BANK OF ENGLAND

October 2014

The Financial Policy Committee's review of the leverage ratio

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Background information on the Financial Policy Committee

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

The Financial Policy Committee:
Mark Carney, Governor
Jon Cunliffe, Deputy Governor responsible for financial stability
Ben Broadbent, Deputy Governor responsible for monetary policy
Andrew Bailey, Deputy Governor responsible for prudential regulation
Martin Wheatley, Chief Executive of the Financial Conduct Authority
Clara Furse, external member
Donald Kohn, external member
Richard Sharp, external member
Martin Taylor, external member
Charles Roxburgh attends as the Treasury member in a non-voting capacity.

Nemat Shafik, Deputy Governor responsible for markets and banking, also attends FPC meetings.

ISSN 1754–4262

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Executive summary

The international community has already set out its intention, through the Basel Committee on Banking Supervision (BCBS), to review the calibration of a minimum required leverage ratio framework by 2017, with a view to introducing a Pillar 1 standard by 1 January 2018. In light of that, and following advice from the interim Financial Policy Committee (FPC) of the Bank of England, HM Government said in September 2012 that it intended to provide the FPC with a direction power over a time-varying leverage ratio, subject to a review in 2017 to assess progress on international standards.

In November 2013 the Chancellor of the Exchequer asked the FPC to conduct a review into the role for the leverage ratio within the capital framework for UK banks, and to consider the case for the FPC having the power to implement a leverage ratio requirement ahead of the international timetable, or to set a higher baseline ratio in some circumstances for UK banks. Subject to the FPC presenting a detailed and evidence-based recommendation, the Chancellor said he would expect to be in a position to submit the FPC's proposals for approval in this Parliament and asked for the review to be completed within twelve months.

The FPC agrees that leverage ratio requirements are an essential part of the framework for assessing and setting capital adequacy requirements for the UK banking system. The FPC is also setting out now its view on the calibration of its leverage ratio framework, in advance of any decision by HM Treasury on granting these powers, in response to the feedback that it received on its consultation paper.

In designing and calibrating its proposed leverage ratio framework, the FPC considered historical loss experience in past bank failures in the United Kingdom and abroad, including during the recent financial crisis. The FPC also took into account that the leverage ratio framework would sit alongside existing risk-weighted capital requirements and stress testing. And for UK global systemically important banks (G-SIBs), these requirements should be seen in the context of forthcoming requirements for total loss-absorbing capacity (TLAC). The FPC also considered the responses to its public consultation and assessed the impact of the leverage ratio framework on capital levels in the financial system, and on economic growth.

The FPC met on 15 October to conclude its review and make its recommendation on the powers needed and appropriate framework for a leverage ratio requirement in the United Kingdom. This review sets out the FPC's recommendation on both the framework and its calibration.

The FPC sees a strong case for introducing a leverage ratio framework ahead of an internationally agreed standard for G-SIBs and other major domestic UK banks and building societies. This reflects the number of systemically important institutions 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 before an international standard on leverage is agreed and implemented. Setting out a framework now will also help firms with their planning, especially by providing clarity for systemically important firms on how supplementary leverage ratio and risk-weighted requirements will fit together. The FPC noted that other authorities had also implemented leverage ratio regimes recently with similar considerations in mind.

The FPC is content for leverage ratio requirements and buffers for all other Prudential Regulation Authority (PRA)-regulated banks, building societies and investment firms to come into force in line with the international timetable in 2018, subject to a review of progress internationally in 2017.

Recommendation on the overall leverage ratio framework for the UK banking system

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.

The FPC judges that a supplementary leverage ratio buffer is required for systemically important firms, whose failure would

be most destabilising for the UK financial system, while a countercyclical leverage ratio buffer is required for all PRA-regulated banks, building societies and investment firms to address risks that vary over the cycle. These buffers should be set in proportion to those applied in the risk-weighted framework. This would seek to achieve complementarity between the leverage and risk-weighted framework. The FPC judges that this strikes the right balance between ensuring the simplicity of leverage ratio requirements and establishing a framework that protects and enhances financial stability.

The FPC judges that together the framework and calibration will lead to prudent and efficient leverage ratio requirements for the UK financial system. In reaching this view on calibration the FPC assumed it would be able to set a specific buffer to recognise the higher risk to the economy posed by systemic firms, and at certain times in the credit cycle, and it would therefore have the ability to apply supplementary and countercyclical leverage ratio buffers in response to identified risks to financial stability. It is the combined effect of all three elements of the leverage ratio framework that delivers an appropriate calibration and hence the absence of any specific element would require the FPC to review its calibration of the rest of the framework to ensure that it delivered appropriate levels of resilience across a range of circumstances. In the absence of specific buffers to recognise those risks, the minimum level of the leverage ratio would need to be higher to give the necessary level of protection to ensure financial stability.

With this in mind, the FPC's view is that the leverage ratio framework as set out in its recommendation would be implemented as follows.

Framework and calibration

- The minimum leverage ratio requirement would be set at 3% which — given the ability to impose supplementary buffers on systemically important firms and to raise the countercyclical leverage ratio buffer (CCLB) in response to risks to financial stability — the FPC judges to be consistent with domestic and international loss experience during historical banking crises including the recent financial crisis, the standardised approach to risk weights for mortgage lending and emerging international standards.

- Supplementary leverage ratio buffers, which would be applied to systemically important firms (G-SIBs and other major domestic UK banks and building societies, including ring-fenced banks), would be set at 35% of the corresponding risk-weighted systemic risk buffer rates for these firms. This 35% conversion factor preserves the relationship between the 3% minimum leverage requirement and the 8.5% Tier 1 risk-weighted capital requirement (the latter including both the minimum and the capital conservation buffer).

- The FPC expects as a guiding principle that it would set the CCLB rate at 35% of the risk-weighted countercyclical capital buffer (CCB) rate. The FPC uses a set of core indicators, alongside other relevant economic and financial data, supervisory and market intelligence and, where available, any relevant information from stress tests, to judge where to set the CCB rate for UK exposures.

- The definition for the exposure measure — the denominator of the leverage ratio — would be aligned with the definition agreed by the BCBS, as implemented in European law.

- For the capital resources measure — the numerator of the leverage ratio — additional Tier 1 (AT1) capital instruments of sufficient quality to convert to common equity Tier 1 (CET1) capital on a going concern basis would be permitted to comprise up to 25% of the minimum requirement. Buffer requirements would be met with CET1 capital only.

- Though the FPC proposes no automatic supervisory actions following breaches of these leverage ratio requirements, it expects that the PRA would take timely and appropriate action to ensure that firms had a credible capital plan to remedy breaches.

- For future stress tests, the FPC would expect regulatory responses to be based both on risk-weighted and leverage ratio requirements.

- In considering the appropriate calibration of the leverage ratio framework, the FPC recognises that relevant discussions on other capital requirements — in particular on TLAC requirements as part of initiatives on ending 'too big to fail' — are still taking place internationally.

Timing

- The minimum level of the leverage ratio of 3% would be introduced as soon as practicable for the UK G-SIBs and other major UK banks and building societies at the level of the consolidated group. The supervisory expectation that currently applies to these firms to maintain a 3% minimum leverage ratio would be superseded.

- A supplementary leverage ratio buffer relating to G-SIBs would be implemented in parallel with the corresponding risk-weighted systemic risk buffers, which will be implemented from 2016.

- A supplementary leverage ratio buffer relating to other major domestic UK banks and building societies would be implemented in parallel with the corresponding risk-weighted systemic risk buffers. At present this would only apply to ring-fenced banks and large building societies as HM Treasury has limited the application of the risk-weighted systemic risk buffer under CRD IV to this class

of firms. For these firms the risk-weighted systemic risk buffer will be set by the FPC following a consultation in 2015, and will be implemented from 2019.

- Changes to CCLB rates would be implemented at the same time as changes to CCB rates; the FPC sets the CCB rate for UK exposures quarterly. The CCB rates apply for all banks, building societies and large investment firms incorporated in the United Kingdom. Countercyclical leverage ratio buffers would be applied to firms at the point they become subject to the minimum leverage ratio requirement.

- For reasons of proportionality the FPC has decided not to request a power of direction to set leverage ratio requirements for Financial Conduct Authority (FCA)-only regulated firms. If it became concerned over the leverage of FCA-only regulated investment firms, the FPC could issue recommendations to the FCA. The FPC is also able to make recommendations to HM Treasury on the designation of activities requiring prudential regulation by the PRA. The PRA has a close working relationship with the FCA.

International co-ordination

- It is expected that an international standard for a minimum leverage ratio requirement will be applied from 2018. The FPC will therefore review progress towards this in 2017, and consider the implications for the leverage ratio framework. In particular, at that stage the FPC expects to direct the PRA to extend leverage ratio requirements to all PRA-regulated banks, building societies and investment firms. As part of this review, the FPC will also consider the case for applying the requirements to firms at a solo level as well as at the level of the consolidated group.

The FPC's powers of direction are subject to a strong statutory accountability and scrutiny regime. The FPC is required to publish and maintain a statement of general policy for each of its direction powers setting out the policy it will follow in using that power. This regime would apply to any powers of direction in respect of leverage. If legislation is introduced into Parliament to implement the FPC's proposed leverage ratio framework, the FPC will publish a draft Policy Statement in early 2015 to inform the Parliamentary debate.

1 Introduction

1.1 Background to this review

As part of the proposed changes to the regulatory framework following the financial crisis, and in response to a request from HM Treasury, in December 2011 the interim Financial Policy Committee (FPC) issued a discussion paper on instruments of macroprudential policy, where it welcomed feedback on potential macroprudential tools.

Following responses received, in March 2012 the interim FPC agreed it would advise HM Treasury that the statutory FPC should have powers of direction to set a leverage ratio — and to vary that ratio over time. It was noted that, for banks and building societies, it would be natural to use the internationally agreed definition of the leverage ratio that had been set out in the Basel III standards.(1)

In response the Government said it intended to provide the FPC with a time-varying leverage ratio direction-making tool, but no earlier than 2018 and subject to a review in 2017 to assess progress on international standards. The Government noted then that it expected the FPC's toolkit would adapt and evolve over time as the international debate and academic literature on macroprudential policy developed and empirical evidence became more widely available.

In November 2013 the Chancellor of the Exchequer wrote a letter to the Governor to request that the FPC conduct a review into the role for the leverage ratio within the capital framework for UK banks. The Chancellor's letter noted that the completion of the EU Capital Requirements Directive and Regulation (CRD IV) represented an important milestone in setting capital standards for individual banks and for securing a set of critical macroprudential tools for the FPC to deploy.(2) Given the strong progress being made at the international level and in the context of the FPC's stated medium-term priorities, the Chancellor stated that he thought 'the time is now right for the FPC to assess what is the full set of powers that it needs in order to fulfil its statutory objectives'. The Chancellor asked that the terms of reference for this review be finalised once the Basel process on defining the leverage ratio had concluded in early 2014, and asked for the review to be completed within twelve months. Subject to the FPC presenting a detailed and evidence-based recommendation, the Chancellor said he 'would expect to be in a position to submit its proposals in this Parliament for approval'.

The Governor agreed that the time was right for the FPC to conduct such a review; in parallel, the FPC published some high-level considerations on the role of the leverage ratio within the overall capital framework in its November 2013 *Financial Stability Report*. The terms of reference for the leverage review were set out in March this year, including the scope and objectives for the review. The terms of reference of this review are summarised in Box 1. As requested by the Chancellor, HM Treasury officials were consulted in finalising the terms of reference of the review. The FPC also said that the review might be accompanied by an FPC recommendation and that any recommendation would include a cost-benefit analysis, and would be sufficiently specific to assist HM Treasury in drafting a statutory instrument (if applicable).

Given the difference in the timetable for this review and the FPC's work on the capital framework due to be concluded in 2015, the FPC had considered that the determination of the appropriate numerical value of the leverage ratio would be outside the scope of the leverage review.

As part of conducting this review, the FPC issued a Consultation Paper in July seeking responses from the industry in order to inform its final recommendations, and staff held bilateral meetings with industry groups across the financial sector in August and September. The consultation period ran from 11 July to 12 September 2014, and 26 responses were received. At its September 2014 meeting, the FPC noted that a common theme in the responses was around the need for guidance on how the proposed framework would be calibrated. For that reason and to support a Treasury consultation on, and impact assessment of, the FPC's proposals, the FPC decided to bring forward its consideration of the appropriate calibration of the leverage ratio framework.

At its meeting on 15 October, the FPC concluded its review and agreed the key recommendation on the powers needed and appropriate framework for a leverage ratio framework in the United Kingdom, including its view on the appropriate calibration of the leverage ratio framework.

This review forms the response to the Chancellor's request of November 2013. HM Treasury would consult on their proposals ahead of any draft legislation being submitted to Parliament. If legislation is introduced into Parliament, it is the intention of the FPC to publish a draft Policy Statement on the proposed leverage ratio direction powers early in 2015 to help inform Parliamentary debate.

1.2 The FPC's objectives and powers

The FPC's primary objective is to contribute to achieving the Bank of England's Financial Stability Objective. The FPC's particular responsibility is the 'identification of, monitoring of, and taking of action to remove or reduce, systemic risks with a view to protecting and enhancing the resilience of the UK financial system'. Systemic risks include those attributable to 'structural features of financial markets, such as connections between financial institutions', to 'the distribution of risk within the financial sector' and to 'unsustainable levels of leverage, debt or credit growth'.

(1) BCBS (2014).
(2) Letter available at www.bankofengland.co.uk/publications/Documents/news/2013/chancellorletter261113.pdf.

Box 1
Terms of reference of the FPC leverage review

On 26 November 2013, the Chancellor requested the Financial Policy Committee (FPC) to undertake a review of the leverage ratio within the capital framework. This review complements the FPC's medium-term priorities on the capital framework and on ending 'too big to fail' (TBTF), as set out in the November 2013 *Financial Stability Report*. The terms of reference of this review are summarised below. As requested by the Chancellor, HM Treasury officials were consulted in finalising the terms of reference.

Scope and objectives

The review was asked to consider the leverage standard required to ensure that the UK banking system is sufficiently resilient. In doing so, it was requested to cover the following elements:

- the roles of and relationship between the leverage ratio and risk-weighted measures, including the relative strengths and weaknesses of each measure;
- international developments related to the leverage ratio;
- the definition and design of the leverage ratio (eg minimum and buffers);
- the merits and demerits of varying the leverage ratio in light of variations in the corresponding risk-weighted standards and, therefore, the merits of being able to vary the leverage ratio in a countercyclical manner;
- the appropriate leverage standards for ring-fenced banks;
- the case for direction powers over the leverage ratio and how this would fit with the rest of the FPC's macroprudential toolkit, including the criteria to be used by the FPC when varying the leverage ratio;
- the impact of leverage standards on UK lending and GDP, and on those businesses with high concentrations in low risk-weighted assets or with different business models; and
- the transitional arrangements of leverage standards, including the circumstances under which it might be appropriate to introduce a leverage ratio on a faster timetable than international standards.

The FPC also has a secondary objective to support the government's economic objectives and it is not empowered to take any action which it believes would significantly reduce the ability of the financial sector to contribute to the growth of the UK economy in the medium or long term.

The FPC has two types of powers to achieve its objectives. First, it can issue recommendations, including on a 'comply or explain' basis to the FCA and PRA. Second, it can make directions to the FCA and PRA over the use of specific regulatory instruments. These are binding and must be implemented as soon as reasonably possible.

The FPC sees several benefits to being able to use powers of direction in the specific case of the leverage ratio framework. Implementation of directions is potentially quicker than for recommendations: a power of direction requires the PRA or FCA not only to comply but also to act as soon as practicable. There is scope for HM Treasury when establishing a power of direction to allow for the disapplication of procedural requirements for consultation periods, if that is judged necessary, which can help where urgent implementation is required. This could be an important consideration in relation to a countercyclical leverage ratio buffer, where certainty on changes may be important to enable firms to alter their capital plans as soon as possible.

Direction powers are used within a clear framework, with a strong macroprudential mandate for varying policies over the cycle. For each direction power, the FPC is required to produce and maintain a Policy Statement of the general policy it proposes to follow, including identifying core indicators that are used, alongside other relevant economic and financial data, supervisory and market intelligence, and where applicable information from stress tests, as a guide for policymaking. This can help firms to understand and anticipate how the FPC's actions will affect their capital planning and is part of the wider accountability framework within which the FPC operates to meet its objectives.

The leverage ratio

A leverage ratio is an indicator of a firm's solvency, and is the ratio of its capital relative to a gross measure of its exposures or assets:(1)

$$\text{Leverage ratio} = \frac{\text{Capital}}{\text{Exposures}}$$

As assets have to be funded either by capital or debt, the lower a bank's leverage ratio, the more it relies on debt rather than capital to fund its assets. Whereas risk-weighted capital

(1) The Basel III leverage ratio measures exposures to on and off balance sheet items. Throughout the review, 'assets' and 'balance sheet' are used as shorthand for this broader exposure method for ease of reading.

ratios differentiate capital requirements according to estimates of the relative riskiness of different types of assets, a leverage ratio weights all assets equally.

In the run-up to the recent global financial crisis, the excessive build-up of on and off balance sheet exposures was a material weakness of the banking system in many countries, including the United Kingdom. During the crisis, the banking sector was forced to rapidly reduce its leverage, in particular by reducing exposures, exacerbating the impact on asset prices and on real economy lending. A leverage ratio requirement aims to mitigate the risks of such excessive balance sheet 'stretch'.

2 Design and calibration of the FPC's leverage ratio framework

This section explains why the FPC is recommending to HM Treasury that it is given powers of direction in relation to a leverage ratio framework. The structure is as follows:

- Section 2.1 summarises the FPC's request for powers.
- Section 2.2 explains why the FPC believes the leverage ratio has an important role to play in enhancing the resilience of the banking system and how it relates to the existing risk-weighted ratio.
- Section 2.3 explains in more detail the FPC's request for powers and how it would expect to use them, including how they would be calibrated.
- Section 2.4 covers other design features of the FPC's recommended leverage ratio framework.
- Section 2.5 explains how the FPC's recommended leverage ratio framework takes into account international developments on leverage.

2.1 Summary of the FPC's request for powers

The FPC seeks powers of direction over:

a. a minimum leverage ratio requirement applicable to all PRA-regulated banks, building societies and investment firms;

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 applicable to all firms subject to the minimum leverage ratio requirement.

The PRA currently has a supervisory expectation of a 3% leverage ratio for G-SIBs and other major domestic UK banks and building societies.(1) The FPC intends to supersede this supervisory expectation by using a power of direction immediately to set a 3% minimum leverage requirement for UK G-SIBs and other major domestic UK banks and building societies. As G-SIBs become subject to supplementary risk-weighted systemic risk buffers from 2016, the FPC also expects to use its powers of direction to set supplementary leverage ratio buffer rates in parallel, at a level equal to 35% of each bank's risk-weighted systemic risk buffer rate. Supplementary buffers for other major domestic UK banks and building societies would be set in the same way, and introduced from 2019.

The FPC will need to review its proposed leverage ratio framework, and particularly the application to individual entities and non-systemic groups, in the light of progress towards an international/EU leverage ratio framework. It is expected that an international leverage ratio framework will be agreed by 2017 and implemented from 2018. In 2017 the FPC will therefore need to review progress and consider the implications for its leverage ratio framework. At that stage the FPC expects to direct the PRA to extend leverage ratio requirements to all PRA-regulated banks, building societies and investment firms.

As a guiding principle, the countercyclical leverage ratio buffer (CCLB) rate will vary in proportion to the countercyclical capital buffer (CCB) rate and equal 35% of that risk-weighted rate. Prior to 2018, if the FPC chose to impose a CCLB, this would only apply to systemically important firms as defined above. From 2018 the FPC envisages applying it to all firms covered by the 3% minimum leverage ratio.

The numerator of the leverage ratio will comprise common equity Tier 1 (CET1) capital plus additional Tier 1 (AT1) instruments of sufficient quality to convert to CET1 on a going concern basis, up to 25% of the minimum leverage ratio requirement of 3%. Leverage ratio buffers should be met solely with CET1. For the denominator the FPC intends to use the Basel III leverage ratio exposure measure as implemented in European law.(2) In 2017, the FPC expects to review its proposed leverage ratio framework and particularly the application to individual entities and non-systemic groups in the light of progress towards international and EU leverage ratio frameworks.

The FPC believes that it is necessary to move in advance of the international timetable and obtain direction powers over a leverage ratio framework at this point in time for the following reasons:

i. To give firms, including ring-fenced banks, clarity on the requirements they will face under a future leverage ratio framework, enabling them to plan for the full implementation of the FPC's framework from 2018.

ii. To enable the FPC to advance its 'too big to fail' objective by setting minimum leverage ratio requirements and supplementary leverage ratio buffers on G-SIBs in line with their increased risk-weighted systemic buffers during the transition period to an internationally agreed leverage regime.

(1) PRA (2013b).
(2) On 10 October 2014 the European Commission adopted a Delegated Act that sets out a revised leverage ratio exposure measure for the purposes of disclosure under the Capital Requirements Regulation. The European Council and Parliament have a period of three to six months in which to express an objection to the Act. If no such objection is made during that period the Act will become EU law.

Table A Summary of FPC requests for leverage ratio direction powers and proposed application of direction powers

Component	Population of firms	Timing	Proposed calibration
Minimum leverage ratio requirement	G-SIBs and other major domestic UK banks and building societies	Immediately	3%
	All PRA-regulated banks, building societies and investment firms	From 2018, subject to a 2017 review	3%
Supplementary leverage ratio buffer	G-SIBs and other major domestic UK banks and building societies	In parallel with corresponding risk-weighted buffer, hence phased from 2016 for G-SIBs and introduced in 2019 for other major domestic UK banks and building societies	35% of the corresponding risk-weighted systemic buffer rates
Countercyclical leverage ratio buffer (CCLB)	G-SIBs and other major domestic UK banks and building societies	Immediately	35% of the risk-weighted countercyclical capital buffer rate
	All PRA-regulated banks, building societies and investment firms	From 2018, subject to a 2017 review	35% of the risk-weighted countercyclical capital buffer rate

iii. To give the FPC the ability to respond rapidly to a period of excessive credit growth, should one occur, via the use of complementary countercyclical capital and leverage ratio buffers for systemically important UK firms.

In asking for direction powers now, the FPC has taken into account the number of systemically important institutions 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 model risk effectively and to respond consistently to risks to financial stability that might emerge before an international standard on leverage is agreed and implemented. The FPC notes that other authorities, such as the United States and Switzerland, have implemented leverage ratio regimes recently with similar considerations in mind.

2.2 The role of a leverage ratio framework in achieving the FPC's objectives

This section explains why the FPC believes the leverage ratio has an important role to play in ensuring the resilience of the banking system and how it relates to the existing risk-weighted ratio.

The purpose of capital regulation

Capital adequacy regulation requires regulated firms to fund themselves with a minimum amount of capital. This capital gives them a cushion to absorb losses, reducing the likelihood of an insolvency that imposes costs on the real economy. Capital regulation is necessary because of various market failures which can lead firms on their own to choose amounts of capital which are too low from society's point of view.

Requiring firms to fund themselves with more capital directly increases the resilience of the UK financial system to shocks, so capital regulation is a critical part of the FPC's toolkit. The FPC currently sets the UK CCB rate and has powers of direction over Sectoral Capital Requirements (SCRs). These are both examples of risk-weighted capital requirements, discussed below.

Ideally, capital adequacy regulation would ensure that all banks are sufficiently well capitalised to absorb losses given society's risk tolerance. In practice, measurement of the riskiness of firms' portfolios is uncertain. This is why multiple approaches to setting capital requirements have been suggested, including requirements based on firms' estimates of their assets on a risk-adjusted basis, stress testing and a leverage ratio that reflects a firm's total assets, unadjusted for estimated risk.

The merits and drawbacks of risk-weighted capital requirements

A risk-weighted capital ratio provides a granular assessment of the risks in firms' portfolios. The risk weights used to arrive at an estimate of risk-weighted assets are reliant either on standardised requirements set by the regulator, which are typically based on historical industry-wide data, or on a firm's internal models reflecting its own historical experience, or on a combination of the two. To the extent that risk can be measured well given the available historical data, and that past experience is a good guide to the future, a risk-weighted ratio should in theory be superior to other capital measures at matching a firm's capital requirements to the risk of losses on its assets.(1)

But the financial crisis revealed significant weaknesses associated with risk weightings — both internal and standardised — that are used to calculate the risk-weighted ratio. For example:

- As all models are simplifications of reality, they are always 'wrong'. Though bad models can be improved, for example by relying on a range of models, better data or more accurate theory, there remains an irreducible amount of modelling uncertainty associated with trying to measure risk.
- Banks may face incentives to use the discretion inherent in internal modelling choices to reduce risk weights.
- Insufficiently large samples of historical data can lead to significant miscalibrations in both internal and standardised

(1) See Gordy (2003).

models if they omit low-probability but large-impact events (known as 'tail events'). The data requirements for capturing these low-probability tail events with any reasonable statistical accuracy can at times be too demanding to be feasible for most firms.

- Models cannot capture 'unknown unknowns'.

- Internal bank models are calibrated from the perspective of individual banks and assume risk is exogenous. They therefore do not capture correlations of losses across banks which are at the heart of systemic crises.

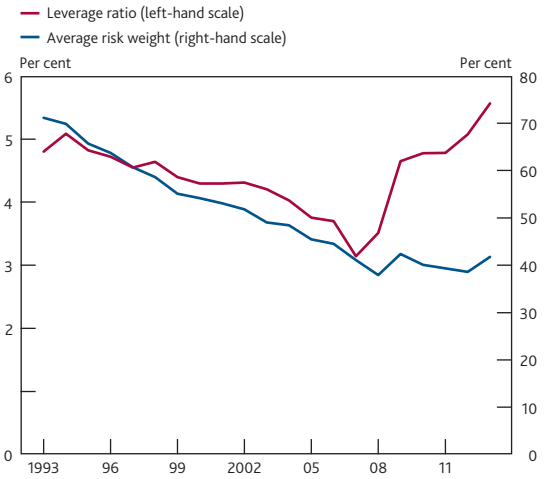
- Complexity and lack of transparency in the risk-weighted framework can reduce the ability of the market to distinguish adequately between strong and weak firms on the basis of the risk-weighted ratio alone. This can have the effect of stifling market discipline, reducing competition and, in periods of stress, leading to contagion from weak to strong banks.

The scale of these problems has been well-documented over recent years.(1) For example, the BCBS has assessed the variability of risk-weighting practices across global banks by asking them to assign risk weights to a common set of hypothetical banking-book exposures to sovereigns, banks and corporates using their internal models. The variability revealed was considerable: when translated into the impact on banks' capital ratios, the risk weights calculated implied a capital ratio for the most conservative bank in the sample that was 50% higher than that for the least conservative.(2) While this illustrates the difficulties in calculating reliable and comparable risk-weighted capital ratios using internal models, regulatory models which use the standardised approach can also be problematic.

Part of the variability of risk weights is caused by firms' modelling choices and supervisory adjustments to model outputs. But variability may also reflect basic statistical facts: if data are insufficient, random fluctuations in samples will lead to a wide range of capital outcomes driven by chance — even if the same model is used. For low-frequency events, which need to be modelled with greater precision than more frequent events, even samples that would usually be considered very large might result in considerable risk-weight variability. Thus variability can be purely reflective of inevitable noise in banks' data rather than any desire to minimise risk weights.

The dangers of relying only on the risk-weighted approach were borne out by the events leading up to and culminating in the financial crisis. **Chart 1** shows the evolution of average risk weights over time: for major global firms, average risk weights fell almost continuously from around 70% in 1993 to below 40% at the end of 2008. The financial crisis showed that the pre-crisis fall in average risk weights did not represent a systematic reduction in risk within the banking system. Indeed, the opposite was true.

Chart 1 Average risk weights and leverage ratios since 1996(a)(b)



Sources: The Banker and Bank calculations.

(a) The series represent the weighted averages across the sample of 17 global banks. Leverage ratio measured as Tier 1 capital/Assets.
(b) Sample includes Bank of America, Barclays, BNP Paribas, Bank of New York Mellon, Citigroup, Commerzbank, Deutsche Bank, HSBC, ING, JPMorgan, Lloyds Banking Group, Royal Bank of Scotland, Santander, State Street, UBS, UniCredit and Wells Fargo.

Stress testing — and the resulting policies to require that banks have sufficient capital to absorb losses in an adverse scenario — can correct some of the shortcomings of risk weights. But this relies on the imagination and willingness of firms and policymakers to consider extreme events that are outside the realm of experience and on their ability to model the financial system response to them correctly. And without a leverage ratio framework, the benchmarks used to assess capital adequacy will still rely only on risk weighting.

The merits and drawbacks of leverage ratio requirements

A minimum leverage ratio requirement also aims to promote individual firms' resilience through ensuring that capital is adequate to absorb losses, but it treats all exposures equally regardless of their estimated risk.

The rationale for using a leverage ratio as a part of regulation is that in environments which are characterised by complexity, small samples and uncertainties, simple indicators often outperform more complex ones.(3) Complementing the risk-weighted ratio with a leverage ratio requirement gives banks better protection against uncertainties and 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.

(1) See, for example, Admati and Hellwig (2013), Haldane (2013) and Tarullo (2014).
(2) See Chart 1 on page 8 of BCBS (2013).
(3) See Haldane and Madouros (2012) and Aikman *et al* (2014).

Empirical evidence supports this view. First, leverage ratios fell in the United Kingdom and several other countries in the run-up to the crisis, while capital adequacy ratios based on risk weights were broadly stable. The leverage ratio attached much more significance to the rapid expansion in intra-financial exposures which turned out to be a significant source of losses in the height of the crisis. Second, a number of studies have found that the leverage ratio was a better predictor of bank failure during the crisis than the risk-weighted capital ratio.(1) Third, a recent IMF research paper(2) shows that banks with higher leverage ratios (ie less leverage) in the run-up to the recent financial crisis reduced lending less than banks with lower leverage ratios (ie higher leverage), even when taking into account dependence on non-deposit funding. This result was not clear when the authors used risk-weighted capital ratios rather than leverage ratios.

The drawback of a leverage ratio approach to setting bank capital requirements is that it is insensitive to risk, requiring banks to use the same amount of capital to fund high-risk assets as low-risk assets. Used on its own, it can create incentives for banks to take on riskier assets.

The leverage ratio on its own would not have captured risk comprehensively since some bank failures are associated with on average higher-risk assets and correspondingly low leverage. The evidence that the leverage ratio sometimes performs better at predicting failure does not lead to the conclusion that relying solely on a regulatory leverage ratio would have prevented the crisis: banks had no incentive to optimise leverage by shifting their portfolios towards riskier assets, because leverage was not a regulatory constraint in most countries. Had it been a constraint, banks might have behaved differently.

Alternatives to the leverage ratio

The FPC's Consultation Paper on the leverage ratio noted a number of potential alternatives to the leverage ratio including asset class-specific risk-weight floors, additional 'Pillar 2' capital add-ons, increased supervisory review of models, and additional disclosures. As Section 3 documents, many consultation respondents argued that some of these would be better alternatives, although there was no consensus on individual alternatives.

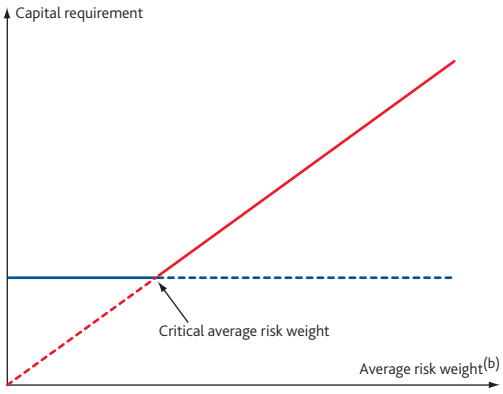
In the Consultation Paper, the FPC argued that while these are complementary mitigants to uncertainty about risk weights, they cannot adequately substitute for the leverage ratio. It still holds this view. Supervisory review of models and asset-class specific risk weight floors can mitigate concerns about particular models but the FPC believes a limit on overall leverage is also required, particularly in the presence of 'unknown unknowns'. Pillar 2 add-ons also require an identification of firms particularly prone to model risk and are less transparent. Finally, while disclosure will increase transparency and comparability, the resulting market discipline may not, on its own, be sufficient to mitigate fully risks which are hard to model, particularly in times of exuberance when risks are being overlooked.

The relationship between risk-weighted and leverage ratio requirements

No capital adequacy measure is a perfect measure of risk. Each has its strengths and weaknesses. The FPC believes that because risk-weighted capital ratio and leverage ratio requirements and stress tests mitigate different types of risk with different degrees of success, they complement each other. It also notes that respondents to the Consultation Paper generally agree (see Section 3).

The constraints provided by risk-weighted and leverage requirements are depicted in **Chart 2**. Below a certain average risk weight, only the leverage ratio binds and the capital requirement is invariant to measured risk (along the flat line). However at some point, the risk-weighted requirement binds and further increases in measured risk do increase the capital requirement. There is an average risk weight at which both requirements bite — the 'critical' average risk weight.

Chart 2 Stylised capital requirements implied by the leverage ratio and the risk-weighted ratio(a)



Source: Bank calculations.

(a) The risk-weighted capital requirement increases linearly (red line). The leverage ratio capital requirement stays constant (blue line). The 'critical average risk weight' is the average risk weight for which both ratios imply the same amount of capital.
(b) Risk-weighted assets/total assets.

The leverage ratio protects against risks which are difficult to model and uncertainties for firms with average risk weights beneath this critical average risk weight. These firms are those most vulnerable to such risks because without a leverage ratio, their capital would be allowed to fall so low that a small error in estimated risk weights may leave them undercapitalised.

(1) See, for example, IMF (2009), Demirgüç-Kunt, Detragiache and Merrouche (2010), Mayes and Stremmel (2012), Brealey, Cooper and Kaplanis (2011), Berger and Bouwman (2013), Blundell-Wignall and Roulet (2013), Hogan, Meredith and Pan (2013), Haldane and Madouros (2012) and Aikman *et al* (2014).
(2) Kapan and Minoiu (2013).

Firms which have average risk weights above the critical average risk weight would be bound by risk-weighted requirements, ensuring that any rebalancing of their portfolios towards assets with higher risk weights would require additional capital to be raised.

How frequently and in what circumstances each capital measure will bind depends on their relative calibration and the types of risks to which banks are exposed. The leverage ratio provides a barrier against risks which are hard to model — in other words, a specific class of risk rather than the frequency with which the risk occurs. The risk-sensitive measure, on the other hand, would constrain banks that might tend to shift into riskier assets if a leverage ratio were the only constraint.

The Consultation Paper proposed that the relationship between the leverage ratio requirements and risk-weighted requirements should be held broadly constant across firms and over time by giving the FPC powers to mirror all supplementary risk-weighted buffers for systemically important firms with supplementary leverage ratio buffers and the countercyclical, risk-weighted buffer with an equivalent countercyclical leverage ratio buffer. Although a significant proportion of respondents did support the FPC's proposals for maintaining a stable relationship between the two regimes, a majority opposed it on the grounds of added complexity.

The FPC remains generally of the same view on this point. Failing to maintain a proportional relationship between the leverage ratio and the risk-weighted ratio would mean that the leverage ratio regime would become relatively less binding both for systemically important firms and during times of high system-wide risk. This would reduce the effectiveness of the leverage ratio as a guardrail against model risks for these largest firms or during the riskiest periods. The inability to maintain the relationship between risk-weighted and leverage ratio constraints over the course of the credit cycle would also pose a significant risk to the FPC's ability to use countercyclical capital buffer requirements to reduce lending in the upswing and cushion it in the downswing (which can help it achieve both its objectives). The reason is that a risk-weighted CCB on its own will tend either to have little effect on firms' incentives to accumulate low risk-weighted exposures or no effect for firms which are below the critical average risk weight. But these low risk-weighted exposures have tended to play an important role in the financial cycle and been a key source of losses across the system in downturns.(1)

For these reasons, the FPC believes that the absence of powers over supplementary and countercyclical leverage ratio buffers would detract from its ability to maintain resilience in the banking system. The FPC also notes that other countries have accepted the thrust of this argument in applying supplementary leverage ratio buffers (see Section 2.5).

2.3 Rationale for the FPC's request for direction powers

The previous section explains why the FPC believes that the leverage ratio is an important complement to the risk-weighted capital ratio and stress testing. This section sets out the FPC's request for direction powers, why it is asking for them and how it expects to use its powers, including the calibration of new requirements. Section 2.4 outlines proposed design features and should be seen as part of the FPC's request for direction powers.

In making its decision, the FPC considered the benefits of simplicity emphasised by many respondents to the consultation. Based on this feedback, the FPC took the decision that the inclusion of a leverage ratio conservation buffer, and the incorporation of Pillar 2 capital charges, would add unnecessary complexity to the framework. Its request has now been simplified to include the minimum set of direction powers it believes are necessary to fulfil its statutory objectives. They are:

a. A minimum leverage ratio requirement, to remove or reduce systemic risks attributable to unsustainable leverage in the financial system.

b. A supplementary leverage ratio buffer, to remove or reduce systemic risks attributable to the distribution of risk within the financial sector.

c. A countercyclical leverage ratio buffer, to remove or reduce systemic risks attributable to credit booms — periods of unsustainable credit growth in the economy.

This approach would see the leverage ratio fully integrated into the current regulatory structure. It would play a complementary role to the risk-weighted capital ratio for the regulation both of systemically important firms and in times of high system-wide risk. For future stress tests, the FPC would expect regulatory responses to be based both on risk-weighted and leverage ratio requirements.

Following feedback to the Consultation Paper, this section indicates how FPC expects to calibrate the components of the leverage ratio framework. The calibrations below assume that all three components are included. The absence of one or more components would imply higher calibrations are needed for the remaining ones. It would also reduce the FPC's ability to differentiate across different types of firms or over time which are important elements of its primary statutory objective.

(1) As noted in the Consultation Paper, Büyükkarabacak and Valev (2010) find that residential mortgage lending is a more important precursor of financial crises than corporate lending, despite generally lower risk-weights.

The minimum leverage ratio requirement

The FPC proposes to set a minimum leverage ratio requirement of 3%. This is the level the BCBS is currently monitoring and the FPC sees important benefits for the UK financial system of aligning with international standards for banks which are not judged to be individually systemically important and hence do not have supplementary risk-weighted buffers applied to them. Until 2018, this minimum leverage requirement would be applied only to G-SIBs and other major domestic UK banks and building societies. The FPC expects to extend the same minimum requirement to all PRA-regulated banks, building societies and-investment firms in 2018, if this has not already been done via EU legislation, but will make a final decision in 2017 by which time the direction of international standards and European legislation will be clearer.

In 2010 the BCBS conducted a data collection exercise to inform its calibration of a minimum leverage ratio requirement. This exercise found that large international banks that experienced severe stress during the crisis — defined as banks experiencing failure, being acquired under stress or receiving government assistance — had significantly lower leverage ratios than their peers which were less severely affected by the crisis (see **Table B**). The exercise also examined what critical values of the leverage ratio would have correctly classified more than 50% of banks in the sample into the stressed and other categories, finding this critical value lay in the range 3%–4%.(1)

Table B End-2006 mean leverage ratios for groups of stressed and non-stressed banks(a)

	Stressed banks	Other banks
Tier 1 Capital/Assets	3.89%	4.19%
Excluding countries with leverage ratio requirements		
Tier 1 Capital/Assets	3.02%	3.65%(b)

Source: Uses data in Table 2 in 'Calibrating regulatory minimum capital requirements and capital buffers: a top-down approach', BCBS (October 2010).

(a) Sample for these leverage ratios include up to 89 banks from multiple countries. Leverage ratios calculated for end-2006 data.
(b) In this subsample, the difference in mean leverage ratios for the groups of stressed and non-stressed banks is statistically significant at the 10% level.

Data collected in the same exercise also showed that the mean loss for banks during the crisis was about 4.5% of risk-weighted assets. To provide protection against losses greater than the mean, and ensure that firms have adequate capital buffers, the BCBS found that an 8.5% Tier 1 baseline risk-weighted capital ratio was appropriate.(2) On the basis of the BCBS evidence the FPC's view is that 3% is an appropriate minimum leverage ratio requirement. Though the calibration of the 8.5% risk-weighted requirement by the BCBS includes a capital conservation buffer, the FPC does not believe that including a leverage ratio conservation buffer would be appropriate if the minimum is 3%. Including a conservation buffer would reduce the minimum leverage ratio requirement to close to 2%, which would have been insufficient to capture most losses. By choosing not to implement a leverage ratio conservation buffer the FPC believes it is significantly simplifying its leverage ratio framework.

The ratio of the minimum leverage ratio and risk-weighted requirements (3:8.5) indicates that the leverage ratio would bind on firms with an average risk weight of 35% or less. The FPC's average risk-weight indicator for a peer group of major UK banks stood at 39.9%, as of the latest reading. This suggests a 3% minimum requirement is consistent with the FPC's leverage ratio framework playing a strong complementary role alongside the risk-weighted framework, but with risk-weighted requirements forming the binding constraint for a majority of UK firms most of the time.

The FPC judges that it is important to apply a 3% minimum requirement to systemically important UK banks and building societies at a consolidated group level as soon as is practicably possible for a number of reasons. They are already subject to a 3% supervisory expectation. Their failure would lead to higher economic costs than for other firms. They account for more than 70% of lending to UK households and non-financial corporates and more than 75% of UK household and non-financial firms' deposits. The FPC judges that it is unnecessary to apply the 3% minimum leverage ratio to other firms ahead of the planned internationally agreed standard on leverage ratio requirements in 2018.

The FPC is seeking a power of direction to set a minimum leverage ratio requirement for all PRA-regulated banks, building societies and investment firms.

Supplementary leverage ratio buffers for systemically important firms

The risk-weighted framework agreed internationally and being implemented through European and UK law includes buffers which mitigate the higher risk to financial stability from systemically important firms. Buffers will be applied to firms designated as UK G-SIBs and other major domestic UK banks and building societies.

In order to maintain the relationship between the risk-weighted capital ratio and leverage ratio regimes, the FPC is requesting a direction power over a supplementary leverage ratio buffer for these systemically important firms. This power would also enable the FPC to advance its 'too big to fail' objective.

(1) BCBS (2010), *Calibrating regulatory minimum capital requirements and capital buffers: a top-down approach*. Note that this exercise used total assets as the denominator of its leverage ratio and hence the critical value would likely be at the bottom of the 3–4% range for a leverage ratio including off balance sheet exposures.
(2) A 6% Tier 1 minimum, of which at least 4.5% should be CET1, and a 2.5% CET1 capital conservation buffer.

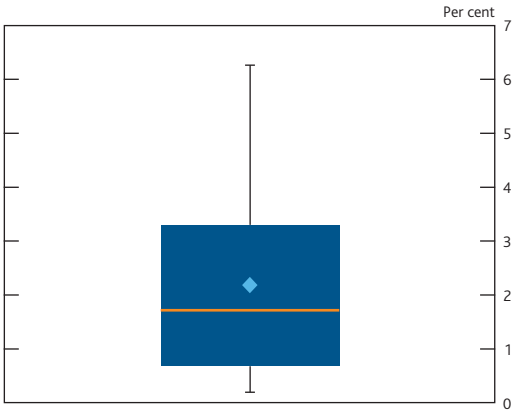
In calibrating supplementary leverage ratio buffers relative to the risk weighted buffers, the FPC has maintained the basic 3:8.5 ratio between the leverage and risk-weighted measures. It proposes to apply supplementary leverage ratio buffer rates that are sized as 35% of the equivalent risk-weighted buffer rates. This provides simplicity and a consistent relationship between the risk-weighted and the leverage ratio requirements. The FPC believes consistent complementarity is highly desirable because it minimises any risks of distorting risk-taking incentives across firms. This ensures that the critical average risk weight remains consistent across firms. Setting a higher critical average risk weight for systemically important firms than for other firms would tend to create incentives for them to shift up the risk-weighting curve, while setting a flat supplementary buffer for all systemically important firms would remove any disincentives in the leverage ratio framework against these firms growing in systemic importance.

The FPC's proposed calibration implies that supplementary leverage ratio buffer rates for UK G-SIBs, when fully implemented, would range between 0.35% and 0.875% (based on the Basel G-SIB framework which applies buffer rates of between 1% and 2.5% to G-SIBs).

The size of risk-weighted buffers for other major domestic UK banks and building societies has not yet been decided. The Government has stated that systemic risk-weighted buffer rates for ring-fenced banks and large building societies from 2019 will be in the range 0%–3% of risk-weighted assets. Once legislation on these systemic risk buffers is in place the FPC expects to develop a framework to set the size of these risk-weighted buffers for individual firms. If these risk-weighted buffer rates were in the range of 1%–3% then the FPC's proposed calibration would result in supplementary leverage ratio buffer rates in the range of 0.35% to 1.05%.

In setting the size of supplementary buffers, the FPC also had regard to empirical evidence on the size of historical losses incurred by major banks, as a proportion of their balance sheet.(1) **Charts 3** and **4** present a measure of peak losses for a range of UK (**Chart 3**) and international (**Chart 4**) firms. The FPC noted that in both the UK and international samples, mean and median losses were in the range 2%–3%. The sum of minimum and supplementary buffers implied by the FPC's leverage ratio framework would not have been sufficient to absorb peak losses seen at the worst affected firms in the recent crisis. But the FPC believes that it is justifiable to set the static minimum and supplementary buffers at these levels even though they would have been insufficient to absorb all losses seen in the crisis, provided that there is also a countercyclical leverage ratio buffer to build up additional loss-absorbing capacity in a credit boom.

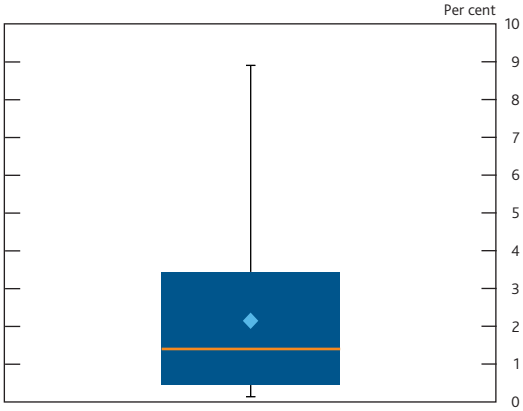
Chart 3 Distribution of peak losses as a percentage of 2006 total leverage ratio exposures for a sample of UK banks(a)(b)(c)



Sources: Annual reports and Bank calculations.

(a) Half-yearly loss values calculated as loss to pre-tax net income + unrealised net gains/losses. Peak losses calculated over the period 2007 H1 to 2013 H1.
(b) Eleven firms in sample. Lines extending vertically from the box indicate firms with the minimum and maximum peak losses in the sample. Lower and upper boundaries of box represent first and third quartiles of the distribution, respectively. Line within box represents the median. Marker within box represents the mean.
(c) Internal calculations used to estimate total exposures from 2006 total asset values.

Chart 4 Distribution of peak losses as a percentage of 2006 total assets for an international sample of banks(a)(b)(c)(d)



Sources: Capital IQ, SNL Financial and Bank calculations.

Note: There was an error in some of the data included in this chart when it was first published in October 2014. This has been amended in the current version, republished online on 4 February 2015.

(a) Half-yearly loss values calculated as loss on estimated pre-tax net income + unrealised net gains/losses. Peak losses calculated over the period 2007 H1 to 2013 H1. Income values exclude income attributable to minority interests.
(b) Forty-two firms in sample. Lines extending vertically from the box indicate firms with the minimum and maximum peak losses in the sample. Lower and upper boundaries of box represent first and third quartiles of the distribution, respectively. Line within box represents the median. Marker within box represents the mean.
(c) Some firms included in the sample have reported on a non-IFRS basis for which some accounting netting rules differ from those under IFRS. Results are not materially different for the subsample including solely IFRS reporting firms.
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(1) Note that **Chart 3** presents losses as a fraction of the leverage ratio exposure measure for each bank, while **Chart 4** shows losses over accounting assets. Hence the figures are not comparable, especially for large banks with significant off balance sheet positions (eg in derivatives or committed lines) for which the exposure measure would be larger than the accounting asset measure.

In calibrating supplementary buffers the FPC also took into account wider changes to risk-weighted capital requirements, stress testing, loss-absorbing capacity and resolution regimes that have been made since the crisis. It also recognised that in the future, stronger resolution regimes which require firms to have greater gone-concern loss absorbency, will lower the costs of firm failures for the wider economy. In addition, the FPC acknowledged in its calibration that the PRA is not operating a zero failure regime, including for systemically important firms.

In keeping with its view that the leverage ratio framework should apply consistently with the risk-weighted framework, the FPC proposes to apply supplementary leverage ratio buffers at the same time that the equivalent risk-weighted capital buffers are introduced. This means that G-SIBs would see their supplementary leverage ratio buffers phase in between 2016 and 2019 in four equal increments, while supplementary buffers for other major domestic UK banks and building societies would be applied from 2019 when equivalent risk-weighted D-SIB buffers will be applied.

Countercyclical leverage ratio buffers

The FPC already has powers over the CCB, which are designed to ensure that the banking system always has sufficient capital on a risk-weighted basis to absorb losses and maintain the flow of credit in a stress without its solvency being threatened following periods of heightened system-wide risk (eg during a credit boom). It may also be effective in leaning against the build-up of risk.

The FPC is proposing the power of direction to set a UK countercyclical leverage ratio buffer so that when system-wide risk is high, firms have sufficient capital on a non risk-adjusted basis to protect them from uncertainties and risks such as model risk, especially in low risk-weight asset classes (Section 2.2).

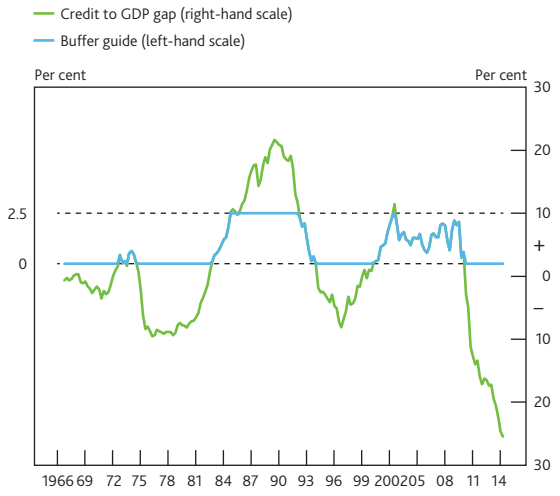
The FPC is requesting this power of direction so that it is able to act rapidly both to raise buffers when system-wide risk is rising and to reduce or remove them during a stress.

The FPC intends to use a guiding principle of setting the countercyclical leverage ratio buffer rate in proportion to the risk-weighted CCB rate, using the same 35% conversion factor as for the supplementary leverage ratio buffer.

The FPC has explained how it will set the UK CCB rate in its Policy Statement.(1) It is currently set at zero, and this is intended to be its default setting when the FPC judges that threats to financial stability are low. When the FPC judges that system-wide risk is rising — and these risks are not clearly confined to a specific sector which may be best targeted by a SCR — the FPC will increase the CCB. If and when these risks crystallise, the FPC intends to release the CCB so banks can use their previously accumulated buffers to absorb losses and continue lending. If CCB rates have been raised sufficiently before stressed periods, their release will still leave the system adequately capitalised. However, if this is not the case, other measures might be necessary to ensure banks are sufficiently capitalised, but these will be designed so as not to discourage lending.

To make its judgement over the degree of system-wide risk, the FPC will employ its core indicators for setting the CCB alongside any other relevant risk assessment, market and supervisory intelligence. The credit to GDP gap (**Chart 5**) is one of the FPC's core indicators and the FPC has a legal obligation to take account of a buffer guide, which translates the credit to GDP gap into a suggested setting of the CCB rate. Had the CCB rate followed the buffer guide before the recent global financial crisis, it would have reached 2.5% well ahead of the crisis (in 2002). And if the FPC had set the countercyclical leverage ratio buffer rate in proportion, using the 35% conversion factor it would have reached 0.9% at the same time.

Chart 5 UK credit to GDP gap and countercyclical capital buffer guide(a)(b)(c)



Sources: British Bankers' Association, Office for National Statistics, Revell, J and Roe, A (1971), 'National balance sheets and national accounting — a progress report', *Economic Trends*, No. 211, May, pages xvi–xvii 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 and private non-financial corporations' 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 Hodrick-Prescott 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%.

But no single indicator is perfect, so the buffer guide will not be the only input into policy. The FPC takes into account a much broader range of indicators in setting the CCB. It has committed that '*the greater the degree of deviation from historical benchmarks suggested by the core indicators, the more homogeneous the picture that the different indicators convey,*

(1) Bank of England (2014).

and the more consistent that picture is with market and supervisory intelligence, the more likely it is that the FPC will adjust the CCB'.

Although a number of respondents did support the FPC's proposals for building a countercyclical leverage ratio buffer framework on top of the minimum requirement, a majority opposed it on the grounds of added complexity. The FPC is conscious of these concerns and has therefore simplified its request for direction powers relative to the proposals put forward in the Consultation Paper. In particular, it is:

- Proposing to round countercyclical leverage ratio buffers to the nearest 10 basis point increment. This will be particularly relevant to firms with exposures outside the United Kingdom, whose risk-weighted CCB rate will comprise an average of the buffer rates set by authorities in more than one country weighted by the proportion of exposures to these countries. Rounding to the nearest 10 basis point increment will avoid small movements in leverage ratio buffer requirements due to changes in CCB rates in countries where firms have a relatively small share of their total exposures.

- Proposing that the period by which firms must comply with increases in the countercyclical leverage ratio buffer could be up to 24 months rather than twelve months. A longer compliance period would give firms more time to adjust if they needed to increase their leverage ratios, potentially minimising any adverse incentive effects for firms that are bound by leverage ratio requirements. Permitting a longer compliance period would recognise that it may be more difficult for some firms, particularly mutuals, to raise their leverage ratio than their risk-weighted ratio.

The FPC intends to apply any countercyclical leverage ratio buffer to firms at the point at which they become subject to the minimum leverage ratio requirement. This means that systemically important UK banks and building societies will also be required to calculate any countercyclical leverage ratio buffer at this point. The FPC's intention is for other PRA-regulated banks, building societies and investment firms to be subject to a countercyclical leverage ratio buffer from 2018, subject to the outcome of an FPC review in 2017.

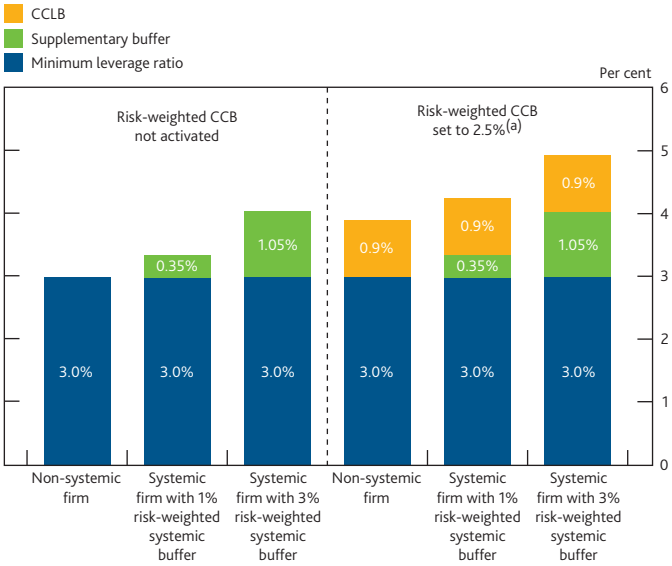
The FPC has considered the implications of moving in advance of international developments by including a countercyclical leverage ratio buffer component in the UK framework. At least at the outset, the countercyclical leverage ratio buffer is unlikely to benefit from the same level of reciprocation by authorities in other countries as is expected for the CCB. An international framework for the setting of countercyclical leverage ratio buffers would have the following benefits for the FPC's leverage ratio framework: (i) leverage ratio buffers would be applied to firms domiciled in overseas jurisdictions in addition to UK firms active in those jurisdictions; (ii) leverage ratio buffers would be reciprocally applied to the branches of overseas banks which are active in the United Kingdom at the same time that the FPC applies them to domestic firms. However, the FPC is of the view that neither issue is sufficiently material to outweigh the significant financial stability benefits of the FPC being able to apply a countercyclical leverage ratio buffer to the largest UK firms as soon as is practicable.

Overall calibration of the FPC's leverage ratio framework

The FPC believes that its proposed calibration delivers a simple and prudent leverage ratio framework that binds on all firms at the same critical average risk weight regardless of their systemic risk-weighted buffers and the setting of the FPC's countercyclical capital tools.

Chart 6 illustrates a range of the potential calibrations of the FPC's leverage ratio framework once it is fully implemented in 2018, highlighting the simple mapping from risk-weighted to leverage ratio requirements. For non-systemically important firms, the leverage ratio requirement will comprise a minimum leverage ratio requirement of 3% plus a countercyclical leverage ratio buffer rate set at 35% of the countercyclical capital buffer rate; while for UK G-SIBs and other major domestic UK banks and building societies the leverage ratio requirement will comprise a minimum leverage ratio requirement of 3% plus supplementary and countercyclical leverage ratio buffer rates set at 35% of the corresponding risk-weighted capital buffer rates.

Chart 6 Examples of the components and calibration of the FPC's leverage ratio framework



Source: Bank calculations.

(a) Orange sections show an example of the size of the countercyclical leverage ratio buffer (CCLB) for a firm with UK exposures only.

2.4 Other design features

This section covers other important design features of the FPC's desired leverage ratio framework.

Capital resources eligible in the numerator of the leverage ratio

The FPC expects to limit the share of 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. As noted in the Consultation Paper, this arrangement would mirror the rules in the risk-weighted framework. Furthermore, the FPC believes that only high-trigger contingent capital (ie those that trigger at a ratio of at least 7% CET1) should count in the AT1 portion, with this quality requirement being intended to ensure that the AT1 will convert to CET1 while the firm is still a going concern.

Most respondents to the Consultation Paper were against giving no recognition of AT1 in the definition of capital for the leverage ratio, expressing concerns that this would put UK leverage ratio requirements out of line with those being developed internationally and would hinder the development of the AT1 market. However, the FPC believes that it needs to ensure a high degree of certainty that buffers and the majority of requirements will prove loss absorbing. A particular concern with AT1 instruments is that the trigger is based on a risk-weighted requirement which for firms with low average risk weights may not be activated despite the minimum leverage ratio requirement having been breached. The FPC believes its decision to cap the part of the minimum requirement to be met by sufficiently high-quality AT1 to 25% strikes the right balance between accommodating firms' concerns and ensuring sufficient certainty that capital will be truly loss absorbing.

The exposure measure in the denominator of the leverage ratio

The FPC expects to adopt the Basel Committee 2014 definition, as implemented in European law.

The scope of application across a banking group

The FPC believes that it should have the power to set leverage ratio requirements at the level of both the group and the individual entities within groups. But it intends to delay a decision on when and how to apply requirements at individual entity level and review this in 2017.

Application to FCA-regulated firms

For reasons of proportionality the FPC has decided not to request a power of direction to set leverage ratio requirements for FCA-only regulated firms. These firms are unlikely to be systemically relevant since their balance sheets tend to be small compared with PRA-regulated firms. If it became concerned over the leverage of FCA-only regulated investment firms, the FPC could issue recommendations to the FCA.

Distribution restrictions

The FPC believes that the PRA should decide how to respond to a firm that breaches leverage ratio buffers or requirements. The FPC does not want to introduce unnecessary complexity by having two different scales of automatic distribution restrictions (one based on risk-weighted buffers and one based on leverage buffers). As is expected to be the case with PRA buffers, the FPC expects that the PRA would take timely and appropriate action to ensure that any buffer breaches are temporary with firms having a credible capital restoration plan.(1) Further action, such as distribution restrictions, could be taken if the PRA is not satisfied with the capital restoration plan or its implementation.

Disclosure

The FPC considers that it is essential to the operation of the leverage ratio framework that firms' leverage ratios as defined above, as well as the requirements placed upon them, are transparent to market participants, in addition to CRR disclosures.(2) While the FPC is not minded to seek a power to direct the PRA to require such disclosures, it already has the power to recommend that the PRA ensures that when a firm is subject to the FPC's leverage ratio requirements, that firm will make the appropriate disclosures in respect of its leverage ratio as defined in this review.

2.5 International and EU developments on the leverage ratio

This section discusses how the FPC's approach to the leverage ratio fits with the international agenda. As noted in the Consultation Paper, the BCBS has agreed a final definition of the leverage ratio and calibration is expected to be complete in 2017 for introduction in 2018 for internationally active banks. Meanwhile the European Commission will report to the European Parliament and Council on the impact and effectiveness of the leverage ratio by the end of 2016, accompanied with a legislative proposal, if appropriate.

The FPC remains committed to implementing a leverage ratio framework which is consistent with the evolving international regime. For this reason, the FPC intends to use the Basel III leverage ratio exposure measure as implemented in European law. Further, the FPC will conduct a review in 2017 on several elements of the framework in light of further international developments.

Nevertheless, the FPC considers it important to have plans for a robust regulatory framework in place as soon as possible to ensure the resilience of the UK banking system and to give UK firms greater certainty about the capital framework. In conducting its work for this review, the FPC has monitored international developments very closely. A number of

(1) The Bank of England will be consulting on the PRA buffer in January 2015.
(2) CRR Article 451.

Box 2
Summary of existing and proposed leverage ratio frameworks

Jurisdiction	Leverage ratio measure
Canada	**Existing leverage ratio:** The 'assets-to-capital multiple' is set at 5% with a possibility of being reduced to 4.35%. The leverage ratio can be met with total capital, and does not include all off balance sheet items. **Proposed leverage ratio:** In January 2014, the Office of the Superintendent of Financial Institutions (OSFI) announced that it plans to replace the assets-to-capital multiple requirement with a 3% Basel III-defined leverage ratio for federally regulated deposit-taking institutions.(a) OSFI will continue to set more stringent requirements on an institution-by-institution basis as circumstances warrant.
Switzerland	**Existing leverage ratio:** Applied to systemically important Banks since 1 January 2013, requiring banks to meet a leverage ratio of between 3.1% and 4.56% by 2019, depending on the level of their risk-weighted requirements in the national framework.(b) This requirement comprises a hard minimum component and a buffer component, which is informed by the nature of the firm's risk-weighted requirements. The components of the leverage ratio requirements may be met with the same quality of capital as for risk-weighted requirements, namely Common Equity Tier 1 capital and contingent convertible bonds. At present, the leverage ratio exposure measure is based on the 2010 BCBS definition, but the Swiss authorities have confirmed that the exposure measure will soon be harmonised with the 2014 Basel definition, for application from 1 January 2016.(c)
United States	**Existing leverage ratio:** There is currently a leverage ratio, which must exceed 4% for large banks.(d) It must be met with Tier 1 capital and does not include off balance sheet exposures.(e) **Future leverage ratio requirements:** From 1 January 2018, a supplementary leverage ratio will be applied to all banks on advanced approach internal models. At the bank holding company level, this is composed of a 3% minimum for all these banks.(f) Globally systemically important banks (G-SIBs) will be required to have a further two percentage points leverage ratio buffer (5% total requirement); firms that enter the buffer region will face restrictions on discretionary capital distributions. G-SIBs' insured depository institutions will be required to meet a 6% minimum to be considered 'well capitalised'. The supplementary leverage ratio will have to be met with Tier 1 capital. In September 2014, the US agencies finalised the definition of the leverage ratio exposure measure for the supplementary leverage ratio to be consistent with the Basel 2014 definition.(g) In their final rules, the US agencies stated that they 'believe that the maintenance of a complementary relationship between the leverage and risk-based capital ratios is important to ensure that each type of capital requirement continues to serve as an appropriate counterbalance to offset potential weaknesses of the other.'
Denmark	**Proposed leverage ratio:** The final report of the Danish Committee on the Causes of the Financial Crisis, published in September 2013, supported moving towards a revised regulatory framework for credit institutions comprising risk-weighted and leverage requirements. The report noted that the 'Committee is generally sceptical as to whether a leverage limit of 33⅓ (3% leverage ratio) in ordinary banks is sufficient to ensure that banks are sufficiently robust'.(h)
Netherlands	**Proposed leverage ratio:** In August 2013, the Finance Ministry recommended at least a 4% leverage ratio for systemically important banks.(i) Following these recommendations, the Dutch National Bank has recently introduced an expectation on four systemically important banks that they meet a minimum 4% leverage ratio by 2018. The leverage ratio is expected to be met with CRD IV end-point Tier 1 capital, and uses the BCBS 2014 definition of the leverage exposure measure.(j)
Sweden	**Proposed leverage ratio:** In May 2014, the Financial Stability Council decided that the need for introducing a leverage ratio ahead of EU standards to serve as a complement to risk-weighted ratios should be investigated.(k)

(a) Remarks by Deputy Superintendent Mark Zelmer to the 2014 RBC Capital Markets Canadian Bank CEO Conference, Toronto, Ontario, 14 January 2014.
(b) Capital Adequacy Ordinance; SR 952.03.
(c) Verordnung über die Banken und Sparkassen, April 2014.
(d) Banks using so-called 'advanced approaches' have had to meet a minimum 4% requirement since 1 January 2014; other banking organisation may be permitted to meet a 3% requirement until 1 January 2015. A form of domestic leverage has applied to US banks since 1981.
(e) In the US rules adopted in July 2013, the definition of Tier 1 capital for the domestic leverage ratio was aligned with the US agencies' transposition of the Basel III definition of capital for risk-weighted capital requirements.
(f) Final rule adopted April 2014.
(g) Final rule on Supplementary Leverage Ratio adopted 3 September 2014.
(h) 'The financial crisis in Denmark — causes, consequences and lessons', published by the Danish Ministry of Business and Growth, 18 September 2013.
(i) Kabinetsvisie Nederlandse Bankensector, Dutch Finance Ministry, 23 August 2013.
(j) Hebbink, Kruidhof and Slingenberg (2014).
(k) Minutes of the Financial Stability Council, www.regeringen.se/sb/d/18209/a/241631 (in Swedish only).

countries have introduced leverage ratio requirements ahead of the international timetable, with some other countries requiring a 3% minimum leverage ratio requirement for non-systemic firms and a higher requirement for systemically important firms with a view to ensuring complementarity between risk-weighted and leverage ratio requirements (these are summarised in Box 2). The FPC sees its proposals as consistent with these international developments.

3 Feedback on the leverage review Consultation Paper

The FPC's public consultation on the leverage review ran from 11 July 2014 until 12 September 2014. The FPC received 26 responses from banks, building societies and other financial services firms, industry associations representing financial services firms, private individuals, academics, and other interested parties including the FCA.

The majority of respondents broadly supported the use of a leverage ratio as a complement to the risk-weighted capital framework. Many of the responses raised concerns about particular aspects of the proposed framework, focusing in particular on the following aspects:

- the role of the leverage ratio;
- simplicity;
- calibration;
- symmetry with the risk-weighted framework;
- potential changes in firms' behaviours in response to the leverage ratio framework;
- the potential effects on the business models of firms generally subject to low risk-weighted capital requirements, in particular those of mortgage lenders and investment banks;
- alternative means of addressing model risk;
- the use of additional Tier 1 (AT1) capital within the leverage ratio framework;
- the extent of possible divergence from the leverage ratio requirements at the EU and international levels;
- transition; and
- the potential competitive implications of the framework.

The responses received have informed the FPC's further consideration of the proposed leverage ratio framework and have shaped it in the following ways.

Calibration

In this review the FPC is setting out its preferred calibration of the leverage ratio framework, in recognition of respondents' feedback that this was essential for them to understand fully the impact of the framework and — in the case of affected firms — to prepare for it.

Simplicity

By deciding not to include in the framework a leverage ratio conservation buffer or Pillar 2 requirements, and by adopting a single conversion factor from risk-weighted requirements to leverage ratio requirements, the FPC has responded to comments advocating a simpler leverage ratio framework than set out in the consultation paper. The FPC's decision not to recommend applying automatic distribution restrictions for breaches of leverage ratio buffers also delivers greater simplicity, by responding to concerns that two potentially overlapping sets of automatic distribution restrictions would over-complicate the combined risk-weighted capital and leverage ratio framework.

Timing of implementation

The FPC has considered comments on the potential implications of moving in advance of the international timetable for implementation of leverage ratio requirements. In response, it has adopted an extended timeline for the full introduction of its framework, with minimum requirements applied initially only to systemically important firms, and supplementary leverage ratio buffers for G-SIBs introduced in parallel with their risk-weighted equivalents. The broader application of requirements to all PRA-regulated banks, building societies and investment firms is delayed until the FPC has greater clarity on the implementation of international standards.

Eligible capital

The FPC has considered the appropriate role for AT1 in the leverage ratio framework and chosen an approach that mirrors the risk-weighted capital framework, permitting AT1 instruments of sufficient quality to comprise up to 25% of the minimum requirement, but requiring leverage ratio buffers to be met with CET1 capital only.

Countercyclical buffers

The consultation feedback highlighted that some firms, particularly mutuals, might experience difficulty in adjusting their leverage ratios rapidly in response to FPC use of the countercyclical leverage ratio buffer. In response the FPC proposes that the period by which firms must comply with increases in the countercyclical leverage ratio buffer could be up to 24 months rather than twelve months.

International consistency

By choosing to follow closely internationally agreed definitions for the elements of the leverage ratio numerator and denominator, the FPC is maximising comparability and consistency with requirements in other jurisdictions and ensuring that firms are preparing appropriately for the expected introduction of an internationally standardised leverage ratio framework.

Annex 1 summarises in detail all major elements of feedback to the consultation, with accompanying FPC responses.

4 Impact analysis

This section sets out an analysis of the potential costs and benefits of granting the FPC the power to impose a leverage ratio requirement on PRA-regulated banks, building societies, and investment firms. All numerical estimates should be treated as indicative, as they are subject to uncertainty and are highly sensitive to the underlying assumptions.

4.1 Summary of benefits and costs

The FPC expects its leverage ratio framework to benefit the UK economy, by boosting the resilience of the financial system to systemic crises which have, in the past, led to lengthy periods of recession or economic stagnation. It expects these benefits to accrue via three main channels:

i. Introducing a minimum leverage ratio requirement for all firms from 2018 will enable the leverage ratio and risk-weighted capital ratio to operate in tandem, thereby enhancing the effectiveness of capital regulation by guarding against model risk, against unforeseeable events causing losses and by limiting unsustainable balance sheet 'stretch' across the system;

ii. Imposing supplementary leverage ratio buffers on systemically important banks will complement the supplementary risk-weighted buffers which will be fully phased in by 2019. This will enable the FPC to address problems of moral hazard and implicit subsidy arising from the presence of firms which do not internalise the systemic costs that their individual failure can impose on the UK financial system and economy, without imposing additional costs on smaller firms;

iii. Operating a countercyclical leverage ratio buffer alongside the CCB, to mitigate unsustainable credit booms which have historically been associated with falling risk weights and heightened financial system fragility.

Direction powers to apply the supplementary and countercyclical leverage ratio buffers together help to improve the efficiency of the leverage ratio framework by requiring that additional capital be held in parts of the system where, and points in the cycle when, systemic risks are high. Without these two components of the framework, the FPC would need to revise up the calibration of the minimum leverage ratio requirement so as to provide the same degree of protection against financial stability risks.

Had leverage ratios been in place prior to the crisis, they would have bound more tightly than risk-weighted measures for a number of UK and overseas banks that subsequently failed. This demonstrates how a leverage ratio framework could help both to prevent potential financial stability risks and reduce the cost of these risks when they occur.

The UK capital framework has changed significantly through the implementation of the Basel III reforms,(1) and there is no previous history of risk-weighted capital and leverage ratio requirements operating in tandem in the United Kingdom. As a result, the FPC does not believe it is feasible at this time to produce robust estimates of the economic benefits that could accrue from channels (i)–(iii). However, the FPC judges that the evidence in the academic literature on the potential benefits of a leverage ratio regime, discussed in detail in Section 2, provides a compelling case that these channels would have a positive impact on the resilience of the UK financial system.

Nevertheless, to the extent that the FPC's leverage ratio framework requires some firms to increase their regulatory capital over and above the levels required by the risk-weighted framework, the economic impact of higher system-wide capital can be estimated empirically. Although increasing the overall level of capital in the banking system is not the FPC's primary intention in proposing the policy changes set out in this review, it is important to have regard to this channel to ensure that the introduction of a leverage ratio framework will not have a detrimental impact on UK long-term economic growth. The FPC's central forecast is that the introduction of its leverage ratio framework will have a small net beneficial impact on the level of GDP, relative to the introduction of the CRD IV/CRR package of reforms. However, as stated above, this estimate does not fully or directly take into account the impacts of channels (i)–(iii).

In summary, the FPC expects its leverage ratio framework to have a material beneficial impact on UK long-term economic growth by strengthening the resilience of the financial system. It has assessed potential sources of costs and concluded that they will not outweigh these benefits. The remainder of this impact analysis discusses in detail the analysis that has been undertaken.

4.2 Costs and benefits

Robustness of the capital framework

The main benefit and primary reason for the proposed policy changes is that they would provide robustness against uncertainties in the existing capital framework. Although the robustness benefits cannot be reliably quantified, they would be expected to operate through a reduction in the probability of future crises. As an indication of the significant impact that even small decreases in the probability of a financial crisis can have for the UK economy, the economic model used by the FPC in this impact analysis estimates that a permanent 1 percentage point reduction in the probability of crises (if starting from a higher probability) would lead to an increase in

(1) Implemented in Europe through the CRD IV package of reforms.

the net present value of GDP equivalent to £4.5 billion per annum.(1)

Increases in the steady-state level of capital

The following analysis compares regulatory capital requirements to meet the FPC's leverage ratio framework with existing steady-state risk-weighted requirements. It is not possible to estimate whether firms will have sufficient actual regulatory capital to meet the leverage ratio framework as, for most firms, it will not be applied until 2018 and reliable forecasts of firms' capital positions are not available that far into the future. Firms' regulatory capital requirements are already due to increase with the transition to steady-state risk-weighted requirements under CRD IV/Basel III.

For some firms the introduction of the FPC's leverage ratio framework will increase regulatory capital requirements over those set by the steady-state risk-weighted framework (**Table F** summarises the impact on firms). The macroeconomic impact of higher system-wide capital has been estimated empirically using the National Institute of Economic and Social Research (NIESR)'s global economic model of the world economy (NiGEM), modified to include a sub-model of the UK banking sector. The advantage of using this model is that it was also used to assess the macroeconomic impact of CRD IV.(2)

Within this model, higher bank capital reduces the likelihood of financial crises which can lead to reductions in GDP.(3) However, the model generates some macroeconomic costs of higher levels of bank capital since it assumes that banks pass through the costs of increased regulatory capital requirements as higher lending spreads. This increases real economy borrowing costs, which reduces the level of investment and therefore output in equilibrium.(4) Therefore, within this model, the net macroeconomic benefits of additional bank capital fall if the capital level increases too much.

The model suggests that there are net benefits to the additional capital in the system as a result of the cumulative impact of the CRD IV reforms, including the introduction of G-SIB and D-SIB buffers (rows 2 and 3 of **Table C**).(5) The impact of adopting the leverage ratio requirements in addition to these other reforms is negligible in this model given the small increase in capital resources involved (row 4 of **Table C**). **Table D** shows the confidence intervals around the point estimates.

The finding of positive net benefits in the presence of a leverage ratio requirement and the package of earlier regulatory reforms indicates that the gross beneficial impact on the level of output due to a reduced probability of future financial crises outweighs the gross cost that may arise as a result of a higher cost of credit to the real economy.

Table C Estimate of net benefits

£ billions per annum[a]	Net benefits
CRD IV[b]	8¼
+ G-SIB and D-SIB requirements	9
+ G-SIB and D-SIB requirements, and FPC leverage ratio requirements	9

(a) Annualised net present value of the chained-volume measure (2012) of UK GDP. Figures are rounded to the nearest quarter of a £ billion.
(b) As reported in PRA (2013a). The CRD IV provisions for capital buffers for systemically important firms were out of the scope of the PRA's August 2013 consultation paper, which is why their impact is not reflected in the first row of the table.

Table D Confidence intervals around net benefits[a]

	£ billions per annum[b]	
Interval	Lower	Upper
95% confidence	-1	24
90% confidence	1	22
80% confidence	3	19

(a) For estimated net benefits of CRD IV, including G-SIB and D-SIB buffer requirements, and FPC leverage ratio requirements (final row in **Table C**).
(b) Annualised net present value of the chained-volume measure (2012) of UK GDP.

There are limitations to using this macroeconomic model to assess the costs and benefits of leverage ratio requirements. In terms of the benefits, the model only reflects the leverage ratio framework as an additional capital requirement and so does not directly or fully capture the primary benefits of a leverage ratio framework (a guardrail against risks arising from errors in regulatory risk weights and internal models and unforeseeable events and to prevent unsustainable bank balance sheet stretch). The benefits to resilience are also likely to be underestimated since the increases in capital will most often correspond to cases where robustness against excessively low risk weights is particularly needed (these cases are described in Section 2). In terms of the costs, the macroeconomic model only analyses the extent to which increases in capital held in the banking system affect the cost of financial intermediation in the broader economy. To the extent that the leverage ratio requirement raises the cost of financial activities other than intermediation, these costs will not be captured in this analysis.

Data

To undertake this impact analysis the FPC has collected data on the capital, risk-weighted assets and leverage ratio exposures of 29 PRA-regulated firms, which together represent over 65% of the total consolidated balance sheet assets of PRA-regulated banks, building societies and

(1) Losses from crises in this calculation are based on historical losses of advanced economies and correspond to the best estimate.
(2) PRA (2013a).
(3) In the model, crises more frequently have temporary effects on GDP but some crises can have permanent effects and generate significant cumulative losses to UK GDP.
(4) NiGEM assumes a constant returns to scale CES production function.
(5) For the purposes of generating the system-wide net benefits, an upper bound scenario where all future ring-fenced banks and large building societies are subject to a 3% systemic risk buffer has been used. However, as **Table F** shows, the system-wide capital shortfalls are not very dissimilar under different assumptions about the size of the systemic risk buffer.

investment firms. The data collected relates to consolidated level balance sheets as at 31 March 2014.(1) For each entity the data collected, in combination with other regulatory returns, allow the calculation of the Basel 2014 leverage ratio exposure measure, Basel III risk-weighted assets and different measures of Basel III regulatory capital (CET1 and Tier 1 capital, on a Basel III end-point basis). **Table E** below sets out the population of firms in the sample, split by type and size.

Table E Sample of firms

	Number in sample
Total firms	29
of which	
Banks	15
Building societies	7
Investment firms/custody banks[a]	7
of which	
Large[b]	13
Small	16

(a) Entities have been classified on the basis of the nature of their principal activities.
(b) Large firms in the table are those with total accounting assets greater than £100 billion. This threshold was also used to distinguish between large and small firms in the impact analysis in PRA (2013a).

Impact on individual firms

While it is expected that most firms will not need to raise additional capital to comply with the FPC's leverage ratio framework over and above existing steady-state requirements, there are some exceptions. This section focuses on the effect of the leverage ratio framework on these firms and quantifies how much additional capital they would need in order to meet FPC leverage ratio requirements.

There is little empirical evidence of how firms' balance sheet and capital management practices may respond to a leverage ratio framework. Hence, we use the size of firms' balance sheets in March 2014 in our baseline scenario as a starting point and assume that firms comply with the leverage ratio requirement by replacing debt funding with eligible regulatory capital instruments, while keeping the asset side of their balance sheet constant.

This approach is applied to each firm in the sample. This allows a derivation of the level of capital that each firm would need to meet its 2019 leverage ratio requirements, using the assumptions set out in Annex 2. Comparing this to the firms' projected level of capital in the baseline scenario (following the assumptions in Annex 2 to estimate the impact of risk-weighted capital requirements on the firms) allows a determination of which of the two requirements would be the binding one and how much additional capital a firm would require to comply with the leverage ratio framework. In projecting firms' steady-state risk-weighted requirements, it has been necessary to assume the size of the risk-weighted buffer for ring-fenced banks and large building societies (D-SIB buffer). Since this buffer is likely to fall within the range of 1%–3% of risk-weighted assets, for the purposes of this impact analysis, the FPC has considered two scenarios, one where all future ring-fenced banks and large building societies are subject to a 1% systemic risk buffer rate and another where those firms are all subject to a 3% systemic risk buffer rate. In both cases supplementary leverage ratio buffer rates are set as 35% of this risk-weighted buffer rate.

Following the procedure described above we find that across the 29 firms in our sample, the introduction of a leverage ratio framework alongside the CRD IV capital framework is found in steady state to entail an increase in Tier 1 capital of £9.0 billion and £9.6 billion under the 1% and 3% systemic risk buffer rate assumptions respectively. This increase would equate to around 3% of the Tier 1 capital stock those firms would be required to hold to meet their estimated 2019 risk-weighted minimum capital requirements and capital buffers. In total, eight of the 29 firms in the sample would need to raise additional capital due to the FPC's leverage ratio framework over and above the capital needed to meet risk-weighted capital requirements and buffers under CRD IV.

Table F shows the breakdown of the additional capital required by the proposed leverage ratio framework by firm size and type, and provides a comparison to projected 2019 Tier 1 capital levels under the two scenarios for systemic risk buffers set out above.(2)

Table F Estimated marginal impact of the FPC leverage ratio framework on 2019 Tier 1 capital resources[a]

	1% systemic risk buffer rate assumption		3% systemic risk buffer rate assumption	
	£ billions	Percentage of 2019 risk-weighted Tier 1 capital stock	£ billions	Percentage of 2019 risk-weighted Tier 1 capital stock
All firms	9.0	2.2%	9.6	2.3%
of which				
Large[b]	8.2	2.1%	8.7	2.1%
Small	0.9	5.8%	0.9	5.7%
of which				
Banks	0.4	0.1%	0.4	0.1%
Building societies	1.6	14.8%	2.1	18.5%
Investment firms/custody banks	7.1	11.2%	7.1	11.2%

Source: Bank calculations.

(a) Figures shown to one decimal place.
(b) Large firms in the table are those with total accounting assets greater than £100 billion.

The FPC judges that for the levels of capital increase implied by its leverage ratio framework, impacts on individual firms or markets will be modest and will not have a detrimental impact

(1) Data for one firm as at 30 June 2014. For a small number of firms in the sample, data were collected on the most significant solo entities within the UK consolidation group.
(2) This comparison compares capital requirements under the risk-weighted and leverage ratio frameworks. Actual amounts of capital firms would raise could be lower if they already hold large voluntary capital buffers.

on aggregate credit creation for any sector of firms or segment of the lending market.

4.3 Impact on firms and business models with low risk-weighted assets

In this impact analysis, the primary focus is on assessing the impact of the FPC's proposed leverage ratio framework on the UK financial system as a whole. However, it is also important to assess the impact on specific types of regulated firms. The calibration of the leverage ratio framework proposed by the FPC in this review would impose an effective minimum average risk weight of 35% for all firms.

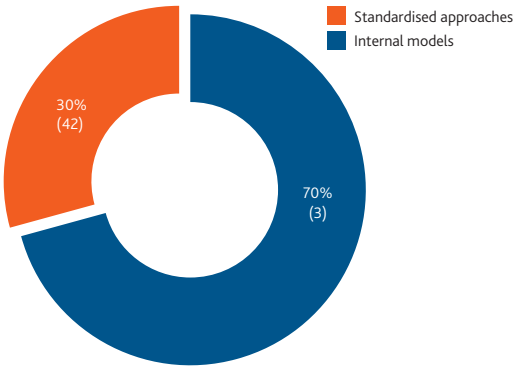
The risk-weighting applied to a firm's assets can be significantly influenced by whether they have permission to use internal models to calculate some risk weights, or whether they solely use standardised risk weights. Under standardised approaches to credit and market risk in the risk-weighted capital framework, the categories of assets that can attract risk weights lower than 35% (and hence which might lead a firm to have an average risk-weight below that figure) include lending to (or guaranteed by) state, regional and local governments, central banks and other highly rated public sector entities, lending to (or guaranteed by) financial institutions, lending secured against highly rated financial collateral (including repo and derivative positions), and the holding of highly rated securities.

Where institutions have permissions to use internal models to risk weight some of their assets, this typically allows greater recognition of collateral, netting and historical loss rates. Thus, internal modelling broadens the range of assets that can have risk weights below 35% to include residential mortgages, some forms of corporate lending and a broader range of financial market transactions, particularly those subject to collateralisation and/or netting.

The range of assets that can have risk weights below 35% indicates the typical business models that might be most impacted by a leverage ratio requirement. Banks and investment firms which have a high proportion of investment banking activities, such as trading in intra-financial sector products (ie securities, repo and derivatives market activity) are more likely to have low risk weights. In addition, banks and building societies that have PRA permission to use internal models to determine risk-weighted capital requirements for their mortgage books typically have average risk weights below 35%. **Chart 7** shows that although only three UK building societies currently have permissions to use internal modelling, their relative size means that in practice 70% of total building society assets are risk-weighted using internal models.

For the firm types most affected by the proposed leverage ratio framework, the requirement to reduce their reliance on debt funding would, all else remaining equal, imply a decrease in their return on equity. The most direct behavioural response to this reduction might be to increase lending spreads which could lead customers either to bear the cost or switch to a competitor. However, lowering reliance on debt would also strengthen the firm's resilience to shocks which, in addition to the benefits it would bring for the wider system, would be expected to contribute to more sustainable returns to the firms' liability holders and hence potentially reduce the cost of funding for the firm.

Chart 7 Total assets held by building societies[a]



Source: Regulatory returns.

(a) Percentage shows proportion of assets held by building societies using internal models and those on standardised approaches. The number in parentheses shows how many firms belong to the relevant group.

Table F demonstrates that building societies, investment firms and custody banks face the largest proportionate increases in capital needs under the FPC's leverage ratio framework. The fact that the leverage ratio binds most strongly for firms with many low risk weight activities reflects the fact that it is intended to tackle risk weight uncertainty (ie the fact that risk-weights may not reflect the true riskiness of an activity), which tends to be higher for such assets, rather than being an unintended consequence.

The seven building societies in the sample, representing approximately 85% of total building society assets, are estimated to require an incremental £2.1 billion of Tier 1 capital, equating to 18.5% of their risk-weighted capital charge under the baseline scenario with a 3% systemic risk buffer rate. The seven investment firms/custody banks in the sample are estimated to require an incremental £7.1 billion of Tier 1 capital, equating to 11.2% of their risk-weighted Tier 1 capital charge under the baseline scenario with a 3% systemic risk buffer rate.

It might be expected that the eight firms in our sample that are bound by the leverage ratio would respond primarily by raising lending spreads and passing on additional costs to customers. That said, it is also possible that they would shift to some degree into activities that have higher risk weights.

4.4 Impact on the pricing of low risk-weighted assets, SME and corporate lending, and on monetary policy implementation

While the primary focus is to assess the impact of the FPC's proposed leverage ratio framework on the UK financial system as a whole, it is also important to assess the impact on specific types of lending and financial markets. As previously discussed, leverage ratio requirements are more likely to bind for firms with low average risk weights. By imposing an effective minimum average risk weight it is also possible that leverage ratio requirements could influence relative price levels in markets in low risk-weighted assets.

Pricing of low risk-weighted assets

A leverage ratio requirement is expected to bind in particular on firms that predominantly have exposure to those asset classes which tend to attract risk weights lower than 35%. To the extent that, at present, firms' internal allocation of the cost of funding to specific business units attempts to reflect the differences in capital requirements that apply to different asset classes, the risk-weighting framework will tend to make lending spreads vary in proportion with risk weights. For example, spreads on loans to corporate borrowers will tend to be higher than on loans to financial institutions to reflect differences in the level of debt funding permitted for the two forms of lending.

All else being equal, the introduction of the FPC's leverage ratio framework might be expected to reduce the differences in lending spreads between those asset classes which currently attract very low risk weights and those asset classes with higher risk weights. **Table G** shows an illustrative example, making a number of assumptions, of how raising the risk weight on a mortgage loan from 10%, to 20% to 35% might affect the spread on the loan at which the lender would breakeven.

Table G Illustrative example of the increase in the breakeven rate on a mortgage loan under different regulatory requirements[(a)]

Regulatory risk weight	10%	20%	35%
Increase in breakeven lending rates (relative to 10% risk weight)	–	7 basis points	16 basis points

(a) Methodology and parameter assumptions based on Miles, Yang and Marcheggiano (2013). The increases in breakeven lending rates are computed assuming full pass-through and no Modigliani Miller effect (ie the cost of equity funding and debt funding are kept constant at an estimated 10% and 5%, respectively). The tax benefits from debt funding relative to equity funding are taken into account, assuming a tax rate of 21%.

Whether the leverage ratio framework changes prices in markets for such low risk-weight assets is likely to depend on the mix of lenders active in those markets and how they allocate capital and price products internally. In principle, firms would be expected to set prices based on their overall marginal costs. So a firm for which risk-weighted capital requirements are the overall binding constraint would be expected to price low LTV mortgages based on the risk-weighted capital requirements even if leverage ratio requirements for that particular product are higher.

Firms are more likely to change pricing if the leverage ratio is the binding constraint on their overall capital and if the marginal capital required to meet the leverage ratio is significantly higher than that required to meet the risk-weighted ratio. As explained above, in the mortgage market, a few firms with permission to use internal models are likely to fall into that category. But the leverage ratio is not expected to be the binding capital constraint on the majority of lenders, which might suggest that the effects, if any, on pricing in the wider market for low LTV mortgages, are likely to be quite small.

Large investment firms/custody banks generally rely on internal models to set risk weights. To the extent that the FPC's leverage ratio framework will bind for these firms, the costs of facilitation services and of funding customers might increase, unless competitive forces drive a reallocation of these activities to firms not bound by the framework. It is important to note that the methodology used above has the potential to over-estimate the impact of the FPC's framework on this group of firms, as it focuses solely on capital and leverage ratio requirements at the level of the UK entity. Many of the firms in the sample are subsidiaries of foreign groups that are or will be subject to higher leverage ratio requirements at group level and hence the imposition of a leverage ratio framework on the UK entity may not require additional capital raising for the group as a whole.

Impact on SME and corporate lending

Firms that are bound by leverage ratio but not risk-weighted requirements might have an incentive to reallocate from lower risk-weighted assets, such as low LTV mortgages, to higher risk-weighted assets, such as SME loans. So, other things equal, leverage ratio requirements would be expected to increase incentives for such firms to lend to higher risk-weighted borrowers, such as SMEs. Alternatively, such firms could continue to operate a business model specialising in low risk-weighted assets — but with less leverage.

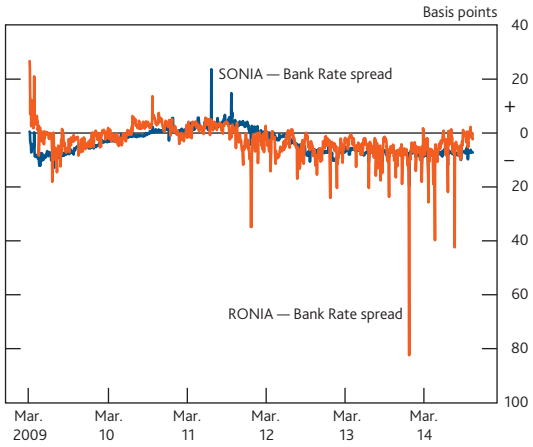
Impact on sterling market liquidity and monetary policy implementation

When a bank borrows cash in the secured or unsecured money market the size of its balance sheet expands. This reduces the bank's leverage ratio but has no impact on its risk-weighted capital requirements, because cash has a zero risk-weighting. Therefore, a leverage ratio requirement, if binding, has the potential to reduce volumes and liquidity in money markets.

A spread between Bank Rate and short-term money market rates has emerged over the past few years under the floor

system of monetary policy implementation (**Chart 8**).[1] While there are a variety of factors that may explain this, market contacts note that the leverage ratio has been an important factor underpinning the persistence of this spread over the recent period.

Chart 8 Spread of overnight market interest rates to Bank Rate[a][b]



Sources: Bloomberg and Bank calculations.

(a) The unsecured overnight interest rate is measured by SONIA. The secured overnight interest rate is measured by RONIA. Both indices are provided by the Wholesale Markets Brokers' Association. For further details, see www.wmba.org.uk.
(b) Data is for the period 1 January 2009 to 22 October 2014.

Banks and building societies are able to earn Bank Rate on reserves held at the Bank of England. If market rates are below Bank Rate, those firms could earn a risk-free spread by borrowing cash in the market from those who do not have reserves accounts and depositing the proceeds with the Bank of England. This would drive market rates back towards Bank Rate. But, as **Chart 8** shows, short-term money market rates have been trading slightly below Bank Rate over the past few years. This suggests that there is a net private cost to banks of borrowing in money markets, since they are unwilling to carry out further arbitrage at these rates. But it is very difficult to identify the effect of the leverage ratio because (i) the cost of borrowing reflects a variety of regulatory and non-regulatory costs, including the leverage ratio; and (ii) these costs are offset to some degree by the benefits that banks obtain from accepting deposits from non-banks in order to maintain client relationships.

The broader costs of less liquid money markets that result from the leverage ratio also need to be considered in addition to the private costs to banks. Less liquid secured money markets may reduce liquidity in the gilt and sterling-denominated corporate bond markets and make it more expensive for borrowers to issue debt. Banks may find it more expensive to manage their own short-term liquidity. Reduced liquidity underlying benchmark money market rates such as the repurchase overnight index average (RONIA) and the sterling overnight index average (SONIA) may also affect liquidity in the markets for derivatives based on these rates, including a direct impact on the SONIA overnight indexed swap market (with around £2 trillion notional outstanding) and an indirect impact on participants who use SONIA for cash flow discounting and valuation purposes.

Finally, the effects of the leverage ratio, such as the spread between Bank Rate and market rates described above, may imply that an internationally agreed leverage ratio framework could lead some central banks to adjust their operating frameworks to ensure they are able to implement their desired monetary policy stance. But the leverage ratio is only one of several factors that affect this spread, including the additional reserves created by the Bank of England as a result of its asset purchases, and depending on how these factors evolve in the future this spread could narrow regardless of the FPC's decisions with respect to the leverage ratio.

4.5 Systems costs

All of the firms that would be within the scope of a leverage requirement are already required to report their leverage ratio to the PRA. Hence, we do not believe that firms would have to make substantial new investments into their systems due to the introduction of a leverage ratio requirement.

(1) See www.bankofengland.co.uk/markets/Pages/sterlingoperations/redbook.aspx.

Annex 1
Respondents' feedback on the Consultation Paper and the FPC's response

Question 1 Do you agree that the leverage ratio plays a complementary role to risk-weighted ratios and stress tests in assessing capital?

Summary of responses

The role of the leverage ratio

The majority of respondents agreed that the leverage ratio has a complementary role in the capital framework alongside risk-weighted capital requirements and stress testing.

Some respondents considered the objectives of the proposed framework not to be aligned with those stated by the Basel Committee. A significant number were also concerned that the proposed leverage ratio framework could often act as the binding constraint for some types of business, in particular for mortgage lending, which is typically subject to relatively low risk-weighted capital requirements.

Simplicity

The majority of respondents emphasised the importance of the leverage ratio being a simple measure. They raised concerns that the proposed framework introduced additional complexity that they considered not to be warranted and which would in their view create difficulty in its interactions with the risk-weighted capital framework.

Nature of a leverage ratio requirement

A number of respondents suggested that a leverage ratio should apply as a Pillar 2 measure — eg as a supervisory tool or benchmark — rather than as a Pillar 1 requirement.

Calibration

A significant number of respondents commented on calibration issues. Some of them argued that it was imperative to consider the question of calibration at the same time as that of the design of the framework. Views were mixed on the appropriate approach to calibration, with some preferring a uniform approach applied across all firms and others preferring explicit differentiation based on size of firm, systemic importance or business model.

Nature and timing of implementation

A significant number of respondents expressed concern about the potential for the proposed leverage ratio framework to diverge significantly from the leverage ratio requirements expected to be implemented at the EU and international levels from 1 January 2018. Some suggested that the timing of implementation of a UK leverage ratio framework should be more closely aligned with the EU or international timetable for implementation. A small number of respondents considered that further time was needed to allow the new capital requirements introduced in 2014 by CRD IV to bed down before introducing further requirements on leverage. A number of responses also emphasised the need for an appropriate transition to the new framework to ease the adaptation process, and some argued for exemptions for building societies or smaller firms.

FPC response

The FPC judges that a Pillar 1 leverage ratio framework is an essential complement to Pillar 1 risk-weighted requirements in the capital framework for PRA-regulated banks, building societies and investment firms.

The FPC places particular importance on the leverage ratio as a tool to act as a guardrail against model risk and measurement error, noting that concern about model risk applies equally to regulatory standardised models and firms' own internal models.

The FPC has revised its intended approach, and developed a calibration, in light of the consultation responses received. In doing so, the FPC has sought to strike an appropriate balance between simplicity and comparability on the one hand and the effectiveness of the framework in complementing risk-weighted capital requirements on the other.

In determining its approach, the FPC has aligned the intended framework as closely as possible with the Basel and EU leverage ratio disclosure frameworks. For the leverage ratio denominator the FPC intends to use the Basel III leverage exposure measure as implemented in European law. The FPC also intends to introduce supplementary leverage ratio buffers at the same time as the parallel risk-weighted buffers are introduced, to ensure the leverage ratio framework remains an effective complement to the risk-weighted regime. Similarly, it expects to use the countercyclical leverage ratio buffer alongside the CCB.

The FPC has explored through its impact analysis the extent to which its leverage ratio framework will require a subset of firms with low average risk weights to raise additional capital. Based on that analysis, which is set out in Section 4, the FPC judges those costs will be modest overall and will be outweighed by the benefits.

Question 2 Do you agree with the considerations regarding potential alternatives to the leverage ratio?

Summary of responses

The majority of respondents stated that alternative means of addressing model risk are already available to the FPC or the PRA. Those respondents considered such alternatives to be a more appropriate means of addressing model risk than a leverage ratio framework. Views were mixed on which

alternatives should be preferred. The most commonly preferred alternatives were: Pillar 2 requirements, stress testing, current or enhanced disclosures and capital floors in the risk-weighted framework. However, views were divided on the merits of capital floors with a similar number of respondents for and against. A number of other alternative measures were suggested, though they were put forward by a small number of respondents: benchmarking of risk-weightings, modification of model permissions, a leverage ratio by asset class, hypothetical portfolio exercises, LTV or LTI limits on mortgage exposures, enhanced supervision, risk-weighted capital buffers, monitoring of firms' leverage ratios and policy settings of interest rates. One respondent stated that a leverage ratio would not address model risk for firms subject to relatively higher average risk weights. A small number of respondents from outside the financial services industry considered the alternatives listed in the consultation not to be genuine alternatives to a leverage ratio.

A number of respondents emphasised the extent of improvements in the capital framework for the banking sector since the crisis, and to modelling frameworks for regulatory capital that have been implemented internationally and in the United Kingdom. It was also noted that regulatory initiatives continue to enhance the models used for regulatory capital purposes, such as the Basel Committee's Fundamental Review of the Trading Book and the regular portfolio benchmarking mandated by Article 78 of CRD IV.

FPC response

The FPC remains of the view that it is necessary for the capital framework to include a leverage ratio framework. No alternative measure can deliver all of the same benefits. A leverage ratio ensures firms' resilience by requiring that a minimum proportion of banking sector assets is funded by going-concern capital at all times. This constrains the extent to which the capital held by the banking sector may reduce because of a fall in risk weights determined by supervisory or internal models. A non risk-weighted measure of solvency is especially important in a period of generalised mispricing of risk such as that which characterised the pre-crisis years. Further, as a relatively simple and comparable solvency metric, the leverage ratio enhances the comparability of banks' capital positions.

The FPC agrees that a range of tools can contribute to mitigating these risks, including the use of floors under model-derived risk-weighted assets, Pillar 2 and enhanced disclosures. The FPC supports regulatory efforts to reduce unwarranted variability in risk-weighted assets through the initiatives of the BCBS and of the European Banking Authority, in addition to the steps the PRA has already taken in this regard.

However, the FPC believes that the leverage ratio has an important role to play in the capital framework. Addressing model risk through targeted measures such as floors under model outputs, or Pillar 2 measures, is an effective means of addressing shortcomings identified in risk measurement that would otherwise result in a firm's undercapitalisation on a risk-weighted basis. While necessary to ensure the adequacy of risk-weighted capital requirements, those measures also rely on the assumptions or judgements used in the underlying models. A non risk-based leverage measure does not depend on those assumptions or judgements and is less susceptible to errors therein. A complementary leverage ratio guards against model risk and excessive leverage in a way that model adjustments or Pillar 2 measures alone cannot.

Question 3 Do you agree with the advantages and disadvantages of symmetry between the leverage ratio framework and the risk-weighted ratio? In particular as they relate to:

- **including a minimum requirement and buffers analogous to the risk-weighted framework;**
- **establishing a leverage conservation buffer in proportion to the risk-weighted buffer;**
- **eligible capital;**
- **the level of application; and**
- **the scope of firms to which the framework is applied.**

Summary of responses

A majority of respondents opposed some or all the elements of a proposed framework comprising leverage ratio minimum requirements and buffers symmetrical to the risk-weighted capital framework. The reasons cited varied by respondent. They included complexity, inconsistency with international approaches or timescales, concern that a symmetric approach would bind a significant number of firms, potential competitive disadvantage for UK firms, insufficient cost-benefit analysis, and the view that such an approach was disproportionate or not adequately justified. A small number of respondents from outside the financial services industry supported the proposed approach. The following paragraphs provide more detail on the views on different aspects of symmetry between the leverage ratio and risk-weighted capital frameworks.

Including a minimum requirement and buffers analogous to the risk-weighted framework

A majority of respondents opposed a conservation buffer or a time-varying buffer being applied to the leverage ratio, with only a small number supporting these aspects of symmetry.

Some respondents raised the concern that a requirement for leverage ratio buffers would mean that firms with less-ready

access to capital markets might need to hold discretionary buffers on top of any leverage ratio buffers as a precaution against variability in their leverage ratio.

Establishing a leverage conservation buffer in proportion to the risk-weighted buffer

A small number of respondents considered a symmetric approach to be appropriate.

A number of other respondents considered there not to be a straightforward relationship between the appropriate size of a conservation buffer for the leverage ratio compared with the conservation buffer in the risk-weighted capital regime. Those respondents suggested that the leverage ratio and risk-weighted capital ratios would behave differently under stress. In particular, risk weights would be likely to rise in a stress period whereas leverage ratio exposure would not rise symmetrically. Therefore, there would not be a simple proportional relationship between the two conservation buffers. Several respondents said the implied calibration of an FPC leverage ratio framework incorporating a leverage ratio conservation buffer could be too high, with the potential to constrain low risk weight business models.

Eligible capital

Respondents generally considered that AT1 capital should be recognised fully in meeting leverage ratio requirements.

A few respondents supported the non-recognition or symmetric recognition (ie limited to 25% of the minimum requirement) of AT1 capital in the leverage ratio framework, because they considered the going concern loss-absorbing capacity of the instruments to be unproven, or because they considered a symmetric approach to be appropriate.

A significant number of respondents opposed any limitation on the amount of AT1 eligible to meet the leverage ratio framework. The main reasons cited were consistency with the CRR, the adequacy of these instruments' loss-absorbency given their trigger levels, complexity for investors and adverse effects on investor demand and pricing. Respondents also noted the potential adverse effects on the competitiveness of UK firms compared with other jurisdictions and the importance of alignment with international definitions.

A number of respondents opposed the possibility of including an additional trigger in AT1 instruments based on the level of the leverage ratio, on the grounds that it would increase their complexity and cost and reduce their potential marketability.

The level of application

Respondents' views were mixed on the level at which the leverage ratio framework should apply. While some respondents proposed that a leverage ratio framework should apply only at consolidated level, a similar number of others considered it should apply at consolidated, sub-consolidated and individual entity (solo) levels. Some were willing to accept application at solo level, subject to appropriate transitional arrangements and consideration of the impact on business models. Others thought it should apply at all levels with no transition. One respondent considered that it was important to apply the leverage ratio also at sub-consolidated and solo levels in order to achieve a level playing field between smaller firms and large banking groups, on the grounds that otherwise larger firms would be better able to 'optimise' the leverage ratio across the group.

The main arguments presented against solo level application were: additional complexity, the risk of trapping capital in individual entities, and the risk (where the leverage ratio is the binding requirement in individual entities) of imposing a higher overall capital requirement across a group than the CRD IV risk-weighted requirement applied at group consolidated level. Some respondents supported the application of the leverage ratio at the level of the ring-fenced bank and the non ring-fenced bank once ring-fencing requirements are applied in the United Kingdom.

Scope of firms to which the framework is applied

Some respondents favoured applying the leverage ratio framework to all firms subject to the risk-weighted capital ratio under CRD IV. However, several of those respondents' support for that approach was conditional on the calibration of the minimum leverage ratio being at a level they considered appropriate and the absence of leverage ratio buffers. Others considered it to be appropriate for the leverage ratio framework not to be applied to smaller banks and building societies or smaller investment firms or subsidiaries of overseas groups.

FPC response

Including a minimum requirement and buffers analogous to the risk-weighted framework

The FPC considers a Pillar 1 minimum leverage ratio requirement to be an essential complement to the risk-weighted capital requirements of all firms. Therefore, the FPC intends to apply a minimum leverage ratio requirement of 3% for all UK banks, building societies and PRA-regulated investment firms from 2018, subject to a review in 2017.

The FPC notes the potential operational complexity introduced by additional buffers. It has also considered further the behaviour of risk-weighted ratios and the leverage ratio under stress. In view of these considerations, the FPC does not propose to impose a leverage ratio conservation buffer. It also proposes that the PRA should decide the appropriate supervisory response if a firm's leverage ratio fell within the buffers, rather than setting pre-determined consequences, such as automatic restrictions on capital distributions. The FPC expects the PRA would act to ensure that firms put in

place a timely and credible capital plan to restore leverage buffers.

Eligible capital

The FPC acknowledges the going-concern loss absorbency provided by an AT1 instrument which has a CET1 trigger set high enough as a percentage of risk-weighted assets for permanent write-down or conversion to CET1 on a going-concern basis.

The FPC considers that AT1 instruments would need to be of sufficient quality to be used to meet minimum leverage ratio requirements, including having a risk-weighted capital trigger of no less than 7% of risk-weighted assets. Consistent with the relative relationship between the 4.5% CET1 and 6% Tier 1 minimum capital ratios that apply under the risk-weighted capital framework, the FPC considers it appropriate to limit the amount of AT1 capital that may be used to meet the minimum leverage ratio requirement to 25% of the 3% minimum requirement. Leverage ratio buffers would be met solely with CET1 capital.

Scope of firms to which the framework is applied

In view of the complementary role of the leverage ratio, the FPC considers it to be essential for a minimum leverage ratio requirement and a countercyclical leverage ratio buffer to apply to all PRA-regulated banks, building societies and investment firms. The FPC has sought to address through the design and calibration of the framework the concerns expressed about the differential impact of the framework on different types of firm.

Question 4 What are your views on the remaining design elements discussed in Chapter 3, in particular regarding the interaction between Pillar 2 and the leverage ratio, including for pension risks, and transitional arrangements, including coverage of only the large UK banks and building societies?

Summary of responses

The feedback received consistently opposed the possibility of Pillar 2 adjustments to the leverage ratio, including in relation to the pension risk element of Pillar 2. The main reasons presented were that Pillar 2 adjustments would increase the complexity of the leverage ratio and are currently based on risks not captured by Pillar 1 risk-weighted requirements, hence it would be inconsistent to adjust the leverage ratio to reflect them. Further, given the variation in Pillar 2 regimes across jurisdictions and absence of disclosure of Pillar 2 adjustments, adjusting the leverage ratio to reflect Pillar 2 would reduce the comparability of the ratio.

Some respondents said that a leverage ratio requirement should not be applied for some or all UK firms prior to the application of an international or EU minimum leverage ratio requirement in 2018.

Several respondents considered the need for possible transitional measures to depend on the structure and calibration of the leverage ratio framework and the resultant impact on different types of business models, particularly those focused on lower risk-weighted assets.

FPC response

The FPC agrees with respondents that the potential benefits of Pillar 2 adjustments to the leverage ratio, including for pension risk, are outweighed by the costs, notably reduced comparability of the leverage ratio requirement across firms and additional complexity.

The FPC recognises the concerns expressed that the intended framework would need to be subject to an appropriate phase-in period and has therefore included transitional arrangements such that only systemically important firms will face leverage ratio requirements in advance of the expected introduction of internationally agreed standards in 2018. However, the FPC believes it should have direction powers over all PRA-regulated banks, building societies and investment firms at this point in time, and signals its intention to apply a minimum requirement of 3% to all firms from 2018, potentially with a non-zero countercyclical leverage ratio buffer if warranted by the conjuncture, to enable a smooth transition to its intended leverage ratio framework.

Question 5 What are your views on the impact on different business models of a 'baseline' requirement in steady state?

Summary of responses

Some respondents argued that the consequence of a leverage ratio requirement would be that firms with predominantly lower risk-weighted assets would shift their asset mix towards the 'critical average risk weight' where the leverage ratio and risk-weighted ratio are equally binding. Depending on the calibration, these respondents considered that this could present the risk of the UK banking sector converging on a homogeneous business model with adverse consequences for the sector's overall stability and the diversity of products it offers.

Other respondents thought that one likely direct consequence of a leverage ratio requirement would be deleveraging in the banking sector. Some respondents offered the view that a leverage ratio requirement could have an adverse effect on the supply and pricing of mortgage lending. A further consequence identified by some respondents was the shifting of credit provision out of the banking sector into the non-regulated sector.

A number of respondents stated that the proposed framework would have a disproportionate impact on the business models of building societies in particular, given societies' focus on mortgage lending, the statutory constraints that apply to their

lending and funding, and their relative ability to access the capital markets. A small number of respondents considered that a leverage ratio framework should be suitably differentiated by business model, with some stating that such an approach was envisaged by the CRD IV. By contrast, other respondents suggested that a single ratio should be applied uniformly across all firms, rather than differentiating by size or business model.

Several responses raised concerns with the application of the leverage framework specifically to investment banks or broker-dealers. One response was concerned that a significantly higher leverage constraint would be particularly harmful for broker-dealers. It considered most business lines would be impacted because of significant increases in liquidity and margin management costs. It also stated there was likely to be an adverse impact on the provision and pricing of clearing and execution services, a reduction in capacity and potential increases in costs and pricing of capital instrument issuance and greater market volatility. If this occurred it considered the impact on financial market and securities market liquidity would be unprecedented. Another response considered that investment banks holding large pools of low risk-weighted assets to provide market liquidity should not be subject to a simple leverage ratio because they have a diversified business base. A further response suggested the leverage ratio was too blunt a measure that would penalise banks that chose to have a mix of investment banking business and low risk-weighted business such as high credit quality corporate lending or mortgage lending.

Several respondents emphasised the potential impacts of a leverage ratio on the cost of repo market activity and the risk of firms reducing their participation in these markets significantly and in market-making of government bonds. Further, some respondents saw the potential for a disproportionate impact of a leverage ratio on certain business models, such as custodian and settlement banks, where firms hold a significant amount of their assets in the form of central bank reserves. One respondent advocated the exemption of reserves held at certain central banks as a means of mitigating that impact; however, the majority of respondents emphasised that alignment with international standards is important and this precludes the exemption of central bank reserves from the exposure measure.

A number of respondents raised the issue of the interaction of the leverage ratio with other regulatory requirements, in particular the Liquidity Coverage Ratio. It was noted that a leverage ratio whose exposure measure includes the high-quality liquid assets eligible for liquidity buffers would incentivise firms to minimise their liquid assets above the required buffer level.

Some respondents noted that, whatever system of leverage ratio minimum requirements and buffers was eventually adopted, firms would require an additional 'voluntary' buffer because of market pressures and to manage the risk of capital distributions becoming restricted.

One respondent expressed the concern that a leverage ratio requirement could disincentivise central clearing depending on how initial and variation margin were treated in the exposure measure. It was noted that the BCBS definition of the leverage ratio exposure measure agreed in January 2014 recognises initial margin in the trade exposure generated in centrally cleared transactions.

A number of building societies noted that their flexibility to raise CET1 capital externally is more limited than is the case for banks.

FPC response

The FPC acknowledges that a leverage ratio requirement will have a relatively greater impact on certain types of banking business which attract relatively low risk weights. Therefore an appropriate timing of introduction and calibration of a leverage ratio requirement are critical to avoiding a material incentive for firms to deleverage or to shift the mix of their business significantly towards higher risk-weighted assets. The FPC has taken this into account in the proposed calibration and phase-in of the framework.

The FPC does not believe that differentiating a leverage ratio requirement by business model type would be an appropriate or effective response to the relatively greater impact the ratio could have on business models focused predominantly on low risk-weighted assets. Such differentiation would create additional complexity, potential moral hazard and possible cliff effects for firms on the threshold of being identified as having a 'low risk-weighted business model'. In addition it would introduce a degree of risk differentiation into a measure which deliberately does not attempt to assess the relative riskiness of assets. While respondents' main focus of concern was on the effect on mortgage lending, a differentiated approach would need to be applied consistently to all business models with low risk-weighted assets in order to ensure equitable treatment. This would be operationally challenging and could introduce competitive distortions.

The FPC acknowledges the interaction of the leverage ratio and liquidity standards. The calibration of the LCR requires a relatively modest proportion of total assets to be held in the form of cash or near-cash assets. A leverage ratio requirement applies across the whole balance sheet. Firms will be able to adjust their balance sheets and pricing to accommodate both a leverage ratio requirement and the LCR.

The FPC recognises that building societies in general, and smaller societies in particular, face additional challenges and costs in raising Tier 1 capital externally when compared to banks. The FPC has sought to address the concern that the

leverage ratio requirement would have a disproportionate impact on the building societies sector through appropriate calibration and transitional arrangements. The FPC also proposes that the period by which firms must comply with increases in the countercyclical leverage ratio buffer could be up to 24 months rather than twelve months.

The FPC acknowledges that firms may choose to maintain a buffer above any leverage ratio requirement and leverage ratio buffers in order to manage leverage volatility, eg as a result of fluctuations in deposits. The FPC has taken this into account in its calibration and in its decision not to apply automatic restrictions on distributions if firms enter into their leverage ratio buffers.

Question 6 Do you agree with the considerations regarding a supplementary leverage ratio component for G-SIBs and RFBs?

Question 7 Do you agree that it would be desirable to scale up the leverage ratio in proportion to the supplementary risk-weighted buffer for G-SIBs and RFBs, with a presumption of symmetry?

Summary of responses

A number of respondents supported the proposals that there should be a supplementary leverage ratio buffer for G-SIBs and ring-fenced banks (RFBs). However, a significant number of respondents opposed the proposal or stated that a sufficiently strong case had not been presented for such a buffer. One respondent, who opposed the proposal, considered international agreement and appropriate calibration to be pre-conditions of a higher leverage ratio buffer for G-SIBs. Some respondents agreed there was a case for supplementary buffers for G-SIBs but were not persuaded they should apply also to RFBs, or argued that the calibration of the supplementary buffer should reflect the size of the RFB and be set in such a way as to avoid cliff effects.

Those respondents who supported a supplementary leverage ratio buffer for G-SIBs and RFBs saw merit in ensuring the same relative calibration of risk-weighted and leverage ratios both for smaller and larger institutions. A small number of respondents argued that the rationale for G-SIB and RFB buffers in risk-weighted capital ratios were equally valid in relation to the leverage ratio.

Those opposing a supplementary leverage ratio buffer for G-SIBs and/or RFBs considered it inappropriate to reflect the additional risks relating to the failure of these banks in the leverage ratio framework. Others argued that the effect of leverage is not greater depending on the size or nature of the entity and that the proposal would represent a tax on the size of G-SIBs which would be likely to make them uncompetitive. One respondent argued that regulatory initiatives relating to recovery and resolution planning meant that additional leverage ratio buffers were unnecessary.

A number of respondents highlighted the impact of the proposal on RFBs in particular, emphasising that it would encourage holdings of higher risk-weighted assets inside the RFB, either by allocation of assets into the RFB from elsewhere within its group or by rebalancing the RFB's origination towards higher risk-weighted assets.

A small number of other respondents noted that the United States has made rules for a supplementary buffer for G-SIBs but cautioned against inferring that this would be appropriate in the United Kingdom. Those respondents noted that because of the role of US Government Sponsored Entities in the financing of the US housing market, US banks typically have a much smaller share of their balance sheets comprising mortgage loans than is the case in the United Kingdom. Given the typically relatively low risk weights on such assets, those respondents considered the effect of a supplementary leverage ratio buffer would be very different in the two jurisdictions.

FPC response

In order to ensure the leverage ratio framework provides an effective constraint on the build-up of excessive leverage of the most systemic firms, the FPC considers it necessary to apply a supplementary leverage ratio buffer to systemically important firms, calibrated in proportion to the G-SIB buffer applied for risk-weighted capital purposes and phased-in on the same timetable.

The FPC believes applying supplementary leverage ratio buffers to systemically important firms is appropriate because of the greater impact that distress of these firms would have on financial stability. In calibrating these buffers the FPC has adopted the only calibration that provides consistent complementarity between the leverage and risk-weighted frameworks across all firms. Supplementary buffer rates are therefore sized as 35% of the equivalent risk-weighted buffer rates. Consistent complementarity is desirable because it avoids distorting risk-taking incentives across firms.

Question 8 Do you agree with the desirability of being able to vary the leverage ratio requirement in the same way as risk-weighted requirements can be varied through the countercyclical buffer?

Question 9 Do you agree that, as a guiding principle, the leverage ratio should vary in proportion to the risk-weighted countercyclical buffer?

A significant number of respondents opposed a countercyclical leverage ratio buffer. However, a number of respondents took the opposite view.

The main reasons cited in opposition to the proposed countercyclical leverage ratio buffer were that cyclicality was not considered to be a relevant consideration for a leverage measure, or that other tools better addressed excessive growth in credit supply. A number of respondents noted that the risk-weighted countercyclical buffer is calculated as a weighted average of the countercyclical buffer rates set within the jurisdictions in which a bank has exposures. Some considered this to create an inappropriate link between leverage ratio requirements and risk-weighted requirements. Others suggested that a countercyclical leverage ratio buffer applied to UK firms only would have a perverse impact on UK credit supply. It was also suggested that it would also complicate firms' capital management and communications with investors.

A small number of respondents highlighted that firms would have greater flexibility to manage a risk-weighted countercyclical buffer by increasing capital or reducing the riskiest or most capital-intensive assets. However, leverage could be managed only by increasing capital or by reducing the nominal amount of assets (without regard to riskiness), which could have perverse consequences. Some respondents stated that they would prefer a constant buffer to one that varied over time. One respondent was concerned that a countercyclical leverage ratio buffer would reduce demand for UK firms' capital instruments.

A small number of respondents expressed concern that there would be a significant risk of firms achieving compliance with a countercyclical leverage ratio buffer by deleveraging, depending on how much time they had to respond to an increase in a leverage ratio buffer. One such respondent stated that if a countercyclical leverage ratio buffer were implemented firms should have the same twelve month period to come into compliance with an increase in this buffer as for the countercyclical capital buffer.

Those respondents supporting a countercyclical leverage ratio buffer cited a number of reasons. One considered there to be a good case for a countercyclical leverage ratio buffer that was aligned with the CCB in the risk-weighted capital framework. Another argued that if improvement in risk-weighted ratios during an upswing were caused primarily by falling risk weights then there is arguably no need to increase the leverage ratio as the exposure measures is not subject to this weakness, but if they are driven mainly by unsustainable increases in asset values then there would be a case for varying a leverage ratio requirement, or for adjusting the asset valuations directly.

FPC response

The FPC continues to see a strong case for a countercyclical leverage ratio buffer to complement its application of a countercyclical capital buffer, and ensure that the FPC has the right tools to moderate excessive credit growth. Concerns raised that firms would need to respond to the use of a countercyclical leverage ratio tool by either raising capital or deleveraging are implicitly acknowledging that this tool would be an effective countercyclical instrument in a credit boom.

The FPC recognises it is likely that leverage is a less pro-cyclical metric than risk-weighted capital. Indeed this is one reason why these two metrics will be effective complements. However, FPC members do not agree that this observation implies that a countercyclical leverage ratio buffer is unnecessary. Regardless of the cyclicality of the leverage ratio, increasing leverage ratio buffers alongside the CCB in an upswing would provide an effective means of increasing the resilience of firms' balance sheets and moderating the supply of lending, enhancing the safety and soundness of the UK financial system.

Given comments raising concerns about the proposed alignment of the countercyclical leverage ratio buffer, particularly that its calculation would partially depend on overseas exposures subject to risk-weighted countercyclical buffers determined by overseas authorities, the FPC considered this issue further. It has concluded that while there are arguments both for and against recognising these changes in the countercyclical leverage ratio buffer, on balance alignment with the risk-weighted CCB is appropriate as a guiding principle. However, the FPC acknowledges this could lead to spurious accuracy in countercyclical leverage ratio buffers, and hence plans to round countercyclical leverage ratio buffer levels to the nearest 10 basis points. The FPC plans to set out in more detail in a Policy Statement its plans for operationalising the countercyclical leverage ratio buffer.

Cost-benefit analysis

Question 10 Do you have any views on the cost-benefit analysis considerations?

All respondents who commented on this question emphasised the importance of an appropriate cost-benefit analysis. A significant number of respondents noted that a proposal on calibration of a leverage ratio requirement and any buffers would be needed in order to produce a comprehensive cost-benefit analysis.

A number of respondents emphasised the importance of taking into account all the other regulatory reforms that have been undertaken since the crisis as the benefits of a leverage ratio could already have been realised through other measures. One respondent made the point that the cost-benefit analysis should consider the interaction of a leverage ratio requirement with other regulatory developments, for example the Liquidity Coverage Ratio and Net Stable Funding Ratio. In addition one respondent noted that the benefits of additional capital would depend on where in the system it is located, with greater benefit to be derived

from higher capital in highly interconnected and high-risk institutions.

Several respondents emphasised the importance of analysing the impacts on the UK mortgage market including pricing, especially for low risk, low LTV customers and on building societies, especially the larger ones. A number of respondents argued that any cost-benefit analysis should address the risk of firms responding to a leverage ratio by adopting higher-risk business models.

One respondent emphasised the potential impacts of a leverage ratio requirement on certain key securities markets, and on repo and securities financing transactions, generally reducing liquidity in these markets, leading to higher financing costs. This respondent argued that institutional investors including pension funds may encounter reduced volumes of/lower yield on securities lending activity.

FPC response

The FPC has responded to comments that the impact of its framework could not be fully understood without more clarity on calibration, by incorporating a recommendation on the level of leverage ratio requirements and buffers into this review. It has addressed the major points raised in the Consultation Paper responses in Section 4 of this document.

Annex 2
Assumptions used in impact analysis

This annex sets out the assumptions made to estimate firms' capital requirements in the baseline scenario where leverage ratio requirements are not imposed, and the calibration scenario where the FPC applies its leverage ratio framework at the levels set out in this review.

Baseline for calculations

To analyse the costs and benefits of a leverage ratio requirement, the FPC first established a forecast of the likely capitalisation of the UK financial system in the absence of such a requirement. Doing so requires considering the amount and quality of capital that lenders will be required to hold due to regulatory requirements as well as the amount of capital that banks may voluntarily decide to hold over and above these requirements.

The baseline scenario is based on the anticipated effects of the full implementation of the risk-weighted Pillar 1 and Pillar 2 requirements included in CRD IV. That is, the Tier 1 capital requirements imposed by the regulatory minimum (6%), the capital conservation buffer (2.5%) and Pillar 2A requirements. Moreover, there are a number of additional elements of the package of post-crisis reforms that are considered as part of the baseline scenario. These include:

(i) The phasing-in of additional risk-weighted capital buffers for global systemically important banks (G-SIBs) in four equal steps from 2016 to 2019. There are different 'buckets' of systemic importance that are associated with different additional capital buffers. It has been assumed that the UK G-SIBs will remain in their current 'bucket' of systemic importance throughout the time horizon we consider.

(ii) The implementation of additional systemic risk buffers for ring-fenced banks (RFBs) that was proposed by the Independent Commission on Banking (ICB). This systemic risk buffer could be up to 3% of risk-weighted assets and will come into force in 2019. Where it has been necessary to assume a level of the systemic risk buffer, the FPC has considered two scenarios: a scenario where all future ring-fenced banks and large building societies are subject to a 1% systemic risk buffer, and a second scenario where a 3% systemic risk buffer is applied to these firms.

(iii) The setting of a countercyclical capital buffer. Adopting the same approach as used in the CRD IV impact assessment, it is assumed that this buffer, which will be set to zero in normal times, would increase banks' risk-weighted capital requirements by, on average, 0.5% of risk-weighted assets over the credit cycle.

Firms typically fund themselves with more capital than the amount of their regulatory requirements. Such 'voluntary buffers' are held to ensure that the firm does not breach regulatory requirements as soon as it starts to experience losses. In the cost-benefit analysis for the implementation of CRD IV, the PRA had assumed that due to the existence of explicit regulatory buffers above the minimum, firms would reduce the size of their voluntary buffers relative to the levels previously observed once CRD IV had been fully implemented. This assumption was maintained in determining the baseline scenario. Specifically, it was assumed that banks will hold a voluntary buffer of 20% of their total risk-weighted capital requirements (ie for a firm with a Tier 1 risk-weighted requirement of 10%, they will target holding an additional capital buffer of 2% of risk-weighted assets).

For groups that will contain a future ring-fenced bank or large building society and which are not a G-SIB, an approximation is used whereby the group's consolidated requirement is calculated under the assumption that the entire balance sheet of the group were inside of the ring-fence. Treating the entire group as being within the ring-fence may overestimate the capital requirement these groups are subject to in the baseline. However, given the expected size of their ring-fenced entities it may be a reasonable approximation. Moreover, the same assumptions are made for the scenario in which a leverage ratio requirement is introduced. This should minimize the risk that the size of the considered intervention is understated. For groups that will contain a future ring-fenced bank or large building society and which are currently a G-SIB, it is assumed that the G-SIB buffer is the relevant systemic buffer at the level of the group.

In setting the baseline scenario it is assumed that the asset composition of firms remains constant over the period during which CRD IV capital requirements are phased-in.

Leverage ratio framework calibration scenario

To estimate the incremental impact that the FPC's leverage ratio framework could have on PRA-regulated banks, building societies and investment firms, the effects of the FPC's indicative calibration of its leverage ratio framework on the UK financial system are considered. Any costs and benefits of a leverage ratio requirement are calculated relative to the baseline scenario discussed above.

The calibration scenario examined for the FPC's future use of direction powers over leverage is a minimum leverage ratio requirement of 3% that applies at a consolidated level to all UK systemically important firms, starting immediately. All other firms within the scope of the proposal (including solo entities within banking groups) could be subject to the same requirement from 2018 onwards. UK systemically important firms would be subject to additional supplementary leverage ratio buffer requirements of 35% of their corresponding

risk-weighted buffers. This equates to additional buffers in the range 0.35%–1.05% for this group. It is assumed that the G-SIB requirements are phased in through four equal sized annual steps from 1 January 2016 to 1 January 2019, while buffers on other systemically important firms apply in full from 2019.

As noted above, it is assumed that the countercyclical capital buffer adds an additional 0.5% of capital requirements in the risk-weighted framework on average over the cycle, following the assumption used in the CRD IV impact analysis, and that this would lead to an equivalent average countercyclical leverage ratio buffer of 0.2% in steady state (scaling by a factor of 35% and rounding to the nearest 10 basis points).

In the context of the baseline scenario, it is assumed that firms hold voluntary capital buffers over and above regulatory requirements. These assumptions are mirrored in the assumptions for the calibration of the leverage ratio framework; that firms hold a 10% voluntary buffer over their leverage ratio requirement.

Following the same approach as in the baseline, for G-SIBs that own a ring-fenced bank, it is assumed that this amount is exclusively driven by the group's consolidated capital requirement. For other groups owning a ring-fenced bank, a simplifying assumption is made: that the group's entire balance sheet is inside the ring-fence. These assumptions may slightly over or underestimate the amount of capital required under both the baseline scenario and the scenario with a binding leverage ratio. The impact assessment is based on the difference between these two scenarios. Hence, it is not clear that these assumptions would distort the estimates of the impact of a leverage ratio. If they did, little can be said as to the direction of the error.

The quantitative estimates of the potential impact of a leverage ratio do not consider the effect of transition periods towards fully implemented CRD IV capital requirements and FPC leverage ratio requirements. Instead, only the impact of a leverage ratio in steady state is considered, which we have assumed will be reached in 2019 when supplementary risk-weighted capital and leverage ratio buffers are fully phased-in. **Table 1** summarises the calibration assumptions used in the impact analysis.

Table 1 Calibration considered in the impact analysis

	Risk-weighted requirement (% of RWAs)		Leverage ratio requirement (% of exposure measure)	
Type of institution	Baseline	Baseline + voluntary and time-varying buffers (1 decimal place)	Baseline	Baseline + voluntary and time-varying buffers (1 decimal place)
G-SIBs[a]	9.5%–11%	12.0%–13.8%	3.35%–3.875%	3.9%–4.5%
Other major domestic UK banks and building societies[b]	9.5%–11.5%	12.0%–14.4%	3.35%–4.05%	3.9%–4.7%
Non-systemic firms	8.5%	10.8%	3%	3.5%

(a) The risk-weighted and leverage ratio requirements for G-SIBs would depend on which G-SIB bucket the bank is in.
(b) The range of risk-weighted and leverage ratio requirements for other major UK banks and building societies reflects different assumptions about the size of the risk-weighted systemic risk buffer rate applied to these firms, as discussed in Section 4.

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