Breaches Survey, Technical Report'; [www.pwc.co.uk/assets/pdf/2015-isbs-technical-report-blue-03.pdf](http://www.pwc.co.uk/assets/pdf/2015-isbs-technical-report-blue-03.pdf).

(2) World Economic Forum (2015), 'Global Risks 2015 10th Edition'; [www3.weforum.org/docs/WEF\\_Global\\_Risks\\_2015\\_Report15.pdf](http://www3.weforum.org/docs/WEF_Global_Risks_2015_Report15.pdf).

**Table A.8** Previous industry and regulatory initiatives to address cyber risk

**Waking Shark**

Cyber attack scenario exercise held in 2011, to test information sharing and co-ordination by firms and regulators in a simulated cyber attack.

**Waking Shark II**

Repeat of 'Waking Shark' exercise, held in 2013, and focused on crisis communications.

**FPC Recommendation**

Issued in June 2013, this led to two initiatives: a cyber risk management questionnaire and CBEST vulnerability testing.

Source: Bank of England.

**Table A.9** UK financial authorities with responsibility for cyber resilience

**HM Treasury**

HM Treasury is the lead government department for operational resilience in the financial sector. As such, it is responsible for advising ministers on the resilience of the sector to key risks, such as that of cyber attack, including through the annual Finance Sector Resilience Plan, and identifying policy priorities. It is also responsible for co-ordinating with other parts of government to strengthen resilience in the sector, and in any response to major operational disruption. HM Treasury works with the Bank of England and the FCA and other relevant government agencies to identify which firms and systems are the most critical parts of the UK financial sector.

**Bank of England**

The FPC is charged with taking action to remove or reduce systemic risks (including cyber risk) with a view to protecting and enhancing the resilience of the UK financial system (as set out in the Foreword to this Report). The Bank (including the PRA) develops cyber resilience policy, supervises PRA-regulated institutions, and also leads CBEST vulnerability testing.

**Financial Conduct Authority**

The FCA develops relevant policy, assesses and supervises FCA-regulated institutions, with a focus on consumer detriment and market integrity. For dual-regulated firms, the FCA liaises with the Bank of England (including the PRA). The FCA is named as a party to the current FPC cyber Recommendation.

Sources: Bank of England, FCA and HM Treasury.

**Table A.10** Cyber questionnaire: selected thematic findings

- Overemphasis on technological (as opposed to management, behavioural and cultural) aspects weakens cyber defensive capabilities.
- Underinvestment in the capability to detect cyber attacks in progress, identify threats, and analyse indicators of malicious activity weakens defence capabilities.
- Effective oversight of supply chain and third parties that handle information processing or IT systems is critical to effective cyber resilience.
- Cyber attack can undermine existing recovery arrangements.
- Effective governance: board members must drive a culture of resilience throughout the firm.

Sources: Bank of England and FCA.

up to promote cyber resilience (Table A.8). And in 2013, the FPC made a Recommendation that HM Treasury, working with relevant government agencies and the other financial authorities (Table A.9), 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. In response, the authorities issued a cyber risk management questionnaire to core UK firms, and themes from this have been used to identify areas for future work. Based on this assessment, the capabilities needed to address cyber risk can usefully be divided into three categories: defensive capabilities, recovery capabilities and effective governance.

*Defensive capability should focus on both IT and non-IT vulnerabilities...*

Defensive resilience capabilities enable firms to identify and withstand attack.<sup>(1)</sup> The cyber risk management questionnaire has been used to identify gaps in firms' defensive capabilities (Table A.10). A common failing was viewing cyber risk as a purely 'technological' issue, without recognising that people matter as much as technology. Attackers can exploit weaknesses in personnel security (for example, deceiving employees so that they reveal passwords) before turning to more sophisticated hacking. The survey also revealed underinvestment by firms in their ability to detect cyber attack, which creates a risk that firms react to attacks too slowly, or misdiagnose incidents of disruption as internal IT failures rather than deliberate attacks. Further, defensive capabilities need to extend to the suppliers and infrastructure that the financial system relies on.

Vulnerability testing can be used to understand a firm's specific risks and further develop its defences. A vulnerability testing framework — known as CBEST — was launched by the Bank in May 2014 in response to the FPC's 2013 Recommendation on cyber resilience. This provides a framework for bespoke, controlled cyber security tests, based on government and private sector expertise on the threats that firms are likely to face. CBEST tests are voluntary and have been offered to core firms. A number of core firms have already begun CBEST testing, but the process of testing the core of the system is not yet complete. Compared with the benefits of cyber resilience, which while not reasonably practicable to quantify are substantial, the direct costs to firms of CBEST testing (estimated at around £150,000 per test) are low.

*...while recovery capability is equally important...*

Promoting resilience through defensive capabilities, while important, is not enough to safeguard the system against disruption of critical economic services. It is likely that some cyber attacks will successfully breach firms' defensive arrangements. Developing the capability to resume vital

(1) Defensive resilience capabilities include firms' ability to protect themselves by identifying and detecting attacks, as well as capabilities relating to leadership and learning.

services quickly and reliably after an attack will require effective backup and recovery systems. Cyber attacks can cause data corruption, which can spread between connected systems. Managing this threat is likely to require segregation between primary and backup systems, in contrast to the management of other business continuity threats, where the focus has tended to be on building immediate system backup capacity, through closely connected backup systems that allow for the rapid resumption of services.

*...and these require effective governance.*

Another important theme from the cyber questionnaire was governance — in particular, the importance of boards viewing cyber risk as a core strategic issue, and challenging senior management where resilience and recovery plans are inadequate. Effective governance includes ensuring that leadership teams have the skills and knowledge required to understand cyber risk, particularly given the adaptive nature of the threat. Cyber resilience is likely to remain an important challenge for boards and senior management.

*The FPC considers it vital that work on cyber resilience continues.*

The first step in mitigating cyber risk is to have an accurate understanding of where the system's vulnerabilities lie. At its meeting in June 2015, the FPC therefore replaced its existing cyber Recommendation with the following Recommendation targeted at completing the current set of CBEST tests and making them a regular part of supervision:

**The FPC recommends that the Bank, the PRA and the FCA work with firms at the core of the UK financial system to ensure that they complete CBEST tests and adopt individual cyber resilience action plans. The Bank, the PRA and the FCA should also establish arrangements for CBEST tests to become one component of regular cyber resilience assessment within the UK financial system.**

The FPC considers that this Recommendation will have a positive impact on the PRA's and the FCA's objectives. While CBEST test results are expected to be an effective measure of core firms' defensive capabilities, further work is also needed to promote recovery capabilities and effective governance. The FPC therefore endorsed a broader work programme, designed to develop these evolving capabilities (**Table A.11**), for all firms at the core of the financial system. This work will be undertaken by the Bank, the PRA, the FCA and HM Treasury, and will enable the FPC to consider whether additional action is needed to address cyber risk. Recognising that firms outside the financial system provide essential services to the financial system, the work programme includes reviewing the list of those firms so that relevant regulators can take account of that dependency in their own cyber planning. And recognising the global nature of the cyber threat, the programme will involve further co-ordination with international authorities.

**Table A.11** Cyber resilience work plan

The work programme endorsed by the FPC will focus on:

- Reviewing the list of core firms to ensure that it captures those most critical to financial stability in the event of a major cyber attack, including those not regulated by the authorities.
- Defining and developing a clear set of capabilities that will enhance *ex-ante* cyber resilience within the UK financial system and improve the effective *ex-post* collective capability of the sector and the authorities to respond to and recover from a major cyber attack.
- Developing co-operation with international authorities to assess and improve cyber resilience in the financial sector, recognising cyber as a potentially cross-jurisdictional threat.

The FPC asked for a report back by Summer 2016.

Source: Bank of England.

# B Resilience of the UK financial system

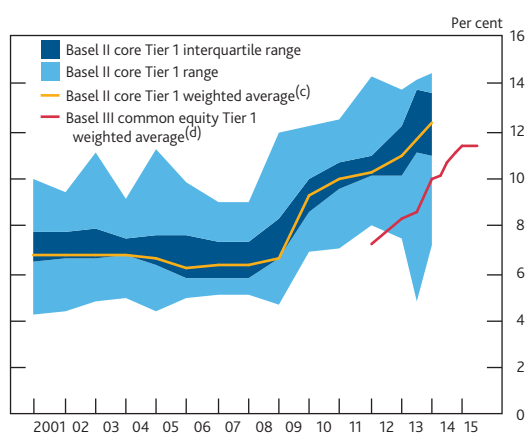
Resilience of the UK banking system has continued to strengthen in line with higher regulatory requirements, both in terms of capital and funding. UK insurers have also maintained solvency ratios in excess of current regulatory requirements. In financial markets, core intermediaries continue to reduce their exposure to liquidity and market risk, possibly with implications for market liquidity. Credit growth to the UK real economy has remained modest, though bank credit availability is gradually improving. Risks of a deterioration of underwriting standards in new lending to UK households and companies currently appear contained.

## B.1 Banking sector

This section assesses the resilience of the UK banking sector.

**Chart B.1 Capital resilience has strengthened**

UK banks' risk-weighted capital<sup>(a)(b)</sup>



Sources: PRA regulatory returns, published accounts and Bank calculations.

- (a) Major UK banks' core Tier 1 capital as a percentage of their risk-weighted assets. Major UK banks are Banco Santander, Bank of Ireland, Barclays, Co-operative Bank, HSBC, LBG, National Australia Bank, Nationwide, RBS and Virgin Money. Data exclude Northern Rock/Virgin Money from 2008.
- (b) From 2008, the chart shows core Tier 1 ratios as published by banks, excluding hybrid capital instruments and making deductions from capital based on FSA definitions. Prior to 2008 that measure was not typically disclosed; the chart shows Bank calculations approximating it as previously published in the *Report*.
- (c) The mean is weighted by risk-weighted assets.
- (d) The Basel II series was discontinued with CRD IV implementation on 1 January 2014. The 'Basel III common equity Tier 1 capital ratio' is calculated as common equity Tier 1 capital over risk-weighted assets, according to the CRD IV definition as implemented in the United Kingdom. The Basel III peer group includes Barclays, Co-operative Bank, HSBC, LBG, Nationwide, RBS and Santander UK.

*UK banks have increased their risk-based capital ratios, which exceed agreed minimum requirements...*

Overall, regulatory capital requirements are set to be up to ten times higher than before the crisis for the most systemically important institutions.<sup>(1)</sup> UK banks started to report their ratios of common equity Tier 1 (CET1) capital to risk-weighted assets on a Basel III basis at end-2011. The UK banks' aggregate CET1 ratio is currently just above 11% (**Chart B.1**) — an increase of 4 percentage points since end-2011, of which nearly a third has been achieved by increasing capital through issuance and retained earnings, and the rest through reductions in risk-weighted assets (**Table B.1**).

This aggregate ratio is in excess of the internationally agreed end-point CET1 ratio requirement — including a capital conservation buffer and a buffer for global systemically important banks (G-SIBs) — by over 2 percentage points (**Table B.2**). Time-varying buffers, such as the countercyclical capital buffer and the PRA buffer, may also be applied at the discretion of the FPC and the PRA Board respectively.

*...and UK banks have continued to raise their leverage ratios.*

Abstracting from risk weights, the average simple, accounting-based leverage ratio of UK banks — measured as equity capital as a percentage of banks' reported assets — is now more than double its end-2009 level, having fallen in the run-up to the crisis (**Chart B.2**).

(1) See 'The future of financial reform', speech by Mark Carney, 17 November 2014 for a comparison of current capital requirements to pre-crisis requirements; [www.bankofengland.co.uk/publications/Documents/speeches/2014/speech775.pdf](http://www.bankofengland.co.uk/publications/Documents/speeches/2014/speech775.pdf). The calculations also draw upon 'Building a resilient financial system', speech by Jaime Caruana, 7 February 2012.

**Table B.1 Increase in UK banks' risk-weighted capital ratio has been driven by reductions in risk-weighted assets**Change in UK banks' aggregate Basel III risk-weighted capital ratio in percentage points (pp)<sup>(a)</sup>

Change in Basel III CET1 ratio since end-2011	4.1 pp
of which due to increase in capital	1.2 pp
of which due to capital issuance <sup>(b)</sup>	29%
of which due to retained earnings	71%
of which due to reduction in risk-weighted assets	2.9 pp
of which due to reduced loans outstanding to the UK real economy	11%
of which due to reductions in other assets <sup>(c)</sup>	89%

Sources: Dealogic, PRA regulatory returns and Bank calculations.

- (a) UK banks are Barclays, Co-operative Bank, HSBC, LBG, Nationwide, RBS and Santander UK.  
 (b) Excludes capital downstreamed from parent companies.  
 (c) Includes changes to risk-weighted assets from changes in operational risk and market risk.

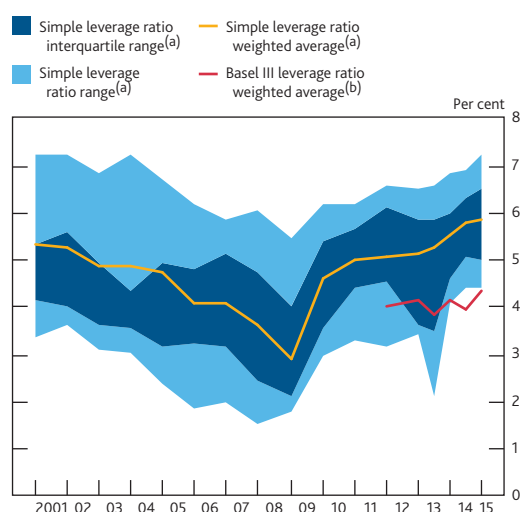
**Table B.2 Full implementation of the capital framework in the next few years will increase requirements**Minimum CET1 capital end-point requirements as a percentage of risk-weighted assets<sup>(a)(b)(c)</sup>

Baseline minimum requirement	4.5%
Capital conservation buffer	2.5% (phased in between 2016 and 2019)
Global systemically important bank (G-SIB) buffer	0%–2.5% (phased in between 2016 and 2019) (2% on average for UK banks)
Minimum end-point requirements	7%–9.5% (9% on average for UK banks)

- (a) A further requirement, the systemic risk buffer (SRB), will be phased in by 2019. In the United Kingdom, the SRB will be set by the PRA, applying a methodology to be determined by the FPC. This will be applied to those parts of UK banks that will be ring-fenced under the Financial Services (Banking Reform) Act 2013 ('ring-fenced bodies') and large building societies.  
 (b) The countercyclical capital buffer is currently set at zero in the United Kingdom.  
 (c) Additional CET1 capital may be required by the PRA for risks not covered by the capital framework.

**Chart B.2 UK banks' leverage ratios have improved**

UK banks' leverage ratios



Sources: PRA regulatory returns, published accounts and Bank calculations.

- (a) The simple (accounting-based) leverage ratio is defined as the ratio of shareholders' claims to total assets based on banks' published accounts (note a discontinuity due to introduction of IFRS accounting standards in 2005, which tends to reduce leverage ratios thereafter). The series uses major UK banks as a peer group as per Chart B.1. Data exclude Northern Rock/Virgin Money from 2008. Average is weighted by total assets.  
 (b) The Basel III leverage ratio corresponds to aggregate peer group Tier 1 capital over aggregate leverage ratio exposure. Up to 2013, Tier 1 capital includes grandfathered capital instruments and the exposure measure is based on the Basel 2010 definition. From 2014 H1, Tier 1 capital excludes grandfathered capital instruments and the exposure measure is based on the Basel 2014 definition. The Basel III sample consists of Barclays, Co-operative Bank, HSBC, LBG, Nationwide, RBS and Santander UK. Weighted by total exposures.

Since January 2015, all global banks disclose their Basel III leverage ratios, in line with regulatory requirements. The largest UK banks all reported a leverage ratio above 3% in 2015 Q1. This is the level at which the FPC has directed the PRA to set its minimum requirement for each major UK bank and building society, above which any applicable systemic and countercyclical leverage ratio buffers would apply (Box 4). Given that the countercyclical buffer is currently set at 0%, the UK banks' aggregate ratio is currently above the agreed FPC leverage requirement as it would fully apply.

Recent improvements to leverage ratios have been achieved largely through the issuance of additional Tier 1 (AT1) instruments, which convert into ordinary shares or are written down to generate equity once a regulatory capital ratio threshold has been breached. UK banks issued under £4 billion of AT1 instruments between 1 January and 19 June 2015 — around 40% of the amount that they issued over the same period last year. In October 2014, the FPC judged that only 'high-trigger' AT1 instruments (that is those that trigger at a CET1 ratio of at least 7%) should count towards the leverage ratio, to provide greater assurance that the AT1 would convert while a bank remains a going concern. In addition, the FPC expects to limit the share of AT1 instruments eligible to meet the minimum leverage ratio requirement to 25%.

The resilience of UK banks is further evaluated through the Bank's annual stress test. At its March 2015 meeting, the FPC agreed elements of the Bank's 2015 stress test, which is currently being undertaken (see Box 3).

### Profits have been lower since the crisis...

Major UK banks' annual profits increased by 60% in 2014, due largely to a continued fall in impairments and a 15% fall in expenses. But UK banks' profitability remains low relative to recent historic experience. For instance, major UK banks' average return on assets at end-2014 was less than a third of its average level between 1987 and 2007.

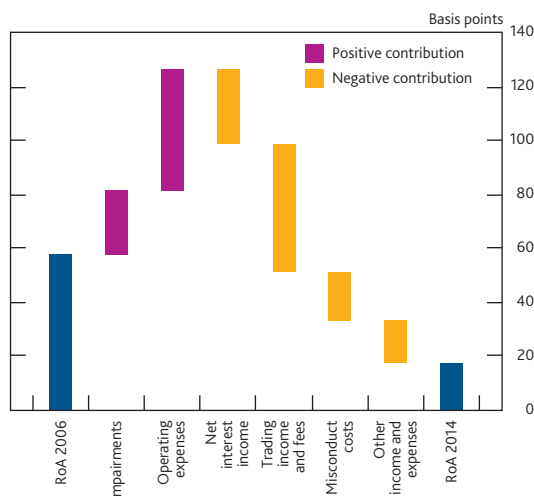
Compared to just prior to the crisis, falling returns on assets are explained largely by lower trading income and net interest income, despite banks' lower reliance on debt financing (Chart B.3). Pervasive charges relating to past misconduct have also depressed profits (see Misconduct section). Banks' low returns are reflected in market-based indicators, with UK banks' shares, for example, continuing to trade below their book value (Chart B.4). This measure indicates, in part, investors' expectations of the banking sector's future profitability.

Persistently low interest rates could put downward pressure on UK banks' profitability, especially as interest rates on new mortgages continue to decline, as a result of competitive pressures. However, the impact of low interest rates on net interest margins has not been material in the recent past due,



**Chart B.3 UK banks' returns are lower than their pre-crisis levels**

Change in UK banks' return on assets (RoA) decomposed<sup>(a)(b)(c)(d)</sup>

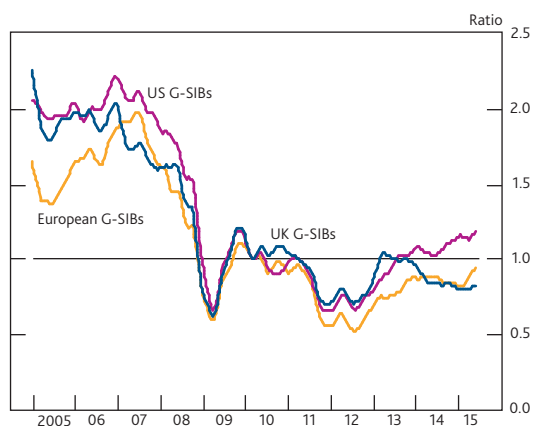


Sources: Firm submissions, published accounts and Bank calculations.

- (a) Returns are defined as profits attributable to shareholders.  
 (b) Assets are annual averages.  
 (c) When banks in the sample have merged, aggregate profits for the year are approximated by those of the acquiring group.  
 (d) UK banks are Barclays, Co-operative Bank, HSBC, LBG, Nationwide, RBS, Santander UK and Standard Chartered. All data year-end, except for Nationwide due to its different reporting cycle.

**Chart B.4 Market indicators reflect banks' low returns**

Global banks' price to book ratios<sup>(a)(b)</sup>



Sources: Thomson Reuters Datastream and Bank calculations.

- (a) Chart shows the ratio of share price to book value per share. Simple averages of the ratios in each peer group are used. The chart plots the three-month rolling average.  
 (b) Global banks are as per the Financial Stability Board's November 2014 list of G-SIBs, excluding BBVA and Groupe BPCE.

in part, to banks' management of their interest rate risk through hedging.

*...but banks aim to improve profitability through strategic business model changes.*

UK banks plan to improve their profitability partly by exiting businesses with lower returns. That includes some of their global investment banking activities, in which they have already reduced exposures considerably since the crisis. Securities held for trading by the large UK banks, for example, amounted to nearly £400 billion at end-2014 — around £8 billion lower than in 2013 and almost 35% lower than in 2007. UK banks have also reduced their exposures to other financial institutions through repo lending and securities lending transactions, by around 20% in 2014 (**Chart B.5**). This will reduce intrafinancial exposures further, making contagion in the UK financial system less likely, but may affect access to funding for some financial institutions.

*Funding conditions have remained benign, and banks have reduced reliance on wholesale funding...*

The post-crisis trend towards more stable funding structures has continued. Banks have shifted their funding mix away from wholesale funding sources towards deposits. Major UK banks' funding from customer deposits has increased by nearly £250 billion since 2008, while wholesale funding declined by over £1.3 trillion over the same period (**Chart B.6**). Under the provisional proposal for the Net Stable Funding Ratio, banks will be required to fund their illiquid assets and off balance sheet activities using stable funding, such as equity, long-term bonds and household deposits, by 2018. UK banks' available amount of stable funding already exceeds 100% of the required amount.

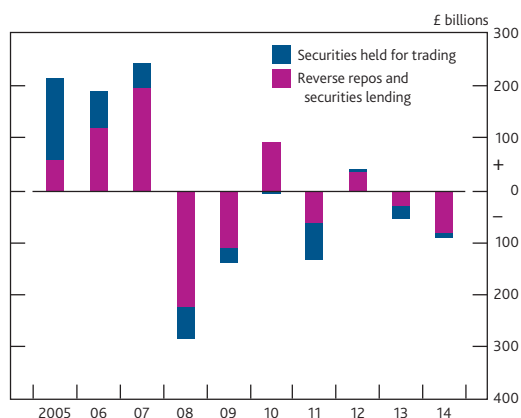
UK banks' net issuance of securitisation has continued to decline. UK monetary financial institutions' securitisation outstanding fell by nearly a quarter in the year to April 2015, to £146 billion. As highlighted in previous *Reports*, factors that may have restrained activity in UK and European securitisation markets include macroeconomic conditions, the availability of cheaper refinancing sources, regulatory uncertainties and the stigma still attached to securitisation given its role in the crisis. In response, the European Commission launched a public consultation on creating a European Union (EU) framework for simple, transparent and comparable securitisations in February 2015.<sup>(1)</sup> The European Banking Authority is expected to provide its technical advice to the Commission in early July.

The cost of default protection against UK banks, a proxy for their wholesale funding costs, has stayed low since the previous *Report*, despite increased risks of an adverse event in

(1) The consultation document is available at [http://ec.europa.eu/finance/consultations/2015/securitisation/index\\_en.htm](http://ec.europa.eu/finance/consultations/2015/securitisation/index_en.htm).

### Chart B.5 UK banks have continued to reduce investment banking and securities financing exposures

Annual change in big six UK banks' outstanding assets relating to investment banking and securities financing<sup>(a)(b)</sup>



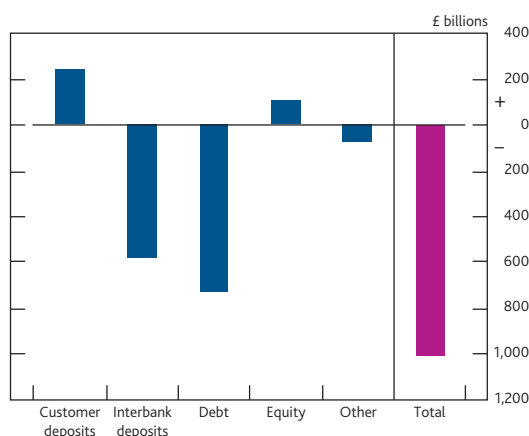
Sources: Published accounts and Bank calculations.

(a) Excluding derivatives.

(b) Big six UK banks are Barclays, HSBC, LBG, Nationwide, RBS and Santander UK.

### Chart B.6 UK banks' reliance on wholesale funding has continued to decline

Change in UK banks' funding between 2008 and 2014<sup>(a)(b)</sup>



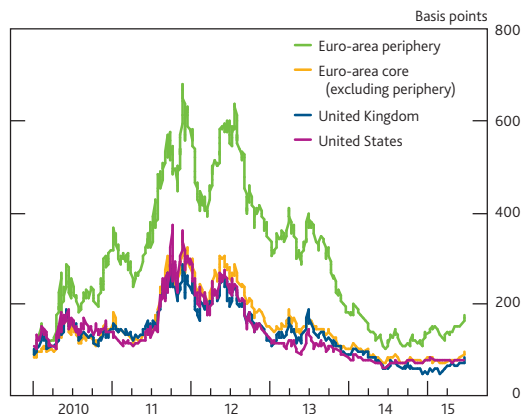
Sources: Bank of England, published accounts and Bank calculations.

(a) UK banks are Banco Santander, Bank of Ireland, Barclays, Co-operative Bank, HSBC, LBG, National Australia Bank, Nationwide and RBS.

(b) Excludes derivative liabilities. Deposit data include some repurchase agreements.

### Chart B.7 Banks' funding costs remained low

Cost of default protection for selected banking systems<sup>(a)</sup>



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

(a) Average five-year senior CDS premia of selected banks, weighted by assets at 2014 H1.

the euro area (Chart B.7). The cost of deposit funding has also fallen. The effective interest rate paid by banks on customer deposits is around 20 basis points lower than in 2014 H1. Current low funding costs reflect in part wholesale market participants' greater confidence in banks' resilience, and high investor demand for banks' long-term debt instruments as a result of the global low-yield environment (see Market liquidity section).

*...although new resolution requirements may have some implications for bank funding.*

Ensuring that banks can fail without adversely affecting the rest of the financial system is vital for resilience. To this end, the Bank has been working closely with resolution authorities in other countries to develop plans to resolve systemically important banks. Improving banks' loss-absorbing capacity, so that they can be recapitalised in a resolution, is an important part of these plans. The Financial Stability Board's (FSB's) consultation on a proposal for a common international standard on total loss-absorbing capacity (TLAC) for G-SIBs closed in February this year. The FSB is undertaking a Quantitative Impact Assessment, to inform the finalisation of the TLAC standard by the end of 2015.

In the United Kingdom, the Bank intends to implement TLAC through its power to set a minimum requirement for own funds and eligible liabilities (MREL) — a requirement of the EU Bank Recovery and Resolution Directive. The Bank intends to consult on MREL in the coming months and the requirement will be phased in over a number of years. The setting of MREL will ensure that all relevant UK banks maintain sufficient amounts of loss-absorbing capacity — that is capital and other debt — to facilitate resolution should they fail.

In order to comply with these standards, it is likely that some UK banks will need to restructure their existing wholesale funding, for example, by issuing debt from a holding company. They may let maturing debt roll off and reissue it in a form that is eligible for MREL, or they may use liability management exercises to achieve the same outcome. Some banks may also need to issue a small amount of additional qualifying instruments.

*UK banks are well placed to respond to liquidity shocks.*

UK banks have increased their liquid asset buffers materially since the crisis, and are consequently well placed to comply with Liquidity Coverage Ratio (LCR) requirements, which will be phased in from October 2015. The LCR measures a bank's liquid assets as a proportion of the outflows it might face if funding conditions became stressed. In aggregate, UK banks currently hold sufficient liquid assets to meet the end-point LCR requirement of 100% (of stressed outflows). UK banks' holdings of cash and high-quality unencumbered securities have trebled since 2008 and now amount to over 15% of UK banks' funded assets. In addition, banks have increased the

### Box 3

## Stress testing the UK banking system in 2015

In 2015, the largest seven UK banks and building societies (hereafter 'banks') are taking part in the Bank's latest concurrent stress test of the UK banking system. This stress test will seek to address many of the risks described in this *Report*, including those arising from the global environment, misconduct and market liquidity, via the trading book. Risks arising from the UK housing market and UK current account were addressed in the first concurrent UK banking system stress test, carried out in 2014.<sup>(1)</sup> This box provides details on the 2015 exercise and highlights important differences to the 2014 stress test.

The Bank's concurrent stress-testing framework provides a quantitative, forward-looking assessment of the capital adequacy of the UK banking system and individual institutions within it, playing a critical role in supporting both the FPC and the PRA in meeting their statutory objectives. Building on the new regulatory infrastructure, the stress tests bring together expertise from across the Bank, including macroeconomists, risk and financial stability experts and supervisors to strengthen the Bank's assessment of risks to UK banking sector resilience.

The 2015 stress test builds on the approach taken in 2014. However, unlike the 2014 test, which was conducted as a 'UK variant' of the European Banking Authority's (EBA's) EU-wide stress test,<sup>(2)</sup> the 2015 stress and baseline scenarios have been fully designed and calibrated by Bank staff. For the United Kingdom, the baseline scenario is broadly consistent with projections in the February 2015 *Inflation Report*, while the international baseline is largely consistent with the International Monetary Fund's (IMF's) October 2014 *World Economic Outlook* projections. Both the stress and baseline scenarios have been discussed and agreed by the FPC and the PRA Board.

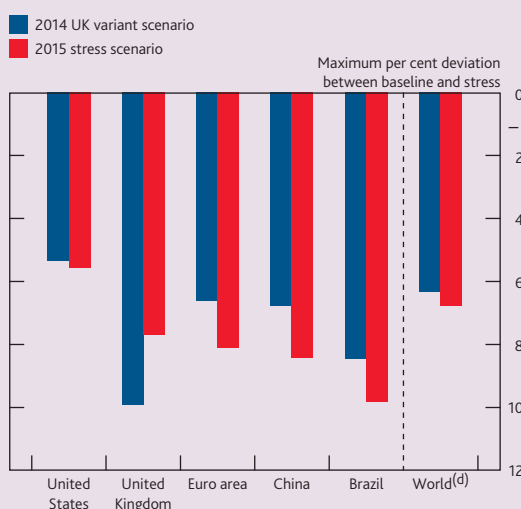
### Stress scenario<sup>(3)</sup>

The design of the 2015 stress scenario reflects the judgement of the FPC in the December 2014 *Report* that the global economic environment presented a growing threat to UK financial stability (as updated in the Global environment section). As a result, the 2015 scenario differs substantially from the 2014 test, which focused on risks to the domestic economy. The setting of different scenarios over time should help to ensure that the banking system is resilient to a range of adverse conditions.

Under the 2015 macroeconomic stress scenario, which stretches over five years, global growth turns out materially lower than expectations, with the level of world GDP falling

short of the baseline by almost 7% during the third year of the stress (Chart A). Related to that shortfall, disinflationary pressures build as oil prices fall to a low of US\$38 per barrel and other commodity prices drop. Market sentiment deteriorates rapidly, investors look to de-risk their portfolios, and safe-haven capital flows to high-quality US assets are generated. The VIX index peaks at above 45 percentage points in the second half of 2015, compared with a peak of around 60 percentage points in 2008. The dollar appreciates against a wide range of currencies, with emerging market economy (EME) exchange rates particularly affected, depreciating on average by more than 25% peak-to-trough during the stress.<sup>(4)</sup> Liquidity in some markets becomes seriously impaired and credit risk premia rise sharply.

**Chart A** Differences in the severity of GDP shocks between the 2014 and 2015 stress tests<sup>(a)(b)(c)</sup>



Sources: Bank of England, EBA, European Commission, IMF October 2014 *World Economic Outlook* and Bank calculations.

- Chart shows the maximum deviation between calendar-year real GDP in the stress and baseline scenarios, over the three-year (2014 scenario) and five-year (2015 scenario) horizons. The date of the maximum difference can differ for each bar. For example, the maximum difference between stress and baseline in the 2015 scenario occurs in the euro area in 2019, but for world GDP this occurs in 2017.
- The 2014 bars are calculated from: (i) the 2014 UK variant scenario (for the United Kingdom) and the 2014 EBA scenario (for foreign economies) in the stress, and (ii) the projections of the Monetary Policy Committee as communicated in the February 2014 *Inflation Report* (for the United Kingdom) and the European Commission's Winter 2014 forecast (for foreign economies) in the baseline.
- Baseline projections in 2015, other than for the United Kingdom, are consistent with the IMF's projections in the October 2014 IMF *World Economic Outlook*. Bank staff have quarterly interpolated the original annual series.
- The calculation for the world GDP bar in 2014 is an estimate. World GDP is weighted by purchasing power parity.

- For the results of the 2014 stress test, see 'Stress testing the UK banking system: 2014 results'; [www.bankofengland.co.uk/financialstability/Documents/fpc/results161214.pdf](http://www.bankofengland.co.uk/financialstability/Documents/fpc/results161214.pdf).
- While the EBA is not planning to conduct a stress test in 2015, a number of other international authorities are. The Bank continues to liaise with these authorities to ensure that a joined-up approach is taken whenever appropriate.
- For more details see 'Stress testing the UK banking system: key elements of the 2015 stress test'; [www.bankofengland.co.uk/financialstability/Documents/stresstesting/2015/keyelements.pdf](http://www.bankofengland.co.uk/financialstability/Documents/stresstesting/2015/keyelements.pdf).
- This group of EMEs comprises Argentina, Brazil, China, Indonesia, Mexico, Russia, Saudi Arabia, South Africa and Turkey. Emerging economies are those identified as such by the IMF (source: IMF *World Economic Outlook*, October 2014, Statistical Appendix).



In the United Kingdom, output growth turns negative as export demand contracts, resulting in a dip of more than 7.5% in the level of UK GDP relative to baseline in the third year of the stress. Higher household and corporate saving rates and an increase in the cost of credit — as corporate bond spreads rise by around 360 basis points — lead to falls in consumption, investment and property prices.<sup>(1)</sup> Peak-to-trough, house prices fall by 20% and commercial property values by around 30%. Additional monetary policy stimulus is pursued, contributing to a fall in the sterling yield curve of around 90 basis points over the course of the stress scenario.<sup>(2)</sup>

Compared with the 2014 test, the stress scenario is more severe for some EMEs and the euro area, and less severe for the UK economy (**Chart A**). Within the United Kingdom, the combination of shocks impacting the corporate sector is more severe than the shocks for households.

The traded risk scenario is also significantly different from the EBA methodology used in 2014. It is consistent with the macroeconomic scenario — both in terms of the broad movements in market risk factors and the types of counterparties affected — and takes account of the liquidity of trading book positions (reflecting the Market liquidity section). The traded risk scenario also tests UK banks' ability to withstand the default of a number of counterparties. This is a material risk as banks' trading books typically contain sizable exposures to individual counterparties.

For the 2015 stress test, the Bank has provided further clarification as to how banks should estimate potential costs relating to past misconduct in both their baseline and stress projections.<sup>(3)</sup> Banks' prudential estimates of future misconduct costs should be determined, irrespective of whether a provision has been recognised in the accounts, by evaluating a range of settlement outcomes and assigning probabilities to these outcomes. These prudential estimates are likely to exceed current provisions (see Misconduct section).

### Hurdle rate framework

The results of the UK stress test will inform analysis of the case for both system-wide policy interventions by the FPC and firm-specific supervisory actions by the PRA.

One threshold, or hurdle rate, for the test will be set at 4.5% of risk-weighted assets, to be met with common equity Tier 1 capital in the stress. For the 2015 test, an additional threshold has been introduced. This has been set at 3% of the Leverage Exposure Measure, to be met with Tier 1 capital, where relevant additional Tier 1 instruments would be permitted to comprise up to 25% of this requirement.

But the PRA may still require banks to take action to strengthen their capital position, even if they remain above

these hurdle rates in the stress scenario. Examples of factors that the PRA might take into consideration when deciding whether action is needed include, but are not limited to: the banks' Tier 1 and total capital ratios; Pillar 2A capital requirements; and the extent to which potentially significant risks are not quantified adequately as part of the stress.

### Lending profiles in the stress scenario

A central macroprudential objective of stress testing is to ensure that the banking system is sufficiently capitalised to maintain its lending capability in the face of adverse shocks. Reflecting this, in the 2014 stress test, the FPC agreed a general principle that banks' proposed management actions to reduce the size of their loan books would not be accepted, unless driven by changes in credit demand that would be expected to occur in the stress scenario. The aggregate bank lending profiles published as part of the 2015 stress-test scenario reflect that principle. In practice, this means that banks' ability to improve their stressed capital ratios through deleveraging is constrained.

### Results and next steps

The results of the 2015 stress test will be published alongside the December 2015 *Report*.

The 2014 stress test was a first step towards establishing the Bank's medium-term stress-testing framework, the main elements of which are set out in a Discussion Paper published in 2013.<sup>(4)</sup> The Bank intends to publish an update on its medium-term vision for the UK stress-testing framework later in 2015, drawing on its experience of concurrent stress testing thus far.

(1) Refers to the peak impact on investment-grade UK corporate bond spreads.

(2) Refers to the average impact on the ten-year UK government bond curve.

(3) Misconduct costs may not vary significantly between the baseline and stress scenario. However, there may be exceptions, for example where redress relates to market prices. See 'Stress testing the UK banking system: guidance for participating banks and building societies'; [www.bankofengland.co.uk/financialstability/Documents/stresstesting/2015/guidance.pdf](http://www.bankofengland.co.uk/financialstability/Documents/stresstesting/2015/guidance.pdf).

(4) See 'A framework for stress testing the UK banking system: a Discussion Paper'; [www.bankofengland.co.uk/financialstability/fsc/Documents/discussionpaper1013.pdf](http://www.bankofengland.co.uk/financialstability/fsc/Documents/discussionpaper1013.pdf).

## Box 4

### FPC Direction and Recommendation on a UK leverage ratio framework

On 6 April 2015, the Government gave the FPC powers of Direction over the PRA in relation to leverage ratio requirements. The Government's decision to legislate followed Recommendations made by the FPC as part of its review of the leverage ratio, requested by the Chancellor of the Exchequer in November 2013 and published in October 2014.<sup>(1)</sup>

The FPC's review of the leverage ratio set out the FPC's proposals, if granted powers of Direction over the leverage ratio, to direct the PRA to set leverage ratio requirements and buffers for PRA-regulated banks, building societies and investment firms, including:

- (a) a minimum leverage ratio requirement, to be set at 3%;
- (b) a supplementary leverage ratio buffer to apply to global systemically important institutions (G-SIIs)<sup>(2)</sup> and other major domestic UK banks and building societies, to be phased in from 2016 alongside the existing systemic risk-weighted capital buffers and to be set at 35% of the corresponding risk-weighted capital buffer rate; and
- (c) a countercyclical leverage ratio buffer, to apply to all firms from the point that they become subject to the minimum requirement and to be set at 35% of the corresponding risk-weighted capital buffer rate as a guiding principle.

The FPC proposed to introduce the minimum requirement for UK G-SIIs and other major domestic UK banks and building societies at a consolidated level as soon as practicable. Furthermore, the FPC proposed to extend the minimum requirement to all PRA-regulated banks, building societies and investment firms from 2018, subject to a review in 2017 of progress on international leverage ratio standards.

To inform the Parliamentary debate on these proposed new leverage ratio tools, the FPC published a draft Policy Statement in February 2015 that set out the specific tools proposed, the firms that would be subject to them, the timelines for implementation, how these tools might affect financial stability and economic growth, and how the FPC would take decisions over the setting of the countercyclical leverage ratio buffer. It also explained the FPC's proposed calibration of the tools.

### FPC's Direction and Recommendation

In line with its proposal in the review of the leverage ratio, on 24 June 2015 the FPC approved its Policy Statement,<sup>(3)</sup> updating the draft to reflect that it had received the powers of Direction, and decided to give the following Direction and Recommendation to the PRA:

**The FPC directs the PRA to implement in relation to each major UK bank and building society on a consolidated basis measures to:**

- require it to hold sufficient Tier 1 capital to satisfy a minimum leverage ratio of 3%;
- secure that it ordinarily holds sufficient Tier 1 capital to satisfy a countercyclical leverage ratio buffer rate of 35% of its institution-specific countercyclical capital buffer rate, with the countercyclical leverage ratio buffer rate percentage rounded to the nearest 10 basis points;
- secure that if it is a global systemically important institution (G-SII) it ordinarily holds sufficient Tier 1 capital to satisfy a G-SII additional leverage ratio buffer rate of 35% of its G-SII buffer rate.

**The minimum proportion of common equity Tier 1 that shall be held is:**

- 75% in respect of the minimum leverage ratio requirement;
- 100% in respect of the countercyclical leverage ratio buffer; and
- 100% in respect of the G-SII additional leverage ratio buffer.

**Common equity Tier 1 may include such elements that are eligible for grandfathering under Part 10, Title 1, Chapter 2 of Regulation (EU) No 575/2013 as the PRA may determine.**

**The FPC also recommends to the PRA that in implementing the minimum leverage ratio requirement it should specify that additional Tier 1 capital should only count towards Tier 1 capital for these purposes if the relevant capital instruments specify a trigger event that occurs when the common equity Tier 1 capital ratio of the institution falls below a figure of not less than 7%.**

(1) See [www.bankofengland.co.uk/financialstability/Documents/fpc/fs\\_lrr.pdf](http://www.bankofengland.co.uk/financialstability/Documents/fpc/fs_lrr.pdf).

(2) In line with the Financial Stability Board and Basel Committee on Banking Supervision, the FPC's review of the leverage ratio and Policy Statement on leverage ratio tools refer to global systemically important banks (G-SIBs). In European legislation, the Treasury's macroprudential measures order and the FPC's Direction, these institutions are referred to as global systemically important institutions (G-SIIs).

(3) See [www.bankofengland.co.uk/financialstability/Documents/fpc/policystatement010715lrr.pdf](http://www.bankofengland.co.uk/financialstability/Documents/fpc/policystatement010715lrr.pdf).

### Further details on the leverage ratio framework

As set out in detail in the review of the leverage ratio and the Policy Statement, the FPC believes that the leverage ratio has an important role to play in ensuring the resilience of the UK banking system. In accordance with its statutory objectives and the Bank's financial stability strategy, the FPC agreed that leverage ratio requirements are an essential part of the framework for assessing and setting capital adequacy requirements for the UK banking system. In environments that are characterised by complexity, small samples and uncertainties, simple indicators can outperform more complex ones. Complementing the risk-weighted capital requirements with leverage ratio requirements gives banks better protection against risks that are hard to model. On top of this, the relative simplicity of the leverage ratio might make it more readily understood by market participants and more comparable across firms than risk-weighted measures or stress-test outputs.

As explained further in the review of the leverage ratio, the FPC judged that a minimum leverage ratio requirement was needed to remove or reduce systemic risks attributable to unsustainable leverage in the financial system; a supplementary leverage ratio buffer was required to remove or reduce systemic risks attributable to the distribution of risk within the financial sector; and a countercyclical leverage ratio buffer was required to remove or reduce systemic risks that vary through time, such as periods of unsustainable credit growth or other cyclical risks. The FPC set the minimum requirement at 3% because this is consistent with domestic and international loss experience and would put the United Kingdom in line with emerging international standards. And it set the buffer rates at 35% of the relevant risk-weighted buffer rates to preserve the relationship with the risk-weighted framework.

The FPC decided that banks should use the highest quality of capital, common equity Tier 1 (CET1), to meet the majority of their leverage ratio requirements. It therefore decided to limit the share of additional Tier 1 (AT1) instruments eligible to meet a minimum leverage ratio requirement to 25% and to require that all leverage ratio buffers be met with CET1 only. This mirrors the risk-weighted framework. The FPC also decided to recommend that only 'high-trigger' AT1 instruments should count towards the leverage ratio, in order to provide greater assurance that the AT1 would convert to CET1 while the bank is still a going concern. The FPC considered that AT1 instruments should convert at a CET1 ratio of at least 7%. This corresponds to the trigger level that UK firms have adopted in their external issuances to date and is a level that investors and market analysts consider as a high trigger for contingent convertible capital.

EU Capital Requirements Regulation (CRR) recital 18<sup>(1)</sup> confirms that until the harmonisation of the leverage ratio in EU legislation, Member States should be able to apply such measures as they consider appropriate. As set out in its review of the leverage ratio, the FPC sees a strong case for introducing such measures for G-SIIs and other major domestic UK banks and building societies ahead of an international standard on leverage being agreed and implemented. The FPC's view reflects the number of systemically important banks present in the United Kingdom; the size of the UK banking system relative to the domestic economy; and the importance, therefore, of being able to manage effectively model risk and to respond consistently to risks to financial stability that might emerge.

Further details on the leverage ratio framework and the impact analysis carried out by the FPC are set out in the review of the leverage ratio and the FPC's Policy Statement on leverage ratio tools. In particular, the FPC set out the estimated costs and benefits of leverage ratio requirements and its reasons for concluding the measures would be proportionate.

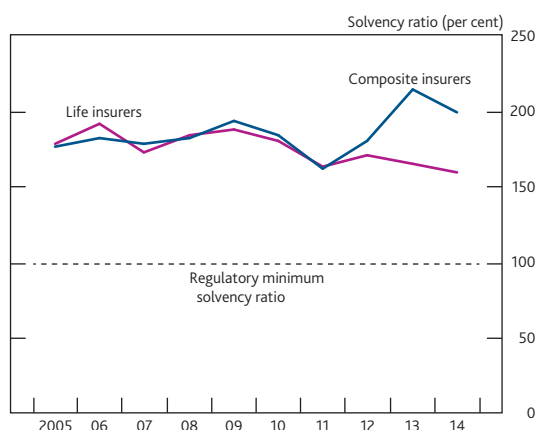
The FPC is also required to have regard to the impact of its policies on the PRA's objectives. As noted above, the FPC considers that the introduction of a leverage ratio framework for major UK banks and building societies would have a positive impact on the resilience of the UK financial system. It should therefore also have a positive impact on the PRA's general objective to promote the safety and soundness of the firms that it regulates, which includes consideration of financial stability. Consistent with the PRA's competition objective, the calibration should not have a detrimental impact on aggregate credit creation for any sectors of firms or segment of the lending market.

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(1) Regulation (EU) No 575/2013.

**Chart B.8 Solvency levels for UK life and composite insurers**

Weighted average solvency ratio<sup>(a)(b)(c)</sup>



Sources: PRA regulatory returns and Bank calculations.

- (a) Weighted by Solvency I capital requirement.  
 (b) The solvency ratio is calculated as an insurer's capital resources divided by its Solvency I capital requirement. Since 2005, UK insurers have also been subject to the ICAS regime. For many firms, ICAS rather than Solvency I will act as the binding capital constraint. The chart shows Solvency I positions as ICAS solvency ratios are not publicly disclosed.  
 (c) Movements in solvency ratio over time reflect firm restructuring activity as well as changes in the external environment.

**Table B.3 UK life insurers have offered fewer and less onerous guarantees than European peers**

Select properties of the major EU life insurance markets<sup>(a)(b)</sup>

Country	Duration gap	Average guaranteed rate in force (per cent)	Share of products with guarantees (per cent)	Investment spread (per cent)
Germany	>10 years	3.1	75	-0.4
Sweden	>10 years	3.3	70	-0.5
Austria	>10 years	3.0	58	0.9
Netherlands	5½ years	3.6	40	0.2
France	4¾ years	0.5	n.a.	-0.6
Denmark	4¾ years	2.6	74	0.1
Spain	<1 years	3.8	n.a.	1.1
Italy	<1 years	2.5	n.a.	0.6
Ireland	<0 years	1.5	n.a.	1.3
United Kingdom	<0 years	0.5	19	-0.1

Sources: European Insurance and Occupational Pensions Authority, Moody's Investors Service, Standard & Poor's Ratings Services (May 2014) and Bank calculations.

n.a. = not available.

- (a) Investment spread is the difference between the internal rate of return on assets and the internal rate of return on liabilities.  
 (b) Duration gap is the difference between the average duration of liabilities and assets.

amount of funding that they would be able to access through the Bank of England's facilities by pre-positioning more assets. Banks could draw on £315 billion through these facilities in February 2015 — an increase of 14% on the previous year.<sup>(1)</sup>

## B.2 Insurance sector

This section considers the resilience of the UK insurance sector.

*UK insurers have maintained solvency ratios in excess of current regulatory requirements.*

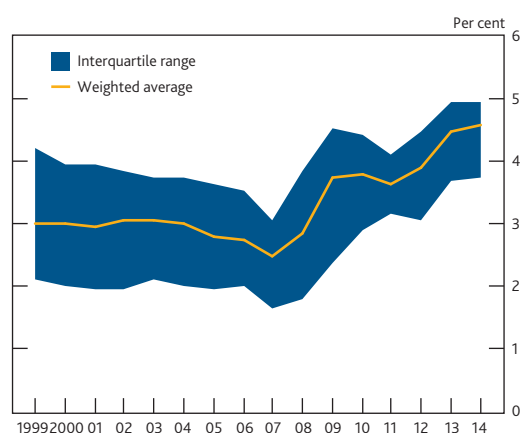
A commonly used metric for assessing the resilience of insurers is the solvency ratio; that is the ratio of an insurer's regulatory capital resources to its regulatory capital requirements. Under Solvency I, the current European regulatory regime for insurers, UK firms have consistently reported solvency ratios that exceed minimum requirements (**Chart B.8**). A lack of risk sensitivity in Solvency I, however, led the United Kingdom to introduce the Individual Capital Adequacy Standards (ICAS) regime in 2005. On 1 January 2016, ICAS will be replaced by Solvency II, which will introduce for European insurers: more risk-based capital requirements; higher standards for the quality of capital instruments issued; strengthened governance and risk management requirements; and enhanced disclosure and regulatory reporting. As UK firms adjust to meet these new requirements, the resilience of the sector should increase.

*A prolonged period of low interest rates may put pressure on some life insurers' business models.*

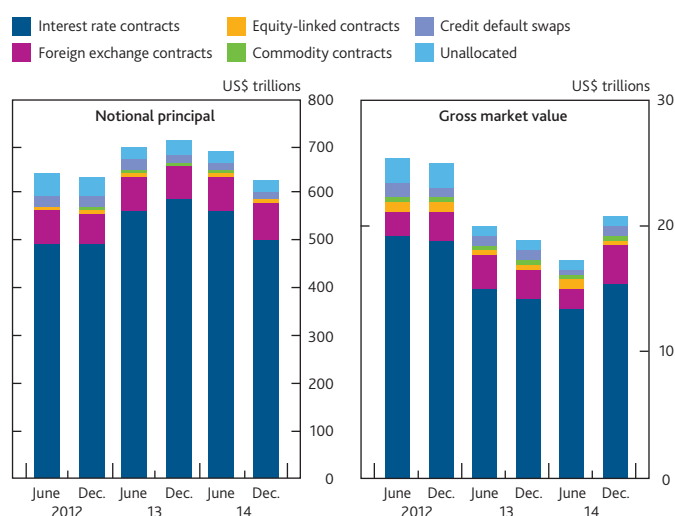
Persistent low rates can put pressure on life insurers' business models if the duration of their assets and liabilities are not closely matched, especially where their liabilities include long-term guarantees. Firms in a number of European countries have issued a substantial share of investment products offering guaranteed returns at rates that are well in excess of current long-term interest rates, and backed these guaranteed liabilities with assets of significantly shorter duration (**Table B.3**).

UK life insurers have been better placed in the recent low-rate environment as they tend to closely match their asset and liability durations. That said, under Solvency II, insurers will be required to value their insurance liabilities on a market-consistent basis. This will be achieved partly through the introduction of a risk margin, the anticipated size of which has increased as risk-free interest rates have fallen: insurers will need to accommodate this in their capital planning.

(1) See the *Sterling Monetary Framework Annual Report 2014–15* for more information; [www.bankofengland.co.uk/markets/Documents/smf/annualreport15.pdf](http://www.bankofengland.co.uk/markets/Documents/smf/annualreport15.pdf).

**Chart B.9 Dealers' leverage ratios have increased**Dealers' leverage ratios<sup>(a)(b)</sup>Sources: SNL Financial, *The Banker* and Bank calculations.

- (a) Leverage ratio defined as reported Tier 1 capital (or common equity where not available) divided by total assets, adjusted for accounting differences on a best-efforts basis.
- (b) Dealers included are Barclays, BNP Paribas, BofA Merrill Lynch, Citigroup, Crédit Agricole, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan Chase & Co., Mitsubishi UFJ, Morgan Stanley, RBS, Société Générale and UBS. Pre-crisis data also include Bear Stearns, Lehman Brothers and Merrill Lynch.

**Chart B.10 Notional amounts outstanding in OTC derivatives have fallen but gross market values have increased**Global OTC derivatives markets<sup>(a)</sup>

Source: Bank for International Settlements.

- (a) At half year-end (end-June and end-December). Amounts denominated in currencies other than US dollars are converted to US dollars at the exchange rate prevailing on the reference date.

## B.3 Market-based finance

This section assesses the resilience of market-based finance in the United Kingdom. The FPC will conduct a more detailed assessment of five types of market-based activity over the coming twelve months (Box 5).

### *Dealers continue to reduce leverage...*

Resilient financial markets are vital to the functioning of the economy, providing essential services to borrowers and savers and to financial institutions that intermediate credit to households and companies, including real money investors and commercial banks. These services tend to be provided on an international basis, so the resilience of UK financial markets is heavily dependent on the global environment. Operating at the centre of global financial markets are a set of core intermediaries, or 'dealers', alongside key financial market infrastructures, such as central clearing counterparties (CCPs), upon whose safety the resilience of those markets relies.

The aggregate leverage ratio of the world's largest dealers has increased from less than 2.5% at the peak of the financial crisis to just over 4.5%, though the rate of increase has slowed recently (Chart B.9). In part, this slowdown reflects an increase in derivative exposures, where these accounted for around 20% of the dealers' total assets at end-2014, compared with 17% a year earlier. Notional amounts outstanding in global over-the-counter (OTC) derivatives markets fell during that period (Chart B.10), which was likely, in large part, due to trade compression — a process by which historical contracts with offsetting risk characteristics are cancelled. But the gross market value of OTC derivatives — that is the cost of replacing outstanding contracts at market prices — rose, largely driven by pronounced moves in long-term interest rates and exchange rates.

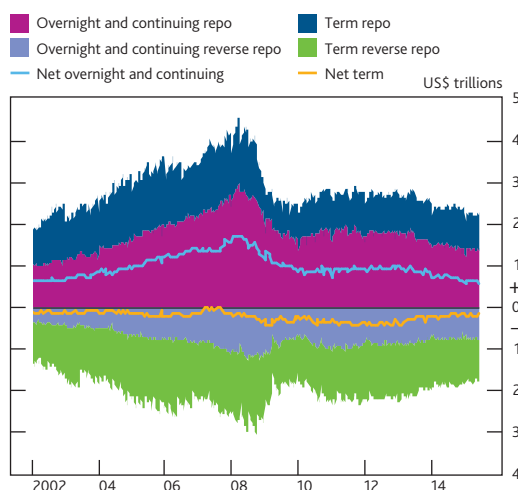
### *...while counterparty risk appears to be contained...*

Through the derivatives markets, dealers are exposed to clients, CCPs and one another. In the absence of substantial central clearing, a complex network of counterparty risk may be created. Since the crisis, a significant and mandated move to central clearing for standardised contracts has simplified the network between firms and reduced the associated risks. For example, the proportion of interest rate derivatives centrally cleared now stands at around 50%, up from 16% in 2007. Central clearing simplifies the network of counterparty exposures and, through multilateral netting, tends to reduce the aggregate amount of risk in the system. However, it has also increased the systemic importance of CCPs. In response, tighter prudential standards have been introduced and international work is being pursued through the FSB, the Committee on Payments and Market Infrastructures and the International Organization of Securities Commissions to evaluate existing measures for CCP resilience and to ensure



**Chart B.11 US primary dealers' use of repo markets has declined further**

US primary dealers' repo financing<sup>(a)(b)</sup>

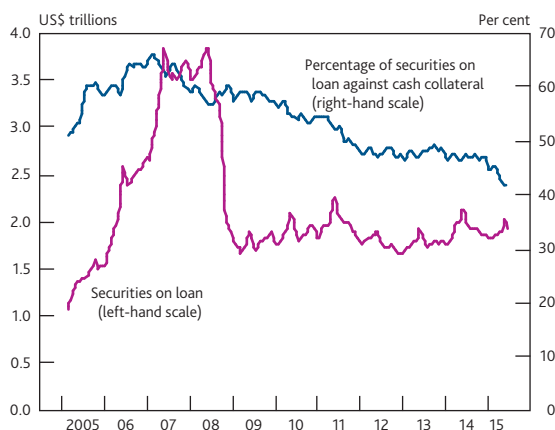


Sources: Federal Reserve Bank of New York and Bank calculations.

- (a) The Federal Reserve Bank of New York trades US government and select other securities with designated primary dealers, which include banks and securities broker-dealers.  
(b) Data to 10 June 2015.

**Chart B.12 The global securities lending market has remained subdued**

Securities on loan and percentage of securities on loan against cash collateral<sup>(a)(b)</sup>



Sources: Markit Group Limited and Bank calculations.

- (a) Data are based on market value of securities.  
(b) One-month moving average.

that appropriate recovery arrangements and resolution regimes are in place.

*...including through securities financing markets...*

The financial system is further interconnected through securities financing markets, which include both repo<sup>(1)</sup> and securities lending transactions.<sup>(2)</sup> These markets are integral to the smooth functioning of the financial system and facilitate the participation of leveraged investors, such as dealers and leveraged hedge funds, which rely on securities financing transactions to fund their trading activities. These transactions are also the means by which some financial institutions, including commercial banks and money market mutual funds, can lend to the financial system on a secured basis and others, such as pension funds and insurance companies, can provide securities on loan to facilitate settlements and short positions.

Since the crisis, US primary dealers' use of repo markets has steadily declined. According to the Federal Reserve Bank of New York, outstanding repo and reverse repo positions fell by 8% on a year ago to around US\$4 trillion in June 2015 (**Chart B.11**). Net positions in the overnight repo market of the US primary dealers now stand at around US\$660 billion, close to the lowest level since 2002. The latest International Capital Market Association survey suggests that activity in the European repo market has experienced a similar decline over the past few years.

The global securities lending market has also remained relatively subdued. Since its peak in 2008, it has contracted from around US\$3.9 trillion of securities on loan to US\$1.9 trillion (**Chart B.12**). More recently, the proportion of securities lent against non-cash collateral has increased. While this reduces risks arising through cash collateral reinvestment programmes, it raises the possibility that securities lending will contract as the value of non-cash collateral falls.

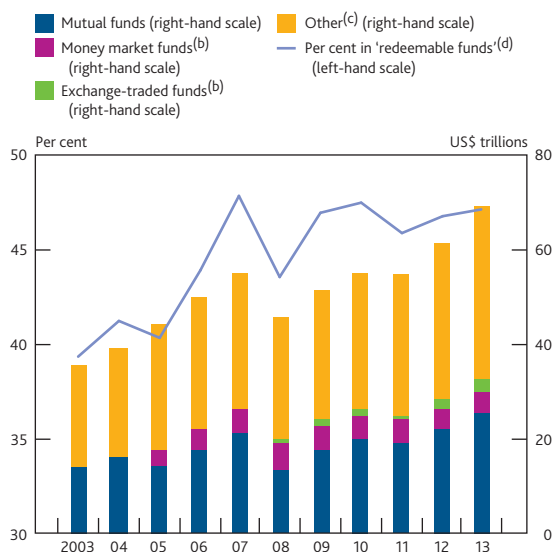
Declines in the volume of securities financing transactions are likely to reflect a variety of factors, including: a reduction in the risk appetites of market participants; the impact of enhanced capital requirements aimed at limiting the amount of leverage of banks' balance sheets; and the anticipation of liquidity regulations that seek to limit their reliance on short-term funding. With dealer business models evolving, an important question is how willing they will be to provide leveraged investors, such as hedge funds, with cash and securities financing during periods of stress.

(1) Repos allow one firm to sell a security to another firm with a simultaneous promise to buy the security back at a later date at a predetermined price.

(2) Securities lending is the temporary transfer of financial securities, such as equities and bonds, from a lender to a borrower. The lender usually requires the borrower to provide cash or securities to collateralise the loan.



**Chart B.13 Global assets under management are rising**  
Global assets under management<sup>(a)</sup>

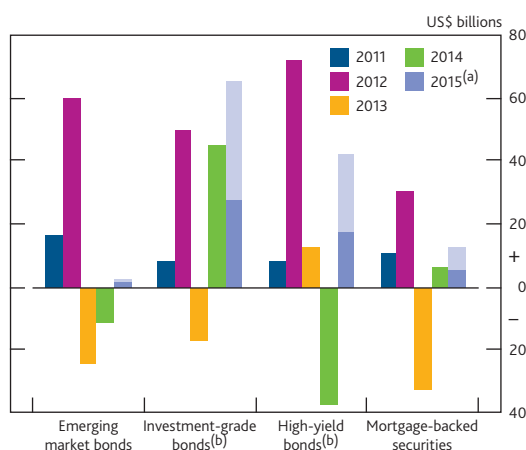


Sources: Investment Company Institute, The Boston Consulting Group Global Asset Management Market Sizing Database, The CityUK Limited and Bank calculations.

- (a) The total global assets under management (AUM) refers to assets that are professionally managed in exchange for management fees; includes captive AUM of insurance groups or pension funds if those AUM are delegated to asset management entities with fees paid. For countries that use currencies other than US dollars, the global AUM series is converted to US dollars at the average 2014 exchange rate. Other series are converted to US dollars at the exchange rate prevailing at the time of publication.
- (b) Data for money market funds start in 2005, prior to that they are included in mutual funds. Data for exchange-traded funds start in 2008.
- (c) Other estimated as a residual includes separately managed accounts, hedge funds and private equity.
- (d) Assets held in mutual funds, money market funds and exchange-traded funds used as a proxy for 'redeemable' funds as they typically offer investors the option to redeem at short notice.

**Chart B.14 There have been strong inflows into high-yield bond funds**

Flows into selected dedicated mutual funds



Sources: EPFR Global and Bank calculations.

- (a) Dark bars show data to end-May, while dark plus light areas show annualised data.
- (b) Dedicated funds that mainly hold investment-grade or high-yield bonds in advanced economies. There will be a small overlap between emerging market bond funds and other funds.

*...with potential implications for market liquidity in some markets...*

Developments in securities financing markets have reduced the interconnections between market participants but there may also be adverse implications for market liquidity. It could mean, for example, reduced trading activity by leveraged hedge funds. The observed reduction in repos and securities lending has also been accompanied by a fall in dealer inventories, which are held by US primary dealers to facilitate their role as market makers. This has reduced dealers' exposure to market risk, including from a significant sell-off in corporate bond markets, but might also reflect a deterioration in their ability and/or willingness to provide market liquidity, particularly during times of stress. Any decline in market liquidity may be a potential amplifier of financial market adjustments to changes in macroeconomic fundamentals (see Market liquidity section).

Alongside concerns about the resilience of underlying liquidity, global assets under management have grown significantly over the past decade, to around US\$70 trillion (Chart B.13).

Within that, the share of funds typically offering investors short-term redemptions has increased, from just below 40% a decade ago to approaching half.

*...as inflows in high-yield bonds remain strong.*

Inflows into funds focused on less liquid assets, such as high-yield bonds, have been strong this year (Chart B.14).

In part, these inflows largely reverse the trend of sharp outflows observed in 2014, as investors appeared to demand greater compensation for holding riskier corporate bonds (see December 2014 Report). In the event, these outflows were concentrated in a subset of markets and did not lead to either a widespread rise in volatility or forced asset sales. But there remains a risk that significant outflows from riskier asset classes, such as emerging market bonds, could lead to forced asset sales and widespread contagion to other markets.

## Box 5

### Financial stability risk and regulation beyond the core banking sector

The Bank of England Act 1998, as amended by the Financial Services Act 2012 (the 'Act'), gives the FPC responsibility to identify, assess, monitor and take action in relation to financial stability risk across the UK financial system, including risks arising from beyond the core banking sector.<sup>(1)</sup>

The FPC published its first assessment of risks beyond the core banking sector in June 2014.<sup>(2)</sup> That assessment focused on five categories of non-bank financial institutions and activities: finance companies, investment funds, money market funds, hedge funds and securities financing transactions. The Committee has since completed its annual review of risks beyond the core banking sector by considering the channels through which activities undertaken by the non-bank financial system could affect UK financial stability. It has concluded on evidence currently available not to recommend a change in how these activities are regulated. The Committee intends to undertake a regular deep analysis of a range of activities. This work will start with a detailed assessment of five activities over the coming year.

In addition to undertaking these detailed assessments, the FPC has an ongoing workplan to assess risks arising in the context of market liquidity (see Box 1). As part of this, the FPC will review changes in market structure, including the impact of automated and passive trading strategies in financial markets.

#### Activity-based risk assessment

There are numerous non-bank financial institutions and markets operating beyond the core banking sector. The FPC assesses systemic risks emanating from these activities using a risk assessment framework that considers sources of fragility, such as leverage and liquidity transformation, and three key transmission channels: (i) the provision of critical services; (ii) risks to systemically important counterparties; and (iii) disruption to systemically important financial markets.<sup>(3)</sup>

The remainder of this box provides an overview of the five activities the FPC will assess in greater detail. The Committee intends to review at least one activity per quarter over the coming year.

#### Investment activities of open-ended investment funds

Open-ended investment funds provide credit to the real economy and the financial system, including through holdings of corporate bonds, bank debt and government debt. Globally, they account for around US\$27 trillion of assets under management, of which around US\$1.2 trillion are domiciled in the United Kingdom. Investment funds are also important participants in core financial markets, such as securities lending, repo and derivative markets.

As part of its work on market liquidity, the Committee is assessing the strategies of investment fund managers for managing the liquidity of their funds in normal and stressed conditions. The Financial Stability Board (FSB) and the European Systemic Risk Board are also considering this issue.

#### Investment activities of hedge funds

Globally, the hedge fund industry manages around US\$3.1 trillion of assets. Those funds authorised or marketed in the United Kingdom manage around US\$553 billion of assets. Hedge funds trade frequently in financial markets and thereby support secondary market liquidity and price discovery. They are also interconnected with banks via repo transactions, margin loans and through derivative agreements.

There is a risk that, if a hedge fund becomes distressed, it could withdraw from markets in which it was previously active or sell assets rapidly. This could have a destabilising impact on liquidity and pricing. In the event of a failure of a hedge fund, counterparties with inadequately collateralised exposures to the fund could experience losses. This potential for rapid asset sales, price distortions and counterparty losses could be amplified if the hedge fund uses leverage, either by taking positions in derivatives ('synthetic leverage') or through cash and securities borrowings ('financial leverage'). According to the FCA's Hedge Fund Survey, hedge funds are on average leveraged 27x on a synthetic basis, and 2.3x on a financial leverage basis.<sup>(4)</sup>

Bank and FCA staff continue to gather data on the hedge fund sector.

#### Securities financing transactions

Activities such as repo financing, securities lending and margin lending are often referred to as securities financing transactions (SFTs). By allowing investors to exchange cash and a broad range of securities, including government bonds, corporate bonds, equities and securitisations, SFTs support the wider functioning of financial markets. Securities lending facilitates market-making and allows investors to cover short positions, thereby increasing overall market liquidity and enhancing the efficiency of price discovery mechanisms in markets. The value of securities on loan globally is around US\$1.9 trillion. Repo markets further contribute to effective market functioning by enabling market makers such as broker-dealers to finance their inventories, thus supporting

(1) The Act gives the FPC the power to make Recommendations to HM Treasury on regulated activities, as well as more general powers in respect of information gathering.

(2) Box 9, 'Financial stability risk and regulation beyond the core banking sector', *Financial Stability Report*, June 2014, pages 73–76; [www.bankofengland.co.uk/publications/Documents/fsr/2014/fsrfull1406.pdf](http://www.bankofengland.co.uk/publications/Documents/fsr/2014/fsrfull1406.pdf).

(3) The risk assessment framework, described in more detail in Box 9 of the June 2014 *Report*, is consistent with frameworks developed by the FSB as part of its work to address risks in the shadow banking system.

(4) *Hedge Fund Survey*, FCA, June 2015; [www.fca.org.uk/static/documents/hedge-fund-survey.pdf](http://www.fca.org.uk/static/documents/hedge-fund-survey.pdf).

market liquidity. The combined size of the US and European repo markets is estimated to be around US\$10.9 trillion.

But SFTs increase interconnectedness between counterparties and key intermediaries such as custodian banks. SFTs can also increase system leverage and contribute to procyclicality in financial markets through changes in haircut requirements. For example, typical margins on AAA-rated structured products increased from around 10% in June 2007 to 100% in June 2009. In addition, participants may choose to withdraw from such markets when economic conditions deteriorate and aversion to counterparty credit risk increases. Such pressures can materialise quickly because of the typically short maturities of repo transactions (often below one month) and the ability of a securities lender to recall securities on loan on demand. The failure of Lehman Brothers in 2008 demonstrated that the withdrawal of net providers of funds can expose net borrowers in repo markets to funding liquidity risk.

The Bank is contributing to international initiatives on SFTs. The FSB has agreed qualitative standards for calculating haircuts on non-centrally cleared SFTs, and has also agreed that haircuts on certain non-centrally cleared SFTs involving non-banks should be subject to numerical floors. This aims to limit leverage outside the banking system and to reduce procyclicality in financing markets. In addition, the FSB has been developing data collection and aggregation standards to enhance transparency in securities financing markets. These are being implemented in Europe by the European Commission through the Securities Financing Transactions Regulation. The formal adoption of the proposed regulation is expected later this year, and will require SFTs to be reported to trade repositories.

### Non-traditional, non-insurance and investment activities of insurance companies

The provision of insurance is a critical service for the real economy. Insurance companies are therefore regulated to promote their safety and soundness, and to secure an appropriate degree of protection and continuity of service for those who are or may become policyholders. UK insurers hold around £1.8 trillion of assets (see Section B.2).

Some insurance companies undertake non-traditional insurance activities, such as providing financial guarantee insurance. Insurers may also be involved in non-insurance activities, such as cash collateral reinvestment programmes, associated with securities lending, or writing credit default swaps. Certain non-traditional, non-insurance (NTNI) activities involve maturity transformation or leverage, increasing insurers' fragility and the interconnectedness between insurance companies and the rest of the financial system.<sup>(1)</sup>

Insurance companies also create interconnectedness through the issuance of catastrophe bonds. These bonds contain specific provisions causing interest and/or principal payments to be delayed or lost in the event of a catastrophe, such as a natural disaster. Around £25 billion of catastrophe bonds are outstanding globally, distributing risk to other parts of the financial system.

As investors in certain financial instruments, such as corporate bonds and equities, insurers further have the potential to exacerbate asset price falls. Work published by the Bank last year set out measures taken by regulators in different countries to mitigate such procyclical behaviour, for example through changes to insurers' solvency requirements and valuation methods.<sup>(2)</sup> Regulatory actions appear to have tempered procyclical responses in stresses to some extent. Solvency II will provide some largely prescriptive measures that aim to tackle procyclicality, but it does not have the same scope for flexibility as the current UK regime.

### Derivative transactions

The global derivatives market is large, with around US\$695 trillion of contracts outstanding.<sup>(3)</sup> Derivative markets enable firms to hedge financial risk, but they may also be used for speculative purposes and can give rise to intra-financial system exposures, potentially of a complex and opaque nature.

Post-crisis reforms are addressing these concerns through a number of measures, including mandatory reporting of over-the-counter (OTC) derivative transactions to trade repositories, mandatory clearing of standardised derivatives, and the introduction of capital requirements for non-centrally cleared derivatives.<sup>(4)</sup> These initiatives are in the process of being implemented.

Central counterparties (CCPs) are becoming increasingly significant as a higher proportion of OTC derivatives activity is centrally cleared. This creates, by design, a concentration of risks in CCPs, highlighting the importance of international initiatives on CCP resilience and resolution.

Greater use of collateral to mitigate exposures also gives rise to the risk that margin requirements may increase procyclically during periods of stress. This procyclicality can cause liquidity stress, whereby parties posting margin have to find additional liquid assets, often at precisely the times when it is most difficult for them to do so.

(1) Further information on NTNI activities is included in the International Association of Insurance Supervisors' framework of policy measures for global systemically important insurers; <http://iaisweb.org/index.cfm?event=getPage&nodeId=25233>.

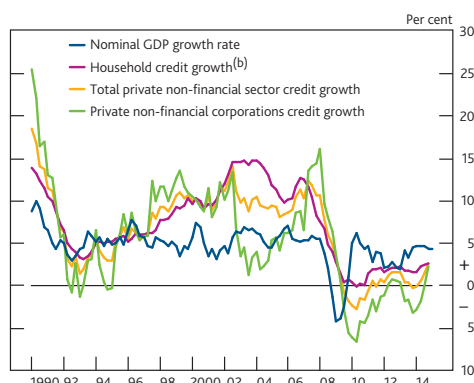
(2) Bank of England and the Procyclicality Working Group (2014), 'Procyclicality and structural trends in investment allocation by insurance companies and pension funds'; [www.bankofengland.co.uk/publications/Documents/news/2014/dp310714.pdf](http://www.bankofengland.co.uk/publications/Documents/news/2014/dp310714.pdf).

(3) Gross notional value, including both OTC and exchange-traded derivatives.

(4) The G20 Pittsburgh Summit of 2009 committed to improving transparency and mitigate systemic risk in OTC derivative markets; [https://g20.org/wp-content/uploads/2014/12/Pittsburgh\\_Declaration\\_0.pdf](https://g20.org/wp-content/uploads/2014/12/Pittsburgh_Declaration_0.pdf).

**Chart B.15 Credit growth has been weaker than nominal GDP growth since the crisis**

UK private sector credit annual growth rate<sup>(a)</sup>

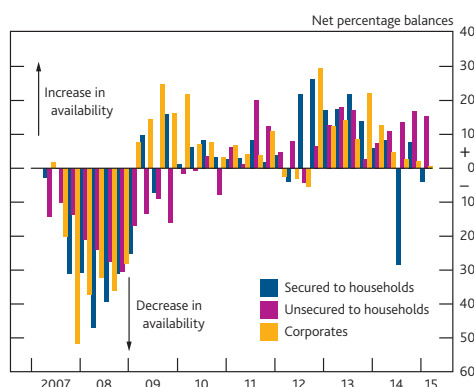


Sources: ONS and Bank calculations.

- (a) Twelve-month growth rate of nominal credit. Credit is defined here as debt claims on the UK private non-financial sector. This includes all liabilities of the household and not-for-profit sector and PNFCs' loans and debt securities excluding derivatives, direct investment loans and loans secured on dwellings.
- (b) Twelve-month growth rate of household and not-for-profit sector liabilities except for the unfunded pensions liabilities and financial derivatives of the not-for-profit sector.

**Chart B.16 Bank credit availability to UK households and companies has been improving since 2012**

Household and corporate credit availability<sup>(a)</sup>

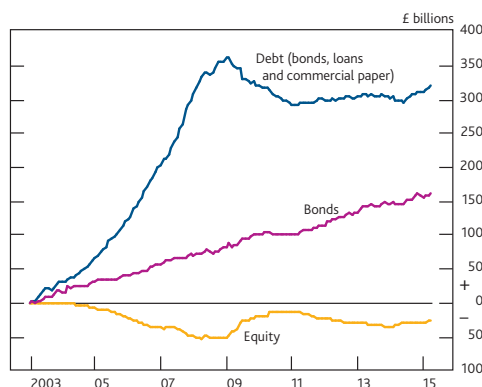


Source: Bank of England Credit Conditions Survey.

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

**Chart B.17 Bond issuance has accounted for a larger share than equity of net finance since the crisis**

Cumulative net finance raised by PNFCs<sup>(a)(b)</sup>



Source: Bank of England.

- (a) Finance raised by PNFCs from UK MFIs and from capital markets. Loans data cover bank lending from UK MFIs, seasonally adjusted. Bonds data cover debt issued by UK companies via UK-based Issuing and Paying Agents. Bonds, equity and commercial paper (CP) are non seasonal. All data cover funds raised in both sterling and foreign currency, expressed in sterling.
- (b) Data taken into account from January 2003 onwards.

## B.4 Provision of credit

This section assesses the recent provision of credit to UK households and businesses. Box 6 describes the setting of the countercyclical capital buffer in the United Kingdom.

*Credit availability in the United Kingdom has improved modestly since 2012.*

Total credit extended to UK households and private non-financial corporations (PNFCs) grew over 2014. But this recovery appears modest relative to the growth of nominal GDP (Chart B.15). The availability of bank credit to UK households and firms has generally been improving over the past few years, as indicated by lenders' responses to the Bank's *Credit Conditions Surveys* (Chart B.16) and reports from the Bank's Agents, although some of the smallest companies still report difficulties obtaining credit.

The provision of credit to the UK economy is a core function of the UK financial system. But unsustainable levels of debt, including that associated with a weakening in underwriting standards, could impact the capacity of the financial system to provide credit to the UK economy in the future.

*For UK PNFCs in aggregate, capital markets are an important source of finance, in particular debt markets...*

Bank credit for UK PNFCs has recovered slowly since the crisis, with capital markets becoming an increasingly important source of net financing for the UK corporate sector (Box 5). Net issuance of bonds by UK PNFCs was nearly £16 billion in the year to May 2015. This mirrors strong global corporate bond issuance. Net equity issuance was also positive over 2014 and in the first quarter of 2015, led by considerable activity in initial public offerings.

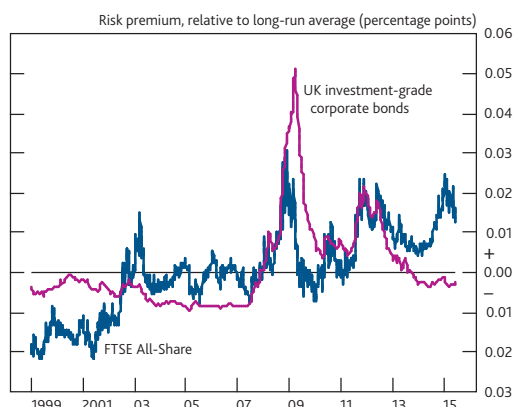
When cumulated, bond issuance has accounted for a larger share than equity of net finance raised in the past few years (Chart B.17). That may in part reflect a pattern of investors appearing to require relatively high compensation for equity risk and lower rates of compensation for the credit and liquidity risks inherent in corporate bonds (Chart B.18). This is also consistent with evidence of a 'search for yield' in credit markets (see Market liquidity section).

A shift towards more debt and less equity financing further implies less private sector risk-sharing in the economy. Other things being equal, equity might be expected to be most useful for supporting risk-sharing because companies are able to adjust their dividend payments according to the economic conditions they are facing. This is not true of debt where, prior to default, unchanged income flows will need to be paid on existing obligations.

An exception to this trend has been the UK commercial real estate (CRE) market, where much of the initial increase in

**Chart B.18** Equity risk premia have declined recently but remain well above those seen in credit markets

Risk premia on UK equities and corporate bonds<sup>(a)</sup>

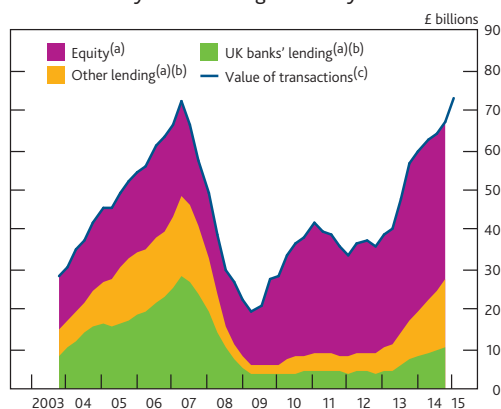


Sources: Bloomberg, BofA Merrill Lynch Global Research, Thomson Reuters Datastream and Bank calculations.

(a) There is a break in the equity series in February 2004 which has been accounted for.

**Chart B.19** UK CRE activity, debt and equity finance have all been picking up

UK CRE activity and financing of activity



Sources: CBRE, De Montfort University, The Property Archive and Bank calculations.

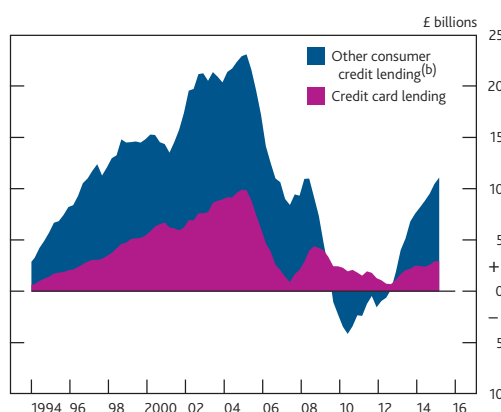
(a) Annual data, interpolated to match quarterly transactions data.

(b) Excludes refinancing.

(c) Four-quarter moving sum of the value of transactions.

**Chart B.20** Consumer credit has grown significantly over the past year

Net new consumer lending by type<sup>(a)</sup>



Source: Bank of England.

(a) Net changes to consumer credit lending. Four-quarter moving sum. Seasonally adjusted.

(b) Includes unsecured personal loans, overdrafts, dealership car finance and other forms of non-mortgage consumer credit.

transactions following the crisis appears to have been funded by equity investors (**Chart B.19**). Market contacts suggest that this was driven by a 'search for yield' by lightly leveraged foreign long-term investors. Nevertheless, over the past year there has been greater use of debt, in particular by private equity funds.

*...while underwriting standards on new lending have remained largely robust, there are a number of areas where standards warrant close monitoring.*

The cost of funding for UK PNFCs has continued to decline, and has fallen even more markedly in some more competitive lending markets such as prime CRE.

This has not been associated with a material increase in corporate sector credit risk. Most of the bond issuance by UK PNFCs over the past twelve months appears to have been undertaken by modestly leveraged firms. For example, the total debt to net earnings (that is earnings before interest, taxes, depreciation and amortisation) multiples of the UK PNFCs carrying out the largest net bond issuance over the past twelve months were in line with their averages over the past decade.

But there are a number of areas where underwriting standards may be weakening relative to the underlying strength of the sector.

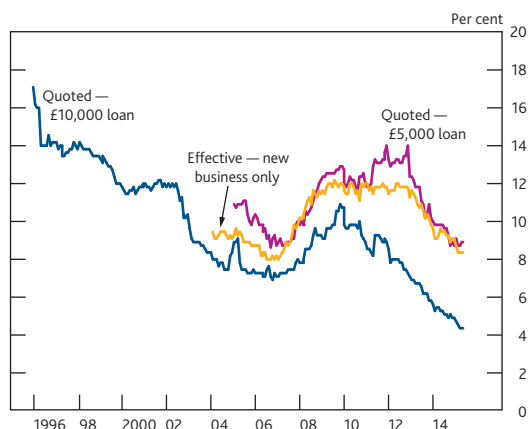
The Bank undertook an in-depth review of underwriting standards in the CRE market in 2015 Q1. The review concluded that the averages and distributions of loan to value ratios and interest cover ratios of banks' realised lending appeared to have loosened between 2013 and 2014, although this did not present immediate concerns. Instead, buoyant activity and prices in the wider CRE market appear to have been supported largely by both the participation of non-leveraged investors and the growth of non-bank lenders, particularly overseas banks and non-bank financial institutions. Given the CRE market's historical importance for UK financial stability, the FPC supports more regular data gathering and will continue to monitor underwriting standards.

Globally, there have been signs of increased risk appetite in leveraged loan markets, though gross leveraged loan issuance in the United Kingdom has remained subdued and net lending in 2014 had been negative. At its March 2015 meeting, the FPC reviewed the results of a survey of underwriting standards in leveraged loan markets and concluded that, based on the historical experience of losses, the UK banking system currently appeared resilient to stress in the leveraged loan market. The Committee requested a repeat of this survey on a regular basis.



**Chart B.21 Interest rates on unsecured loans have fallen markedly in recent years**

Interest rates on unsecured personal loans<sup>(a)(b)</sup>



Source: Bank of England.

(a) Average interest rates on personal unsecured loans provided by up to 22 MFIs. Quoted rates series are weighted averages of rates from a sample of banks and building societies with products meeting the specific criteria, see [www.bankofengland.co.uk/statistics/Pages/iadb/notesiadb/household\\_int.aspx](http://www.bankofengland.co.uk/statistics/Pages/iadb/notesiadb/household_int.aspx). Effective interest rates are for new fixed-rate unsecured loans to households with maturities of one to five years and compiled using data from up to 22 MFIs (see [www.bankofengland.co.uk/statistics/Pages/iadb/notesiadb/effective\\_int.aspx](http://www.bankofengland.co.uk/statistics/Pages/iadb/notesiadb/effective_int.aspx)). Non seasonally adjusted.

(b) Data are to May 2015, correct as at 29 June 2015.

*Mortgage lending has picked up recently, following a year of moderation, and consumer credit has increased.*

The banking sector remains the dominant source of contractual financing for UK households, and bank lending to households resumed early in the recovery, albeit at a relatively low rate of growth. Although the overall availability of household credit has increased since the crisis, there have been some periods of tightening over the past year — notably around the introduction of the Mortgage Market Review (see UK housing market section).

Consumer credit growth, meanwhile, has strengthened recently (**Chart B.20**), increasing by 6.9% in the year to March 2015. This growth has been led by increases in unsecured personal loans and car finance. Quoted interest rates on unsecured personal loans have fallen markedly in recent years, and for some loan sizes are now at their lowest levels since the start of the data series (**Chart B.21**). Effective rates — the rates at which loans are actually extended — have fallen to a lesser degree.

Consumer credit accounts for a relatively small share of total household lending: at end-2014 there was approximately £170 billion of UK consumer credit lending outstanding, compared with over £1 trillion of residential mortgage loans. Nevertheless, a sustained expansion of consumer credit could increase household indebtedness and interact with mortgage debt on household and lender balance sheets, making them less resilient to future shocks. Survey data suggest that the majority of consumer credit balances are held by households who already have mortgages.



## Box 6

### Setting of the countercyclical capital buffer

Since May 2014, the FPC has been responsible for setting the countercyclical capital buffer (CCB) in the United Kingdom, which it does on a quarterly basis. The CCB is a macroprudential instrument that enables the FPC to put banks in a better position to withstand stress through the financial cycle, by requiring them to raise capital ratios as threats to financial stability increase and allowing them to run them down if risks crystallise or if risks ease.

In setting the CCB, the Committee considers a range of indicators and analysis that assess the threats to UK financial stability, and the resilience of the UK banking system.

The Committee's judgements on the main risks to UK financial stability are set out in Part A. Some risks, particularly around Greece and emerging markets, have increased since December. Some other risks have declined. Notably, the risks associated with low growth in advanced economies have moderated particularly as growth prospects in the euro area have improved following actions by the European Central Bank.

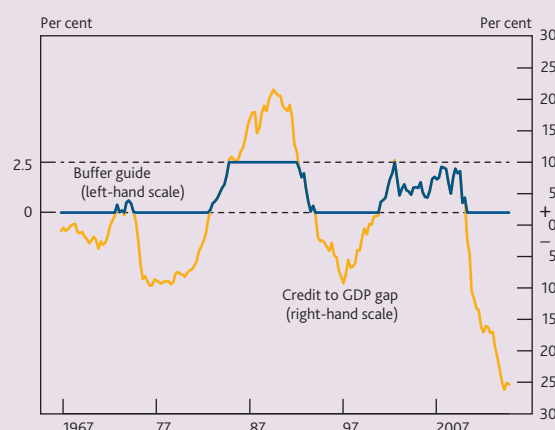
In June 2015, the Committee also considered the Basel 'buffer guide' — a simple metric identified in legislation, based on the size of the gap between the credit to GDP ratio and its long-term trend. Reflecting modest credit growth over the past year, the credit to GDP ratio has fallen by around 5 percentage points over the past twelve months to 145%. As a result, the 'buffer guide' implied that the CCB should be set at 0% (**Chart A**).

But the Committee considers there to be a number of drawbacks to this measure and that there should be no simple, mechanistic link between the buffer guide and the CCB rate. For example, while the negative gap partly reflects the weakness in credit growth to the non-financial private sector, it is also driven by a strong upward trend in the credit to GDP ratio prior to the crisis (**Chart B**); yet this strong growth trend was clearly not sustainable and might not be consistent with the path of credit to GDP in the years ahead.

As set out in Part B, UK banks have continued to strengthen their capital and funding positions, as part of transitioning towards stronger regulatory requirements (see Section B.1). Furthermore, actions taken as a result of the 2014 stress-test exercise will have increased UK banks' resilience. The Committee will examine UK banks' ability to withstand risks that could materialise from developments in emerging market economies and financial markets as part of the 2015 stress-test exercise, as set out in Box 3.

Taking these considerations into its overall assessment of risks, at its June meeting the Committee agreed to set the

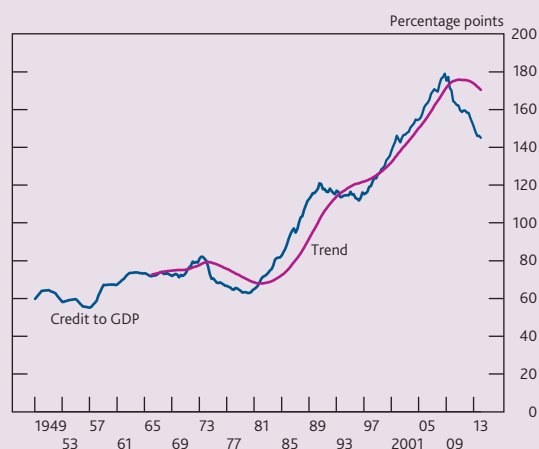
**Chart A** Credit to GDP gap and the countercyclical capital buffer guide<sup>(a)(b)(c)</sup>



Sources: British Bankers' Association, ONS, Revell, J and Roe, A (1971), 'National balance sheets and national accounting — a progress report', *Economic Trends*, No. 211 and Bank calculations.

- (a) Credit is defined here as debt claims on the UK private non-financial sector. This includes all liabilities of the household and not-for-profit sector excluding the unfunded pension liabilities and financial derivatives of the not-for-profit sector, and PNFCs' loans and debt securities excluding derivatives, direct investment loans and loans secured on dwellings.
- (b) 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 HP filter with a smoothing parameter of 400,000.
- (c) The buffer guide suggests that a credit gap of 2% or less equates to a CCB rate of 0% and a credit gap of 10% or higher equates to a CCB rate of 2.5%.

**Chart B** Credit to GDP and trend<sup>(a)(b)</sup>



Sources: British Bankers' Association, ONS, Revell, J and Roe, A (1971), 'National balance sheets and national accounting — a progress report', *Economic Trends*, No. 211 and Bank calculations.

- (a) See footnote (a) **Chart A**.
- (b) See footnote (b) **Chart A**.

**CCB rate for UK exposures at 0%, unchanged from March 2015.**

### Reciprocation

The FPC also has responsibility for deciding whether foreign CCB rates should be reciprocated by the UK authorities. While such decisions are made on an individual basis, in most cases reciprocation would enhance UK financial stability and therefore the FPC expects to reciprocate foreign CCB rates. In light of this, the Committee noted that the PRA would reciprocate recent CCB actions by Hong Kong, Norway and Sweden.

## Annex 1: Previous macroprudential policy decisions

This annex lists FPC Recommendations from previous periods that have been implemented or superseded since the previous *Report*, as well as Recommendations and Directions that are currently outstanding. It also includes those FPC policy decisions that have been implemented through rule changes and are therefore still in force.

Each Recommendation and Direction has been given an identifier to ensure consistent referencing over time. For example, the identifier 13/Q1/6 refers to the sixth Recommendation made following the 2013 Q1 Committee meeting.

### Recommendations implemented or superseded since the previous *Report*

13/Q2/6	Improve resilience to cyber attack	Superseded and withdrawn
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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.

Work to implement this Recommendation has been focused around two initiatives: a cyber self-assessment questionnaire issued to core firms and financial market infrastructures, and a cyber vulnerability testing framework, known as CBEST. This work is discussed in more detail in Part A, which also sets out the FPC's overall assessment of risks from cyber attack. Based on that assessment, the Committee has replaced this Recommendation with a new Recommendation (15/Q2/3), focused on CBEST testing. Further details of this Recommendation are listed in Part A (Cyber risk).

14/Q3/2 <sup>(1)</sup>	Powers of Direction over leverage ratio	Implemented
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The FPC recommends that HM Treasury exercise its statutory power to enable the FPC to direct, if necessary to protect and enhance financial stability, the PRA to set leverage ratio requirements and buffers for PRA-regulated banks, building societies and investment firms, including: (a) a minimum leverage ratio requirement; (b) a supplementary leverage ratio buffer that will apply to G-SIBs and other major domestic UK banks and building societies, including ring-fenced banks; and (c) a countercyclical leverage ratio buffer.

Legislation granting the FPC powers of Direction over leverage ratio requirements and buffers was made in March 2015. This legislation came into force on 6 April 2015, with the exception of powers over supplementary leverage ratio buffers for those major domestic UK banks and building societies not covered by G-SIB systemic risk-weighted capital buffers. Powers over these supplementary buffers will come into force in January 2019, in line with the international timetable and the FPC's Recommendation. The FPC had previously published a draft Policy Statement on 4 February 2015, setting out how it would use these powers.<sup>(2)</sup>

At its Policy meeting on 24 June, the FPC directed the PRA to implement leverage ratio requirements for major UK banks and building societies — this decision (15/Q2/1(D)) is discussed in Box 4.

### Recommendations and Directions currently outstanding

13/Q1/6	Develop proposals for regular stress testing of the UK banking system	Action under way
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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.

The Bank published the key elements of the second annual concurrent stress test in March 2015.<sup>(3)</sup> The Bank intends to publish an update of its medium-term vision for stress testing later in 2015, based on the experience of the 2014 stress test and responses to the October 2013 Discussion Paper on stress testing.

<sup>(1)</sup> This Recommendation was made at the FPC's dedicated meeting on the leverage ratio review, held on 15 October 2014.

<sup>(2)</sup> [www.bankofengland.co.uk/financialstability/Pages/fpc/policystatements.aspx](http://www.bankofengland.co.uk/financialstability/Pages/fpc/policystatements.aspx).

<sup>(3)</sup> [www.bankofengland.co.uk/financialstability/Pages/fpc/stresstest.aspx](http://www.bankofengland.co.uk/financialstability/Pages/fpc/stresstest.aspx).

**14/Q3/1 Powers of Direction over housing instruments**

Action under way

The FPC recommends that HM Treasury exercise its statutory power to enable the FPC to direct, if necessary to protect and enhance financial stability, the PRA and FCA to require regulated lenders to place limits on residential mortgage lending, both owner-occupied and buy-to-let, by reference to: (a) loan to value ratios; and (b) debt to income ratios, including interest coverage ratios in respect of buy-to-let lending.

Legislation granting the FPC power of Direction over loan to value and debt to income limits in respect of mortgages on owner-occupied properties was passed in March 2015. This legislation came into force on 6 April 2015. The FPC has now approved its Policy Statement on housing tools, first published in draft on 4 February 2015.<sup>(1)</sup> HM Treasury intends to consult on the FPC's proposed LTV/interest coverage ratio powers for the buy-to-let sector later in 2015.

**15/Q2/1(D) Direction on the leverage ratio**

Action under way

The FPC directs the PRA to implement in relation to each major UK bank and building society on a consolidated basis measures to:

- require it to hold sufficient Tier 1 capital to satisfy a minimum leverage ratio of 3%;
- secure that it ordinarily holds sufficient Tier 1 capital to satisfy a countercyclical leverage ratio buffer rate of 35% of its institution-specific countercyclical capital buffer rate, with the countercyclical leverage ratio buffer rate percentage rounded to the nearest 10 basis points;
- secure that if it is a global systemically important institution (G-SII) it ordinarily holds sufficient Tier 1 capital to satisfy a G-SII additional leverage ratio buffer rate of 35% of its G-SII buffer rate.

The minimum proportion of common equity Tier 1 that shall be held is:

- 75% in respect of the minimum leverage ratio requirement;
- 100% in respect of the countercyclical leverage ratio buffer; and
- 100% in respect of the G-SII additional leverage ratio buffer.

Common equity Tier 1 may include such elements that are eligible for grandfathering under Part 10, Title 1, Chapter 2 of Regulation (EU) No 575/2013 as the PRA may determine.

This Direction is discussed in Box 4.

**15/Q2/2 Role of AT1 in minimum leverage ratio requirements**

Action under way

The FPC recommends to the PRA that in implementing the minimum leverage ratio requirement it specifies that additional Tier 1 capital should only count towards Tier 1 capital for these purposes if the relevant capital instruments specify a trigger event that occurs when the common equity Tier 1 capital ratio of the institution falls below a figure of not less than 7%.

This Recommendation is discussed in Box 4.

**15/Q2/3 CBEST vulnerability testing**

Action under way

The FPC recommends that the Bank, the PRA and the FCA work with firms at the core of the UK financial system to ensure that they complete CBEST tests and adopt individual cyber resilience action plans. The Bank, the PRA and the FCA should also establish arrangements for CBEST tests to become one component of regular cyber resilience assessment within the UK financial system.

This Recommendation is discussed in Part A (Cyber risk).

(1) [www.bankofengland.co.uk/financialstability/Pages/fpc/policystatements.aspx](http://www.bankofengland.co.uk/financialstability/Pages/fpc/policystatements.aspx).

## Other FPC policy decisions which remain in place

The table below sets out previous FPC decisions, which remain in force, on the setting of its policy tools. The calibration of these tools is kept under review.

### Countercyclical capital buffer (CCB)

**The current UK CCB rate is 0%.** This rate is reviewed on a quarterly basis. The United Kingdom has also reciprocated a number of foreign CCB decisions — for more details see the Bank of England website.<sup>(1)</sup> Under PRA rules, foreign CCB rates applying from 2016 onwards will be automatically reciprocated if they are less than 2.5%.

### Prevailing FPC Recommendation on mortgage affordability tests

When assessing affordability in respect of a potential borrower, UK mortgage lenders are required to have regard to any prevailing FPC Recommendation on appropriate interest rate stress tests. This requirement is set out in FCA rule MCOB 11.6.18(2).<sup>(2)</sup> In June 2014, the FPC made the following Recommendation (13/Q2/1):

**When assessing affordability, mortgage lenders should apply an interest rate stress test that assesses whether borrowers could still afford their mortgages if, at any point over the first five years of the loan, Bank Rate were to be 3 percentage points higher than the prevailing rate at origination. This Recommendation is intended to be read together with the FCA requirements around considering the effect of future interest rate rises as set out in MCOB 11.6.18(2).**

### Recommendation on loan to income ratios

In June 2014, the FPC made the following Recommendation (13/Q2/2):

**The Prudential Regulation Authority (PRA) and the Financial Conduct Authority (FCA) should ensure that mortgage lenders do not extend more than 15% of their total number of new residential mortgages at loan to income ratios at or greater than 4.5. This Recommendation applies to all lenders which extend residential mortgage lending in excess of £100 million per annum. The Recommendation should be implemented as soon as is practicable.**

The PRA and the FCA have published their respective approaches to implementing this Recommendation: the PRA has issued a Policy Statement, including rules,<sup>(3)</sup> and the FCA has issued general guidance.<sup>(4)</sup>

(1) [www.bankofengland.co.uk/financialstability/Pages/fpc/ccbrates.aspx](http://www.bankofengland.co.uk/financialstability/Pages/fpc/ccbrates.aspx).

(2) <http://fshandbook.info/FS/html/FCA/MCOB/11/6>.

(3) [www.bankofengland.co.uk/pru/Documents/publications/ps/2014/ps914.pdf](http://www.bankofengland.co.uk/pru/Documents/publications/ps/2014/ps914.pdf).

(4) [www.fca.org.uk/news/fg14-08](http://www.fca.org.uk/news/fg14-08).

## Annex 2: Core indicators

**Table A.1** Core indicator set for the countercyclical capital buffer<sup>(a)</sup>

Indicator	Average, 1987–2006 <sup>(b)</sup>	Average 2006 <sup>(c)</sup>	Minimum since 1987 <sup>(b)</sup>	Maximum since 1987 <sup>(b)</sup>	Previous value (oya)	Latest value (as of 19 June 2015)
<b>Bank balance sheet stretch<sup>(d)</sup></b>						
1 Capital ratio						
Basel II core Tier 1 <sup>(e)</sup>	6.6%	6.3%	6.2%	12.3%	n.a.	n.a.
Basel III common equity Tier 1 <sup>(f)</sup>	n.a.	n.a.	7.2%	11.4%	10.2%	11.4% (2015 Q1)
2 Leverage ratio <sup>(g)</sup>						
Simple	4.7%	4.1%	2.9%	5.9%	5.5%	5.9% (2014)
Basel III (2010 proposal)	n.a.	n.a.	n.a.	n.a.	4.2%	n.a.
Basel III (2014 proposal)	n.a.	n.a.	n.a.	n.a.	n.a.	4.4% (2014)
3 Average risk weights <sup>(h)</sup>	53.6%	46.4%	34.6%	65.4%	36.1%	37.4% (2014)
4 Return on assets before tax <sup>(i)</sup>	1.0%	1.1%	-0.2%	1.5%	0.3%	0.5% (2014)
5 Loan to deposit ratio <sup>(j)</sup>	114.5%	132.4%	96.0%	133.3%	99.1%	96.0% (2014)
6 Short-term wholesale funding ratio <sup>(k)</sup>	n.a.	24.3%	12.6%	26.5%	14.1%	12.6% (2014)
<i>of which excluding repo funding<sup>(k)</sup></i>	n.a.	15.6%	5.8%	16.1%	5.8%	6.3% (2014)
7 Overseas exposures indicator: countries to which UK banks have 'large' and 'rapidly growing' total exposures <sup>(l)(m)</sup>	In 2006 Q4: AU, BR, CA, CH, CN, DE, ES, FR, IE, IN, JP, KR, KY, LU, NL, US, ZA			In 2014 Q1: CN, IE, HK, MY, SG, TW		
8 CDS premia <sup>(n)</sup>	12 bps	8 bps	6 bps	298 bps	67 bps	82 bps (19 June 2015)
9 Bank equity measures						
Price to book ratio <sup>(o)</sup>	2.14	1.97	0.52	2.86	0.93	0.99 (19 June 2015)
Market-based leverage ratio <sup>(p)</sup>	9.7%	7.8%	1.9%	15.7%	5.3%	5.5% (19 June 2015)
<b>Non-bank balance sheet stretch<sup>(q)</sup></b>						
10 Credit to GDP <sup>(r)</sup>						
Ratio	124.5%	159.4%	93.8%	179.1%	150.8%	145.1% (2014 Q4)
Gap	5.8%	6.2%	-26.2%	21.5%	-23.1%	-25.3% (2014 Q4)
11 Private non-financial sector credit growth <sup>(s)</sup>	10.1%	9.8%	-2.8%	22.8%	-0.4%	2.5% (2014 Q4)
12 Net foreign asset position to GDP <sup>(t)</sup>	-3.1%	-12.1%	-23.8%	20.4%	-23.8%	-19.8% (2014 Q4)
13 Gross external debt to GDP <sup>(u)</sup>	193.9%	321.8%	123.0%	406.7%	333.6%	327.3% (2014 Q4)
<i>of which bank debt to GDP</i>	128.2%	202.6%	84.4%	275.6%	183.9%	176.4% (2014 Q4)
14 Current account balance to GDP <sup>(v)</sup>	-1.8%	-2.2%	-6.1%	0.6%	-5.6%	-5.6% (2014 Q4)
<b>Conditions and terms in markets</b>						
15 Long-term real interest rate <sup>(w)</sup>	3.10%	1.27%	-0.88%	5.29%	0.35%	-0.42% (19 June 2015)
16 VIX <sup>(x)</sup>	19.1	12.8	10.6	65.5	11.6	13.9 (19 June 2015)
17 Global corporate bond spreads <sup>(y)</sup>	115 bps	87 bps	52 bps	486 bps	108 bps	132 bps (19 June 2015)
18 Spreads on new UK lending						
Household <sup>(z)</sup>	480 bps	352 bps	285 bps	840 bps	693 bps	658 bps (Mar. 2015)
Corporate <sup>(aa)</sup>	107 bps	100 bps	84 bps	417 bps	249 bps	237 bps (Dec. 2014)

Table A.2 Core indicator set for sectoral capital requirements<sup>(a)</sup>

Indicator	Average, 1987–2006 <sup>(b)</sup>	Average 2006 <sup>(c)</sup>	Minimum since 1987 <sup>(b)</sup>	Maximum since 1987 <sup>(b)</sup>	Previous value (oya)	Latest value (as of 19 June 2015)
Bank balance sheet stretch <sup>(d)</sup>						
1 Capital ratio						
Basel II core Tier 1 <sup>(e)</sup>	6.6%	6.3%	6.2%	12.3%	n.a.	n.a.
Basel III common equity Tier 1 <sup>(f)</sup>	n.a.	n.a.	7.2%	11.4%	10.2%	11.4% (2015 Q1)
2 Leverage ratio <sup>(g)</sup>						
Simple	4.7%	4.1%	2.9%	5.9%	5.5%	5.9% (2014)
Basel III (2010 proposal)	n.a.	n.a.	n.a.	n.a.	4.2%	n.a. (2014)
Basel III (2014 proposal)	n.a.	n.a.	n.a.	n.a.	n.a.	4.4% (2014)
3 Average mortgage risk weights <sup>(ab)</sup>	n.a.	n.a.	15.6%	22.4%	18.4%	15.6% (2014)
4 Balance sheet interconnectedness <sup>(ac)</sup>						
Intra-financial lending growth <sup>(ad)</sup>	12.0%	13.0%	-15.3%	45.5%	-1.7%	-7.1% (2014)
Intra-financial borrowing growth <sup>(ae)</sup>	14.1%	14.0%	-19.8%	28.9%	-19.8%	-2.9% (2014)
Derivatives growth (notional) <sup>(af)</sup>	37.7%	34.2%	-18.9%	52.0%	7.2%	-18.9% (2014)
5 Overseas exposures indicator: countries to which UK banks have 'large' and 'rapidly growing' non-bank private sector exposures <sup>(ag)(m)</sup>		In 2006 Q4: AU, CA, DE, ES, FR, IE, IT, JP, KR, KY, NL, US, ZA			In 2014 Q1: FR, IE, JP	In 2015 Q1: CN, HK, KY, SG
Non-bank balance sheet stretch <sup>(q)</sup>						
6 Credit growth						
Household <sup>(ah)</sup>	10.3%	11.2%	-0.1%	19.6%	1.5%	2.7% (2014 Q4)
Commercial real estate <sup>(ai)</sup>	15.3%	18.5%	-9.7%	59.8%	-8.3%	-5.0% (2015 Q1)
7 Household debt to income ratio <sup>(aj)</sup>	108.9%	149.6%	87.7%	158.0%	135.9%	135.8% (2014 Q4)
8 PNFC debt to profit ratio <sup>(ak)</sup>	239.5%	309.0%	157.0%	407.7%	316.9%	288.2% (2014 Q4)
9 NBFI debt to GDP ratio (excluding insurance companies and pension funds) <sup>(al)</sup>	59.5%	126.7%	15.1%	180.1%	158.8%	154.1% (2014 Q4)
Conditions and terms in markets						
10 Real estate valuations						
Residential price to rent ratio <sup>(am)</sup>	100.0	151.1	66.9	160.6	129.0	133.8 (2015 Q1)
Commercial prime market yields <sup>(an)</sup>	5.4%	4.0%	3.8%	7.3%	4.4%	4.1% (2015 Q1)
Commercial secondary market yields <sup>(an)</sup>	8.9%	5.8%	5.4%	10.9%	8.8%	7.4% (2015 Q1)
11 Real estate lending terms						
Residential mortgage loan to value ratio (mean above the median) <sup>(ao)</sup>	90.6%	90.6%	81.6%	90.8%	85.5%	86.2% (2014 Q4)
Residential mortgage loan to income ratio (mean above the median) <sup>(ao)</sup>	3.8	3.8	3.6	4.1	4.0	4.0 (2014 Q4)
Commercial real estate mortgage loan to value (average maximum) <sup>(ap)</sup>	77.6%	78.3%	60.0%	79.6%	62.2%	63.6% (2014 H2)
12 Spreads on new UK lending						
Residential mortgage <sup>(aq)</sup>	81 bps	50 bps	34 bps	361 bps	205 bps	177 bps (Apr. 2015)
Commercial real estate <sup>(ar)</sup>	137 bps	135 bps	119 bps	422 bps	290 bps	262 bps (2014 Q4)



- (a) A spreadsheet of the series shown in this table is available at [www.bankofengland.co.uk/financialstability/Pages/fpc/coreindicators.aspx](http://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 year before the start of the global financial crisis.
- (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 Banking Group (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). 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 core Tier 1 capital as a percentage of their aggregate risk-weighted assets. The core Tier 1 capital ratio series starts in 2000 and uses the major UK banks peer group as at 2014 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. The series are annual until end-2012, half-yearly until end-2013 and quarterly afterwards. Sources: PRA regulatory returns, published accounts and Bank calculations.
- (f) The Basel II series was discontinued with CRD IV implementation on 1 January 2014. The 'Basel III common equity Tier 1 capital ratio' is calculated as aggregate peer group common equity Tier 1 levels over aggregate risk-weighted assets, according to the CRD IV definition as implemented in the United Kingdom. The Basel III peer group includes Barclays, Co-operative Banking Group, HSBC, Lloyds Banking Group, Nationwide, RBS and Santander UK. Sources: PRA regulatory returns and Bank calculations.
- (g) A simple leverage ratio calculated as aggregate peer group equity (shareholders' claims) over aggregate peer group assets (note a discontinuity due to the introduction from 2005 of IFRS accounting standards, which tends to reduce reported leverage ratios thereafter). The Basel III (2010) series corresponds to aggregate peer group Tier 1 capital (including grandfathered instruments) over aggregate Basel 2010 leverage ratio exposure. The Basel III (2014) series corresponds to aggregate peer group CRD IV end-point Tier 1 capital over aggregate Basel 2014 exposure measure, and the previous value is for June 2014. Note that the simple series excludes Northern Rock/Virgin Money from 2008. The Basel III series consists of Barclays, Co-operative Banking Group, HSBC, Lloyds Banking Group, Nationwide, RBS and Santander UK. The series are annual until end-2012 and half-yearly afterwards. Sources: PRA regulatory returns, published accounts and Bank calculations.
- (h) Aggregate end-year peer group risk-weighted assets divided by aggregate end-year peer group published balance sheet assets. Data for 2014 H1 onwards are on a CRD IV basis. Sample excludes Northern Rock for all years. Series begins in 1992 and is annual until end-2012 and half-yearly afterwards. Sources: Published accounts and Bank calculations.
- (i) Calculated as major UK banks' annual profit before tax as a proportion of total assets, averaged over the current and previous year. When banks in the sample have merged, aggregate profits for the year are approximated by those of the acquiring group. Series is annual. Latest value shows return on assets between end-2013 and end-2014. Previous value is for 2013 as a whole. Sources: Published accounts and Bank calculations.
- (j) Major UK banks' loans and advances to customers as a percentage of customer deposits, 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 and is annual until end-2012 and half-yearly afterwards. Sources: Published accounts and Bank calculations.
- (k) Share of total funding (including capital) accounted for by wholesale funding with residual maturity of under three months. Wholesale funding comprises deposits by banks, debt securities, subordinated liabilities and repo. Funding is proxied by total liabilities excluding derivatives and liabilities to customers under investment contracts. Where underlying data are not published estimates have been used. Repo includes repurchase agreements and securities lending. The series starts in 2005. Sources: Published accounts and Bank calculations.
- (l) This indicator highlights the countries where UK-owned monetary financial institutions' (MFIs) overall exposures are greater than 10% of UK-owned MFIs' tangible equity on an ultimate risk basis and have grown by more than 1.5 times nominal GDP growth in that country. Foreign exposures as defined in BIS consolidated banking statistics. Uses latest data available, with the exception of tangible equity figures for 2006–07, which are estimated using published accounts. Sources: Bank of England, ECB, IMF *World Economic Outlook* (WEO), Thomson Reuters Datastream, published accounts and Bank calculations.
- (m) Abbreviations used are: Australia (AU), Brazil (BR), Canada (CA), Switzerland (CH), People's Republic of China (CN), Germany (DE), Spain (ES), France (FR), Ireland (IE), Italy (IT), Hong Kong (HK), India (IN), Japan (JP), Republic of Korea (KR), Cayman Islands (KY), Luxembourg (LU), Malaysia (MY), Netherlands (NL), Singapore (SG), Taiwan (TW), United Arab Emirates (AE), United States (US) and South Africa (ZA).
- (n) 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.
- (o) 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 Banking Group and Nationwide. Northern Rock is excluded from 2008 and Virgin Money from 2012. Series starts in 2000. Sources: Thomson Reuters Datastream, published accounts and Bank calculations.
- (p) 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 Banking Group and Nationwide. Northern Rock are excluded from 2008 and Virgin Money from 2012. Series starts in 2000. Sources: Thomson Reuters Datastream, published accounts and Bank calculations.
- (q) The current vintage of ONS data is not available prior to 1997. Data prior to this and beginning in 1987 have been assumed to remain unchanged since *The Blue Book 2013*.
- (r) 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 except for the unfunded pension liabilities and financial derivatives of the not-for-profit sector, and private non-financial corporations' (PNFCs) loans and debt securities excluding derivatives, direct investment loans and loans secured on dwellings. 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. See *Countercyclical Capital Buffer Guide* at [www.bankofengland.co.uk/financialstability/Pages/fpc/coreindicators.aspx](http://www.bankofengland.co.uk/financialstability/Pages/fpc/coreindicators.aspx) for further explanation of how this series is calculated. Sources: BBA, ONS, Revell, J and Roe, A (1971), 'National balance sheets and national accounting — a progress report', *Economic Trends*, No. 211 and Bank calculations.
- (s) Twelve-month growth rate of nominal credit. Credit is defined as above. Sources: ONS and Bank calculations.
- (t) As per cent of annual GDP (four-quarter moving sum). Sources: ONS and Bank calculations.
- (u) Ratios computed using a four-quarter moving sum of GDP. MFIs cover banks and building societies resident in the United Kingdom. Sources: ONS and Bank calculations.
- (v) As per cent of quarterly GDP. Sources: ONS and Bank calculations.
- (w) Five-year real interest rates five years forward, derived from the Bank's index-linked government liabilities curve. Sources: Bloomberg and Bank calculations.
- (x) 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 average. Sources: Bloomberg and Bank calculations.
- (y) 'Global corporate debt 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. Spreads are option adjusted, (ie they show 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 average. Series starts in 1997. Sources: BofA Merrill Lynch Global Research and Bank calculations.
- (z) The household lending spread is a weighted average of mortgage and unsecured lending spreads, with weights based on relative volumes of new lending. The mortgage spread is a weighted average of quoted mortgage rates over risk-free rates, using 90% LTV two-year fixed-rate mortgages and 75% 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 relative to OIS of matching maturity. Spreads are taken relative to Bank Rate for the tracker product. The unsecured component is a weighted average of spreads on credit cards, overdrafts and personal loans. Spreads are taken relative to Bank Rate. Series starts in 1997. Sources: Bank of England, CML and Bank calculations.
- (aa) 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). Weights based on relative volumes of new lending. Series starts in October 2002. Sources: Bank of England, BBA, Bloomberg, BofA Merrill Lynch Global Research, De Montfort University, Department for Business, Innovation and Skills and Bank calculations.
- (ab) 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 Nationwide for 2014 H2 where only solo data were available. Series starts in 2008 and is updated half-yearly. Sources: PRA regulatory returns and Bank calculations.
- (ac) 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 adjusted for the acquisitions of Midland by HSBC in 1992, and of ABN AMRO by RBS in 2007 to avoid reporting large growth rates resulting from step changes in the size and interconnectedness of the major UK bank peer group.
- (ad) Lending to other banks and other financial corporations. Growth rates are year on year. Latest value shows growth rate for year to end-2014. Previous value is for 2013 as a whole. Sources: Published accounts and Bank calculations.
- (ae) Wholesale borrowing, composed of deposits from banks and non-subordinated securities in issue. Growth rates are year on year. Latest value shows growth rate for year to end-2014. Previous value is for 2013 as a whole. One weakness of the current measure is that it is not possible to distinguish between retail deposits and deposits placed by non-bank financial institutions on a consolidated basis. Sources: Published accounts and Bank calculations.
- (af) 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 the future should market shares change. Series starts in 2002. Growth rates are year on year. Latest value shows growth rate for year to end-2014. Previous value is for 2013 as a whole. Sources: Published accounts and Bank calculations.
- (ag) This indicator highlights the countries where UK-owned MFIs' non-bank private sector exposures are greater than 10% of UK-owned MFIs' tangible equity on an ultimate risk basis and have grown by more than 1.5 times nominal GDP growth in that country. Foreign exposures as defined in BIS consolidated banking statistics. Overseas sectoral exposures cannot currently be broken down further at the non-bank private sector level. The intention is to divide them into households and corporates as new data become available. Uses latest data available, with the exception of tangible equity figures for 2006–07, which are estimated using published accounts. Sources: Bank of England, ECB, IMF *World Economic Outlook* (WEO), Thomson Reuters Datastream, published accounts and Bank calculations.
- (ah) Twelve-month nominal growth rate of total household and not-for-profit sector liabilities except for the unfunded pension liabilities and financial derivatives of the not-for-profit sector. Sources: ONS and Bank calculations.
- (ai) Four-quarter growth rate of UK-resident MFIs' loans to the real estate sector. The real estate sector is defined as: buying, selling and renting of own or leased real estate; real estate and related activities on a fee or contract basis; and development of buildings. Not seasonally adjusted. Quarterly data. Data cover lending in both sterling and foreign currency from 1998 Q4. Prior to this period, data cover sterling only. Source: Bank of England.
- (aj) Gross debt as a percentage of a four-quarter moving sum of disposable income. Includes all liabilities of the household sector except for the unfunded pension liabilities and financial derivatives of the non-profit sector. The household disposable income series is adjusted for financial intermediation services indirectly measured (FISIM). Sources: ONS and Bank calculations.
- (ak) 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. The corporate gross operating surplus series is adjusted for FISIM. Sources: ONS and Bank calculations.
- (al) Gross debt as a percentage of four-quarter moving sum of nominal GDP. The NBFi sector includes all financial corporations apart from MFIs. This indicator additionally excludes insurance companies and pension funds. Sources: ONS and Bank calculations.
- (am) Ratio between an average of the seasonally adjusted Halifax and Nationwide house price indices and RPI housing rent. The series is rebased so that the average between 1987 and 2006 is 100. Sources: Halifax, Nationwide, ONS and Bank calculations.
- (an) The prime (secondary) yield is the ratio between the weighted averages, across the lowest (highest) yielding quartile of commercial properties, of IPD's measures of rental income and capital values. Source: Investment Property Databank (IPD UK).
- (ao) Mean LTV (respectively LTI) ratio on new advances above the median LTV (LTI) ratio, based on loans to first-time buyers, council/registered social tenants exercising their right to buy and homemovers, and excluding lifetime mortgages and advances with LTV above 130% (LTI above 10x). 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. Series starts in 2005. Sources: FCA Product Sales Data and Bank calculations.
- (ap) Average of the maximum offered loan to value ratios across major CRE lenders. Series starts in 2002. Sources: De Montfort University and Bank calculations.
- (aq) The residential mortgage lending spread is a weighted average of quoted mortgage rates over risk-free rates, using 90% LTV two-year fixed-rate mortgages and 75% 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 relative to OIS of matching maturity. Spreads are taken relative to Bank Rate for the tracker product. Weights based on relative volumes of new lending. Series starts in 1997. Sources: Bank of England, CML and Bank calculations.
- (ar) The CRE lending spread is the average of rates across major CRE lenders relative to Bank Rate. Series starts in 2002. Sources: Bank of England, De Montfort University and Bank calculations.

Table A.3 Core indicator set for LTV and DTI limits<sup>(a)</sup>

Indicator	Average, 1987–2006 <sup>(b)</sup>	Average 2006 <sup>(c)</sup>	Minimum since 1987 <sup>(b)</sup>	Maximum since 1987 <sup>(b)</sup>	Previous value (oya)	Latest value (as of 19 June 2015)
<b>Lender and household balance sheet stretch</b>						
1 LTI and LTV ratios on new residential mortgages						
Owner-occupier mortgage LTV ratio (mean above the median) <sup>(d)</sup>	90.6%	90.6%	81.6%	90.8%	85.5%	86.2% (2014 Q4)
Owner-occupier mortgage LTI ratio (mean above the median) <sup>(d)</sup>	3.8	3.8	3.6	4.1	4.0	4.0 (2014 Q4)
Buy-to-let mortgage LTV ratio (mean) <sup>(e)</sup>	n.a.	n.a.	70.9%	78.6%	71.8%	71.5% (2015 Q1)
2 Household credit growth <sup>(f)</sup>	10.3%	11.2%	-0.1%	19.6%	1.5%	2.7% (2014 Q4)
3 Household debt to income ratio <sup>(g)</sup>	108.9%	149.6%	87.7%	158.0%	135.9%	135.8% (2014 Q4)
of which: mortgages <sup>(g)</sup>	77.0%	109.5%	56.8%	118.8%	105.5%	104.3% (2014 Q4)
of which: owner-occupier mortgages <sup>(h)</sup>	86.1%	100.4%	72.8%	105.4%	91.1%	89.2% (2014 Q4)
<b>Conditions and terms in markets</b>						
4 Mortgage approvals <sup>(i)</sup>	97,940	118,991	26,658	135,579	63,055	68,076 (Apr. 2015)
5 Housing transactions <sup>(j)</sup>	129,015	139,007	51,700	220,909	103,030	97,610 (Apr. 2015)
Advances to homemovers <sup>(k)</sup>	48,985	59,342	14,300	93,500	28,900	25,800 (Apr. 2015)
% interest only <sup>(l)</sup>	53.3%	31.0%	2.6%	81.3%	5.9%	2.7% (Apr. 2015)
Advances to first-time buyers <sup>(k)</sup>	39,179	33,567	8,500	55,800	24,800	22,400 (Apr. 2015)
% interest only <sup>(l)</sup>	52.1%	24.0%	0.0%	87.9%	0.4%	0.4% (Apr. 2015)
Advances to buy-to-let purchasers <sup>(k)</sup>	9,903	12,931	3,603	16,230	7,500	8,100 (Apr. 2015)
% interest only <sup>(m)</sup>	n.a.	n.a.	50.0%	66.7%	63.7%	66.7% (2014 Q4)
6 House price growth <sup>(n)</sup>	1.8%	2.2%	-5.6%	7.0%	2.1%	1.4% (May 2015)
7 House price to household disposable income ratio <sup>(o)</sup>	3.2	4.8	2.3	5.0	4.0	4.2 (2014 Q4)
8 Rental yield <sup>(p)</sup>	5.8%	5.1%	4.8%	7.6%	5.1%	5.2% (2014 Q4)
9 Spreads on new residential mortgage lending						
All residential mortgages <sup>(q)</sup>	81 bps	50 bps	34 bps	361 bps	205 bps	177 bps (Apr. 2015)
Difference between the spread on high and low LTV residential mortgage lending <sup>(q)</sup>	18 bps	25 bps	1 bps	293 bps	192 bps	162 bps (May 2015)
Buy-to-let mortgages <sup>(r)</sup>	n.a.	n.a.	61 bps	398 bps	302 bps	290 bps (2015 Q1)

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

(b) If the series start 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 year before the global financial crisis.

(d) Mean LTV (respectively LTI) ratio on new advances above the median LTV (LTI) ratio, based on loans to first-time buyers, council/registered social tenants exercising their right to buy and homemovers, and excluding lifetime mortgages and advances with LTV ratio above 130% (LTI ratio above 10x). 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. Series starts in 2005. Sources: FCA Product Sales Data and Bank calculations.

(e) Estimated mean LTV ratio of new non-regulated lending advances, of which buy-to-let is 88% by value. The figures include further advances and remortgages. The raw data are categorical: the share of mortgages with LTV ratio less than 75%; between 75% and 90%; between 90% and 95%; and greater than 95%. An approximate mean is calculated by giving these categories weights of 70%, 82.5%, 92.5% and 97.25% respectively. Series starts in 2007. Sources: Bank of England and Bank calculations.

(f) The twelve-month nominal growth rate of credit. Defined as the four-quarter cumulative net flow of credit divided by the stock in the initial quarter. Credit is defined as all financial liabilities of the household and non-profit sector. Sources: ONS and Bank calculations.

(g) Gross debt as a percentage of a four-quarter moving sum of disposable income. Includes all liabilities of the household sector except for the unfunded pension liabilities and financial derivatives of the non-profit sector. The household disposable income series is adjusted for financial intermediation services indirectly measured (FISIM). Sources: ONS and Bank calculations.

(h) Due to data limitations, the mortgage debt of owner-occupiers is calculated as the product of the share of total mortgage debt directed to owner-occupiers on the asset side of lenders' balance sheets with total loans secured on dwellings on the liabilities side of household balance sheets. Series starts in 1999. Sources: Council of Mortgage Lenders, ONS and Bank calculations.

(i) Number of new loans secured on dwellings approved for house purchase net of cancellations, seasonally adjusted. Series starts in 1993. Sources: Bank of England and Bank calculations.

(j) The number of houses sold/bought in the current month is sourced from HMRC's Land Transaction Return. From 2008 the Return excluded properties priced at less than £40,000 (2006 and 2007 data have also been revised by HMRC to correct for this). Data prior to 2005 comes from the Survey of Property Transactions; the UK total figure is computed by assuming that transactions in the rest of the United Kingdom grew in line with England, Wales and Northern Ireland. Seasonally adjusted. Sources: Council of Mortgage Lenders, HMRC and Bank calculations.

(k) The number of new mortgages advanced for house purchase in the current month. Buy-to-let series starts in 2001. Sources: Council of Mortgage Lenders and Bank calculations.

(l) The share of new owner-occupied mortgages advanced for house purchase that are interest only. Interest-only mortgages exclude mixed capital and interest mortgages. There are structural breaks in the series in April 2015 where the CML switches source. Data prior to 2002 are at a quarterly frequency.

(m) The share (in volume terms) of unregulated mortgages that are interest only. Note: unregulated mortgages are used here as a proxy for buy-to-let, but this will include other types of unregulated mortgages such as second charge. These data include all mortgages, not just those for house purchase. Interest-only mortgages exclude mixed capital and interest mortgages. Sources: Bank of England and Bank calculations.

(n) House prices are calculated as the mean of the average UK house price as reported by the Nationwide and Halifax building societies. Growth rate calculated as the percentage change three months on three months earlier. Series starts in 1991. Sources: Halifax, Nationwide and Bank calculations.

(o) The ratio is calculated using gross disposable income of the UK household and non-profit sector per household as the denominator. Aggregate household disposable income is adjusted for financial intermediation services indirectly measured (FISIM). Historical UK household population estimated using annual GB data and assuming linear growth in the Northern Ireland household population between available data points. Series starts in 1990. Sources: Department of Communities and Local Government, Halifax, Nationwide, ONS and Bank calculations.

(p) The rental yield is the ratio between the annual rental income generated from a rented property and the value of the property. These data are as reported from a survey of members of the Association of Residential Letting Agents. Series starts in 2001. Source: Association of Residential Letting Agents.

(q) The overall spread on residential mortgage lending is a weighted average of quoted mortgage rates over safe rates, using 90% LTV two-year fixed-rate mortgages and 75% LTV tracker, two and five-year fixed-rate mortgages. Spreads are taken relative to gilt years of matching maturity until August 2009, after which spreads are taken relative to OIS of the same maturity. Spreads are taken relative to Bank Rate for the tracker product. Weights are based on relative volumes of new lending. The difference in spread between high and low LTV lending is the rate on 90% LTV two-year fixed-rate mortgages less the 75% LTV two-year fixed-rate. Series starts in 1997. Sources: Bank of England, Bloomberg, Council of Mortgage Lenders, FCA Product Sales Data and Bank calculations.

(r) The spread on new buy-to-let mortgages is the weighted average effective spread charged on new floating and fixed-rate unregulated mortgages over safe rates. Spreads are taken relative to Bank Rate for the floating-rate products. The safe rate for fixed-rate mortgages is calculated by weighting two-year, three-year and five-year risk-free interest rates by the number of buy-to-let fixed-rate mortgage products offered at these maturities. The risk-free rates are gilts of the appropriate maturity until August 2008, after which the OIS is used. Series starts in 2007. Sources: Bank of England, Moneyfacts and Bank calculations.

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# Glossary and other information

## Glossary of selected data and instruments

**CDS** – credit default swap.

**CMBS** – commercial mortgage-backed security.

**Euribor** – euro interbank offered rate.

**GDP** – gross domestic product.

**Libor** – London interbank offered rate.

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

## Abbreviations

**AT1** – additional Tier 1.

**BIS** – Bank for International Settlements.

**CBEST** – UK Government's National Cyber Security Programme.

**CCB** – countercyclical capital buffer.

**CCP** – central counterparty.

**CEO** – chief executive officer.

**CET1** – common equity Tier 1.

**CML** – Council of Mortgage Lenders.

**CRD IV** – Capital Requirements Directive.

**CRE** – commercial real estate.

**CRR** – Capital Requirements Regulation.

**DC** – defined contribution.

**DTI** – debt to income.

**EBA** – European Banking Authority.

**ECB** – European Central Bank.

**EFSS** – European Financial Stability Facility.

**ELA** – Emergency Liquidity Assistance.

**EME** – emerging market economy.

**EU** – European Union.

**FCA** – Financial Conduct Authority.

**FDI** – foreign direct investment.

**FEMR** – Fair and Effective Markets Review.

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

**FPC** – Financial Policy Committee.

**FSA** – Financial Services Authority.

**FSB** – Financial Stability Board.

**FTSE** – Financial Times Stock Exchange.

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

**G-SIB** – global systemically important bank.

**G-SII** – global systemically important institution.

**HMRC** – Her Majesty's Revenue and Customs.

**ICAS** – Individual Capital Adequacy Standards.

**IFRS** – International Financial Reporting Standard.

**IIF** – Institute of International Finance.

**IMF** – International Monetary Fund.

**IOSCO** – International Organization of Securities Commissions.

**IT** – information technology.

**LBG** – Lloyds Banking Group.

**LCR** – Liquidity Coverage Ratio.

**LTI** – loan to income.

**LTV** – loan to value.

**MFI** – monetary financial institution.

**MREL** – minimum requirement for own funds and eligible liabilities.

**NBFI** – non-bank financial institution.

**NIIP** – net international investment position.

**NTNI** – non-traditional, non-insurance.

**OFI** – other financial institution.

**ONS** – Office for National Statistics.

**OTC** – over the counter.

**PNFC** – private non-financial corporation.

**PPI** – payment protection insurance.

**PRA** – Prudential Regulation Authority.

**PwC** – PricewaterhouseCoopers.

**RBS** – Royal Bank of Scotland.

**RICS** – Royal Institution of Chartered Surveyors.

**RoA** – return on assets.

**SFT** – securities financing transaction.

**SME** – small and medium-sized enterprise.

**SRB** – systemic risk buffer.

**S&P** – Standard & Poor's.

**TLAC** – total loss-absorbing capacity.

**WEO** – IMF *World Economic Outlook*.

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