

April 2016

The Financial Policy Committee's approach to setting the countercyclical capital buffer

A Policy Statement



BANK OF ENGLAND



16 December 2019: As set out in the December 2019 Financial Stability Report, the FPC has agreed to raise the level of the UK CCyB rate that it expects to set in a standard risk environment from in the region of 1% to in the region of 2%. All other elements of its CCyB policy remain unchanged.



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

Her Majesty's Government has made the FPC responsible for setting the countercyclical capital buffer. This document sets out the FPC's approach to setting the countercyclical capital buffer. It replaces those sections of the Committee's previous Policy Statement, published in January 2014, which related to the countercyclical capital buffer.

The Financial Policy Committee:

Mark Carney, Governor

Jon Cunliffe, Deputy Governor responsible for financial stability

Andrew Bailey, Deputy Governor responsible for prudential regulation

Ben Broadbent, Deputy Governor responsible for monetary policy

Tracey McDermott, Acting Chief Executive of the Financial Conduct Authority

Alex Brazier, Executive Director for Financial Stability Strategy and Risk

Clara Furse

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Martin Taylor

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

This document was finalised on 4 April 2016 and, unless otherwise stated, uses data available as at 18 March 2016.

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Executive summary

The Financial Policy Committee's (FPC's) statutory 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'.⁽¹⁾ 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'.⁽²⁾

A resilient financial system is likely to bring large economic benefits to our economy. The global financial crisis demonstrated how vulnerabilities in the financial system can amplify adverse shocks, resulting in severe and persistent contractions in economic activity. By reducing the likelihood and severity of such crises, financial stability policies help to ensure the stable provision of financial intermediation services — including payment services, credit supply and insurance against risk — to the wider economy.

The FPC's task is not to achieve resilience at any cost. Its actions should not, in the provisions of the Financial Services Act 2012, have 'a significant adverse effect on the capacity of the financial sector to contribute to the growth of the UK economy in the medium or long term'.⁽³⁾ Subject to achieving its primary objective, the FPC must also support 'the economic policy of Her Majesty's Government, including its objectives for growth and employment'.⁽⁴⁾

Parliament has given the FPC the power to set the countercyclical capital buffer (CCyB) rate for the United Kingdom. The CCyB is a macroprudential tool provided for by the EU's Capital Requirements Directive (CRD)⁽⁵⁾ and is implemented in the United Kingdom by Treasury Regulations⁽⁶⁾ and rules made by the Prudential Regulation Authority.⁽⁷⁾ The considerations to be taken into account when using this tool are specified tightly in the CRD legislation and Treasury's Regulations.⁽⁸⁾ This tool enables the FPC to adjust the resilience of the banking system to the changing scale of risk of losses it faces on its UK exposures over time.

By increasing the CCyB when risks are judged to be building up, banks⁽⁹⁾ have an additional cushion of capital with which to absorb potential losses, enhancing their resilience and helping to ensure the stable provision of financial intermediation services. When threats to stability are judged to have receded, or when credit conditions are weak and banks' capital buffers are judged to be more than sufficient to absorb future losses, the CCyB can be reduced. This will help to mitigate a contraction in the supply of lending to households and businesses.

The CCyB applies to all banks, building societies and investment firms (other than those exempted by the Financial Conduct Authority (FCA)) incorporated in the United Kingdom. The FPC is required to set the CCyB rate each quarter. The CCyB rate set by the FPC augments the capital that firms should have in respect of their UK credit exposures. Under the provisions in the CRD for reciprocity, it also applies automatically (up to a 2.5% limit, and currently subject to a transition timetable) to firms incorporated in other European Economic Area (EEA) states that have adopted and implemented the CRD, including branches operating in the United Kingdom and banks located in EEA states that lend directly cross-border into the United Kingdom. The FPC expects these reciprocity provisions to apply also to internationally active banks in jurisdictions outside the EEA that have implemented the Basel III regulatory standards. These arrangements bring clear global financial stability

(1) Section 9C(2) of the Bank of England Act 1998.

(2) Section 9C(3) of the Bank of England Act 1998.

(3) Section 9C(4) of the Bank of England Act 1998.

(4) Section 9C(1) of the Bank of England Act 1998.

(5) Directive 2013/36/EU.

(6) The Capital Requirements (Capital Buffers and Macro-prudential Measures) Regulations 2014 (2014/894).

(7) See Chapter 3, 'Countercyclical Capital Buffer', of the Capital Buffers Part of the PRA Rulebook.

(8) The CCyB rate must be assessed and set in accordance with CRD and Treasury's Regulations, taking into account: (a) the buffer guide calculated by the FPC that reflects the credit cycle and the risks due to excess credit growth in the United Kingdom, taking into account specificities of the UK economy, and based on the deviation of the ratio of credit to GDP from its long-term trend, (b) any current guidance maintained by the ESRB, (c) any recommendations of the ESRB on setting the CCyB rate, and (d) any other variables that the FPC considers relevant for addressing cyclical systemic risk.

(9) In this Policy Statement, references to 'banks' are to be read as references to the CRD institutions to which the CCyB applies. These institutions are described in Section 2.2 of this Policy Statement.

benefits as they help to ensure that CCyB actions do not distort the level playing field between domestic banks and foreign banks with exposures in that jurisdiction. The FPC will work with other authorities to achieve reciprocity, consistent with its own policy on reciprocity.

This policy statement updates the FPC's strategy for setting the CCyB.⁽¹⁾ This strategy is based on five core principles:

- **The FPC's primary objective in setting the CCyB is to ensure that the banking system is able to withstand stress without restricting essential services, such as the supply of credit, to the real economy.**
- **The FPC therefore intends to vary the buffer — both up and down — in line with the risk, at the system level, that banks will incur losses on UK exposures.**
- **Increasing the CCyB may also restrain credit growth and mitigate the build-up of risks to banks, but this is not its primary objective and will not usually be the primary objective guiding its setting.**
- **The FPC intends to set the CCyB above zero before the level of risk becomes elevated. In particular, it expects to set a CCyB in the region of 1% when risks are judged to be neither subdued nor elevated. This expectation will be kept under review.**
- **By moving early, before risks are elevated, the FPC expects to be able to vary the CCyB gradually, and to reduce its economic cost.**

The FPC's approach to assessing the threat level on UK exposures has three basic elements.

- The FPC assesses the likelihood and severity of potential future adverse 'shocks' to the UK economic outlook. This includes an analysis of domestic and global economic and financial imbalances whose correction could have material adverse consequences for UK economic activity.
- The FPC monitors characteristics of households' and companies' balance sheets that would determine how macroeconomic and financial shocks could translate into defaults and losses. These include measures of non-bank borrower stretch, such as levels of debt relative to income, debt-servicing costs, and the terms at which loans are being extended. The FPC monitors both the averages and distributions of these measures across the economy since it is highly indebted borrowers that are typically most vulnerable.
- The FPC assesses the sensitivity of banks' balance sheets to losses on their UK exposures. The FPC monitors banks'

leverage and funding vulnerabilities, as well as market indicators of their resilience and earnings potential. The FPC's assessment of these indicators is supported in more detail by the Bank's annual concurrent stress test, as described below.

Some of the indicators the FPC regularly monitors to support its CCyB decisions are presented in Section 4.1 of this Statement — although judgement plays a material role in all FPC decisions and policy is not mechanically tied to any specific set of indicators. The choice of these 'core' indicators reflects the large academic literature on financial crises, which has identified a number of metrics that have signalled build-ups in vulnerabilities prior to financial crises in the past. The core indicators are published alongside the wider information set informing the FPC's decisions in its *Financial Stability Report* every six months and on the Bank's website every quarter. The FPC will update this list of indicators over time as it learns from experience, as the financial system evolves, as data availability and quality improve, and as new research is undertaken.

The FPC's CCyB decisions are also informed by results from the Bank's annual concurrent stress tests of the UK banking system. These tests provide an important gauge of the sensitivity of banks' balance sheets to stress. From this year, the severity of the annual stress test scenario will be linked systematically to the policymakers' assessments of risk levels across markets and regions. The stress being tested against will generally be severe and broad, in order to assess the resilience of major UK banks to 'tail-risk' events. In addition, where risks are judged to be heightened, the related aspects of the test will be more severe and *vice versa*. The tests will be used to assess whether the UK banking system has buffers of capital that are sufficient to absorb the stress articulated, as well as testing the resilience of individual banks. If the test shows that the stress would impact on the capital ratios of the banking system by more than can be absorbed by the system-wide capital conservation buffer and by the prevailing CCyB, the FPC will consider increasing the CCyB rate. And if existing buffers are more than sufficient for the system as a whole, the FPC will consider reducing the CCyB. There is, however, no mechanical link between the outputs of the stress test and the CCyB; the CCyB will be set at the FPC's discretion with reference to its strategy, drawing on a range of indicators and analysis.

An increase in the CCyB enhances the resilience of the banking system by providing banks with an additional cushion of capital with which to absorb potential losses, helping to ensure the stable provision of financial intermediation services. This has a positive effect on the expected level of

(1) For the previous Policy Statement, see 'The Financial Policy Committee's powers to supplement capital requirements: A Policy Statement', January 2014.

GDP in the medium term. Given current risk-weighted assets, a 1% UK CCyB rate set by the FPC is equivalent to capital buffers of around £10 billion for the UK banking system. As discussed in Section 5.1 of this Statement, there is significant evidence that well-capitalised banks are more likely to survive in a crisis, less likely to cut lending during periods of economic stress, and less likely to suffer funding problems that could result in forced sales of assets with damaging knock-on consequences for the financial system.

Although an increase in the CCyB is also likely to tighten credit conditions and influence the central outlook for the economy, this effect is expected to be small, particularly if the policy steps taken by the FPC are small and gradual and occur in stable economic environments. As discussed in Section 5.2 of this Statement, in such circumstances, a 1% UK CCyB rate set

by the FPC is likely to increase bank lending spreads by less than 10 basis points. But such estimates are inherently uncertain because there is limited experience of varying system-wide capital buffers over the financial cycle. Moreover, the impact of the CCyB may also be greater if the tool is applied quickly, in large steps, or in less stable economic environments.

The FPC intends to communicate its decisions in a transparent and systematic manner. All CCyB decisions are published in the quarterly Record that follows its policy meetings. The FPC provides a more in-depth explanation of its decisions in its six-monthly *Financial Stability Report*. In addition, the prevailing CCyB rate set by the FPC, as well as the core indicators that support its decisions, are published on the Bank of England's website each quarter.

1 Introduction

The Financial Services Act 2012 introduced legislation to create the Financial Policy Committee (FPC). The FPC's statutory 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'.

The FPC's task is not to achieve resilience at any cost, however. Its actions should not, in the provisions of the Financial Services Act 2012, have 'a significant adverse effect on the capacity of the financial sector to contribute to the growth of the UK economy in the medium or long term'. Subject to achieving its primary objective, the FPC must also support 'the economic policy of Her Majesty's Government, including its objectives for growth and employment'.⁽¹⁾

Parliament has given the FPC the power to set the countercyclical capital buffer (CCyB) rate for the United Kingdom. The CCyB is a macroprudential tool

provided for by the EU's CRD and is implemented in the United Kingdom by Treasury Regulations and rules made by the Prudential Regulation Authority. The considerations to be taken into account when using this tool are specified tightly in the CRD legislation and Treasury's Regulations. The FPC is responsible for setting the CCyB in the United Kingdom.⁽²⁾ By varying the CCyB, the FPC can increase capital buffer requirements over and above their structural, non-time varying level.

This Policy Statement describes the FPC's approach to setting the UK CCyB rate. It is structured as follows. Section 2 describes the CCyB including: to whom and to which exposures the UK CCyB rate applies; what CCyB rates will apply to UK banks' foreign exposures; how the CCyB fits in with other elements of the capital framework; implementing the CCyB; and reciprocity arrangements. Section 3 sets out the FPC's strategy for setting the UK CCyB. Section 4 describes the FPC's approach to monitoring the risk environment facing banks, and the banking system's resilience to those risks. Section 5 presents the FPC's assessment of the impact of increasing the UK CCyB on financial system resilience and credit conditions. Finally, Section 6 describes how the FPC will communicate its CCyB policy actions.

(1) See Tucker, Hall and Pattani (2013) for more detail on the role of the FPC.

(2) In this Policy Statement, references to the 'CCyB' are to be read, depending on the context, as references to either 'countercyclical capital buffer' or to the 'countercyclical capital buffer rate' and references to 'varying the buffer' are to be read as references to 'varying the countercyclical capital buffer rate'.

2 Description of the countercyclical capital buffer

2.1 What is the countercyclical capital buffer?

The CCyB is a macroprudential tool that enables the FPC to adjust the resilience of the banking system to the changing scale of risk it faces over time. By increasing the CCyB when risks are judged to be building up, banks will have an additional cushion of capital to absorb potential losses. When threats to stability are judged to have receded, or when credit conditions are weak and banks' capital buffers are judged to be more than sufficient to absorb future losses, the CCyB can be reduced. By aligning resilience with risk, the CCyB reduces the extent to which economic shocks will be amplified by the banking system, including through contracting the supply of credit and other services. Although, in principle, this could be achieved by very high baseline capital requirements, the FPC judges that this would be inefficient and inconsistent with its objective not to harm the capacity of the financial sector to contribute to the growth of the UK economy in the medium or long term. Varying capital requirements over time allows the required resilience to be achieved in a more efficient way.

2.2 To whom does the countercyclical capital buffer apply?

The CCyB applies to all banks, building societies and investment firms (other than those exempted by the FCA) incorporated in the United Kingdom (henceforth referred to as 'banks').⁽¹⁾ The CCyB is applied at both individual entity and consolidated group levels. Over time, lending activity may migrate to institutions not covered by the CCyB. If this creates risks to financial stability, the FPC can make Recommendations designed to address these risks.

2.3 Calculating the institution-specific countercyclical capital buffer rate

Each bank must calculate its 'institution-specific' CCyB rate, defined as the weighted average of the CCyB rates in effect across the jurisdictions in which it has credit exposures.⁽²⁾ The institution-specific CCyB rate is then applied to the firm's total risk weighted assets.

Table A provides a stylised example of how this operates. Bank A has only UK credit exposures so its institution-specific CCyB rate is equal to the UK CCyB rate of 1%; Bank B's credit exposures are distributed equally between the United Kingdom and the foreign jurisdiction, so its institution-specific CCyB rate is 1.75%, the average of the UK CCyB rate of 1% and the foreign CCyB rate of 2.5%; Bank C has only foreign credit exposures, so its institution-specific CCyB rate is equal to the foreign rate of 2.5%. These institution-specific CCyB rates are applied to each firm's total risk-weighted assets to calculate the amount of capital it has to have to meet its CCyB.

Table A Mechanics of the institution-specific CCyB

	Credit exposures	UK CCyB rate (per cent)	Foreign CCyB rate (per cent)	Institution-specific CCyB rate (per cent)	Total risk-weighted assets (£ bn)	CCyB (£ bn)
Bank A	100% UK 0% foreign	1	2.5	1	100	1
Bank B	50% UK 50% foreign	1	2.5	1.75	100	1.75
Bank C	0% UK 100% foreign	1	2.5	2.5	100	2.5

The CCyB rate applicable to UK banks as a result of their foreign credit exposures will typically be set by the relevant foreign authorities that have implemented the Basel III standards. Since 1 January 2016, CCyB rates up to 2.5% set by such foreign authorities must be applied by UK banks in calculating their institution-specific buffer. The FPC also expects as a rule to recognise foreign CCyB rates above 2.5%, which would then become binding for UK banks under PRA rules. For exposures to countries outside the EEA, the FPC has the power to set CCyB rates for UK banks that are higher than those chosen by the relevant overseas authorities when, in its view, the foreign CCyB rate is not sufficient to protect the UK financial system from risks related to excessive credit growth in those economies. The European Systemic Risk Board (ESRB) has an important role in co-ordinating such decisions across the EEA and the FPC intends to comply with the ESRB framework for setting non-EEA CCyB rates.⁽³⁾

2.4 How does the countercyclical capital buffer fit with the rest of the regulatory framework?

The CCyB is part of a broader framework of equity and other loss-absorbing capital requirements that apply to UK banks, introduced in the aftermath of the financial crisis.⁽⁴⁾ Some elements of this framework are currently in effect; other elements are being phased in and will take full effect by 2019.

The framework of risk-based capital requirements comprises three elements.

First, there are **minimum levels of going concern capital** that must be met at all times, for which banks follow internationally agreed methods for calculation and calibration.

(1) Under CRD, a Member State may exempt small and medium-sized investment firms from the requirement to maintain the CCyB if such an exemption does not pose a risk to financial stability. Treasury granted this discretion to the FCA. The FCA applies this exemption to investment firms with less than 250 employees and either turnover of no more than €50 million or a balance sheet total of no more than €43 million.

(2) Relevant credit exposures include those in exposure classes that are subject to own funds requirements for credit risk, specific risk or incremental default and migration risk in the trading book, or securitisation positions. Excluded exposure classes include central governments or central banks, regional governments or local authorities, public sector entities, multilateral development banks, international organisations, and institutions (ie credit institutions and investment firms).

(3) See ESRB Recommendation 2014/1, 'Recommendation on recognising and setting countercyclical capital buffer rates for exposures to third countries'.

(4) See 'Supplement to the December 2015 *Financial Stability Report*: The framework of capital requirements for UK banks' for further details on the elements of this framework.

Going concern capital is able to absorb losses in the normal course of business. The minimum Tier 1 capital requirement is 6%, 4.5 percentage points of which must be met with common equity Tier 1, the highest quality of loss-absorbing capital.

In addition to this common minimum requirement, the PRA applies supervisory requirements that vary by bank (referred to as 'Pillar 2A') to compensate for shortcomings in existing measures of risk-weighted assets. In terms of Tier 1 capital, these currently average 2.4% of risk-weighted assets across major UK banks.⁽¹⁾

Second, there are **system-wide buffers of equity**, which sum to the 'combined buffer requirement' in CRD and PRA rules.⁽²⁾ These buffers can be used to absorb losses, reducing the need in stressed conditions for banks to withdraw services such as credit provision to the real economy. They are based on internationally-agreed methods for calculation and calibration.

The combined buffer is comprised of:

- The **capital conservation buffer**, which will be set at 2.5% of risk-weighted assets as of 2019;
- The **CCyB**, which effectively extends the capital conservation buffer. This will vary through time depending on the risk environment facing banks;
- Additional **buffers for banks that are judged to be systemically important** for either the global or domestic economy. Banks judged by the Financial Stability Board to be globally systemic will have buffer requirements that range between 1% and 2.5% of risk-weighted assets. Ring-fenced banks and large building societies will be subject to a domestic systemic risk buffer of between 0% and 3% of risk-weighted assets.⁽³⁾

Third, in addition to the 'combined buffer', some individual banks are subject to a supplementary supervisory buffer, calibrated to capture specific risks they face that are not captured in other buffers. This is the **PRA buffer**. It applies to banks whose balance sheets are more sensitive to a given level of economic risk than the system as a whole. Banks whose risk management and governance have weaknesses will also be subject to a PRA buffer.

The capital framework also includes a simple leverage ratio, which sets a floor of 3% for the level of Tier 1 capital a bank must have relative to its total (un-weighted) exposures. The Government has given the FPC powers to supplement this leverage floor by making Directions over a countercyclical leverage ratio buffer (CCLB).⁽⁴⁾ As a guiding principle, the FPC intends to move the CCLB in line with its setting of the CCyB, with the CCLB rate set at 35% of a bank's institution-specific

CCyB rate. This will help to maintain overall consistency between the risk-weighted capital and leverage ratio frameworks.

2.5 Implementing the countercyclical capital buffer

When the FPC increases the CCyB, or recognises a CCyB for another country, banks will, in general, have twelve months before this rate must be used for calculating their institution-specific CCyB rates. While a longer implementation period is not permitted, a shorter one may be justified in exceptional circumstances. A decision to decrease the CCyB takes effect immediately. When the FPC reduces the CCyB, it must decide on an indicative period during which no increase in that rate is expected.

The CCyB forms part of banks' combined buffer requirement (see Section 2.4). Under EU bank capital regulations, banks face mandatory restrictions on their distributions, including dividend payments, share buy-backs, bonuses and coupons on additional Tier 1 instruments if they have insufficient CET1 capital to meet their combined buffer. Banks in these circumstances are subject to a maximum distributable amount (MDA). When a bank is in the fourth or highest quartile of its combined buffer (ie when it meets between 75% and 100% of it), 60% of profits can be distributed; in the third quartile, 40% can be distributed; in the second quartile, 20%; and in the first or lowest quartile, 0%. When a bank does not meet its combined buffer, it is required under PRA rules to prepare a plan and submit it to the PRA explaining how it will meet the buffer level within an appropriate timeframe.⁽⁵⁾

2.6 Reciprocity of the UK countercyclical capital buffer rate

The FPC sets the CCyB rate for UK exposures. Subject to a transition period, CCyB rates set by the FPC up to 2.5% of risk-weighted assets apply automatically to the UK exposures of all banks headquartered in the EEA,⁽⁶⁾ including those of EEA branches operating in the United Kingdom and those of banks located in EEA states that lend directly cross-border into the United Kingdom.⁽⁷⁾ The FPC expects these 'reciprocity'

(1) In addition, sectoral capital requirements provide the FPC with a means for varying the risk weights on banks' exposures to residential property, commercial property and other parts of the financial sector. The FPC expects to apply this tool if exuberant lending conditions in one of these sectors pose risks to financial stability. The FPC's strategy for deploying sectoral capital requirements is described in 'The Financial Policy Committee's powers to supplement capital requirements: A Policy Statement', January 2014.

(2) See Chapter 4, 'Capital Conservation Measures', in the Capital Buffers Part of the PRA Rulebook.

(3) For details on the FPC's proposals for applying systemic risk buffers to domestic systemically important banks, see 'The Financial Policy Committee's framework for the systemic risk buffer: A Consultation Paper', January 2016.

(4) For further details of the leverage ratio framework, see 'The Financial Policy Committee's powers over leverage ratio tools: Policy Statement', July 2015.

(5) For details of these capital conservation measures, see Article 141 of the CRD, the Capital Buffers Part of the PRA Rulebook, and PRA Supervisory Statement 6/14.

(6) CRD reciprocity provisions apply in all EEA states that have adopted and implemented the CRD.

(7) Automatic reciprocity is being phased in gradually from 2016, with the cap on automatic reciprocity increasing in steps of 0.625% through 2019. The United Kingdom has chosen to waive these transition caps.

provisions to apply also to internationally-active banks in jurisdictions outside the EEA that have implemented the Basel III regulatory standards. These arrangements bring clear global financial stability benefits as they help to ensure that CCyB actions do not distort the level playing field between domestic banks and foreign banks with exposures in that jurisdiction.⁽¹⁾ The FPC will work with other authorities to

achieve reciprocity, consistent with its own policy on reciprocity.

Automatic reciprocity in the EEA does not apply for CCyB rates set above 2.5%. But jurisdictions can choose to apply these rates at their discretion.

(1) Aiyar, Calomiris and Wieladek (2014) provide empirical evidence that non-reciprocated increases in capital requirements generate material leakages to foreign branches operating in the United Kingdom.

3 The FPC's strategy for setting the countercyclical capital buffer

3.1 High-level strategy

The FPC's strategy for setting the CCyB is based on five core principles:

- (a) **The FPC's primary objective in setting the CCyB is to ensure that the banking system is able to withstand stress without restricting essential services, such as the supply of credit, to the real economy.⁽¹⁾**
- (b) **The FPC therefore intends to vary the buffer — both up and down — in line with the risk, at the system level, that banks will incur losses on UK exposures.**

It will aim to match the resilience of the UK banking system — measured by the total buffer of equity it holds — to the changing scale of risk it faces over time.

This process will be broadly symmetric. Should risks abate, or crystallise, the CCyB will be reduced, if necessary to zero. Reducing regulatory buffers in this way will help to ensure that capital accumulated when risks were building up can be used, thus enhancing the ability of the banking system to continue to support the economy in times of stress.

- (c) **Increasing the CCyB may also restrain credit growth somewhat and mitigate the build-up of risks to banks, but this is not its primary objective and will not usually be the primary objective guiding its setting.**

Other macroprudential tools, such as those aimed directly at lending standards or sectoral capital requirements, may be better placed to address excessive growth of credit or other heightened risks.

- (d) **The FPC intends to set the CCyB above zero before the level of risk becomes elevated.**

In a post-crisis repair and recovery phase, the FPC expects to set the CCyB at zero for a prolonged period.

The FPC expects to set a CCyB in the region of 1% of risk-weighted assets when risks are judged to be neither subdued nor elevated. This expectation will be kept under regular review and will change, for example, if the structure of banks' balance sheets were to evolve. Stress testing is one tool for making this assessment.

- (e) **By moving early, before risks are elevated, the FPC expects to be able to vary the CCyB gradually, and to reduce its economic cost.**

This approach is likely to be more robust to the inherent uncertainty in assessing the degree of risk to banking system capital, to time lags in implementing the CCyB, and to uncertainty about its impact on credit conditions and the real economy. It is also likely to reduce transaction costs.

3.2 The countercyclical capital buffer and the risk environment

In general, the FPC's strategy for setting the CCyB will be to align the total capital buffer requirement of the banking system to the threat of loss. The strategy can be described in four stages, which are outlined below. Although they describe a stylised 'financial cycle', which is distinct from the business cycle in both its frequency and amplitude, the FPC does not consider the financial system as always moving through the stages in the same order. For example, risks can abate rather than always build, including because the FPC takes action to address them. It is also likely that risks will build in uneven and diverse ways over the cycle, with indicators of the risk environment producing conflicting signals.

Stage 1: Risks facing the financial system are very subdued: the post-crisis repair phase

Risks facing the financial system will normally be subdued in a post-crisis repair and recovery phase when the financial system and borrowers are repairing balance sheets. As such, balance sheets are not overextended. Asset and property prices tend to be low relative to assessed equilibrium levels. Credit supply is generally tight and the risk appetite of borrowers and lenders tends to be low. The probability of banks coming under renewed stress is lower than average. So in these environments the FPC would expect to set a CCyB rate on UK exposures of 0%.

Stage 2: Risks in the financial system re-emerge but are not elevated: a standard risk environment

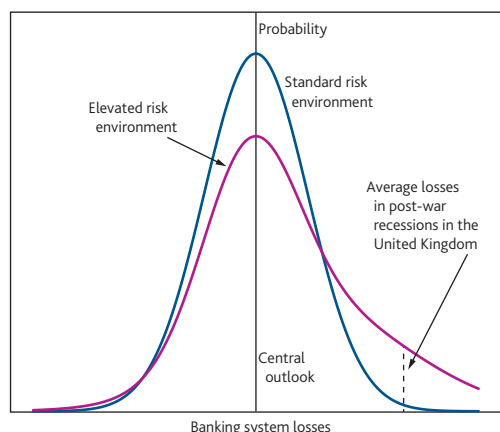
In this risk environment, borrowers will not tend to be unusually extended or fragile, asset prices are unlikely to show consistent signs of over, or under, valuation, and measures of risk appetite are likely to be in line with historical averages.

The distribution of risks of loss on UK exposures at this point is likely to be reasonably symmetric, as shown by the blue line in **Figure 1**. Large losses are possible, but they are in the tail of the distribution of possibilities.

The FPC intends to set a positive CCyB rate after the economy moves into this phase. It currently expects, in this period, that the CCyB would be in the region of 1%.

(1) This is consistent with the recital 80 of the CRD, which states that the aim of the CCyB is 'to ensure that [banks] accumulate, during periods of economic growth, a sufficient capital base to absorb losses in stressed periods. The [CCyB] should be built up when aggregate growth in credit and other asset classes with a significant impact on the risk profile of such [banks] are judged to be associated with a build-up of system-wide risk, and drawn down during stressed periods'.

Figure 1 Stylised distribution of losses in different risk environments



Note: This is a stylised diagram used for illustrative purposes only.

A CCyB rate in the region of 1%, combined with other elements of the capital framework, provides UK banks with sufficient capital to withstand a severe stress. Given current balance sheets, the FPC judges that, at this level of the CCyB, banks would have sufficient loss-absorbing capacity to weather a macroeconomic downturn of greater magnitude than those observed on average in post-war recessions in the United Kingdom — although such estimates are inherently uncertain. This would be an event far into the right-hand tail of outcomes shown in the **Figure 1**.

The FPC will keep this estimate of the CCyB it would expect to set in a standard risk environment under review. Over time, it is possible that the structure of banks' balance sheets — and the financial system as a whole — will evolve to make banks more or less sensitive to economic shocks. If this happens, the FPC's view of where the CCyB rate can be expected to be in a standard risk environment will change.

A strategy in which the CCyB rate is in the region of 1% in a standard risk environment is consistent with the FPC moving the buffer up before risks become elevated. This will allow it to move in more gradual steps. This gradualism as risks increase has two benefits:

- The FPC judges it to be more robust to the uncertainty inherent in measuring risks to financial stability. This uncertainty relates to the complexity of the financial system, and its tendency to evolve over time.

The strategy of 'moving early' is also more robust to the time lags between risks becoming apparent and macroprudential policies being implemented — for instance, banks typically have twelve months to adjust to an FPC decision to increase the CCyB. Activating the buffer before risks become elevated provides the banking system with a positive buffer that can be cut in the event of a material adverse shock.

- A gradual approach is likely to have a smaller impact on the cost of equity and therefore real economic activity. The effect of the CCyB on economic conditions is highly uncertain and there is no strong empirical base for its assessment. It is possible that its effects could be highly non-linear.

Small increases that banks can, for example, meet through retained earnings should have a relatively small effect on the cost of capital to the real economy. And sharp and relatively large increases that could prompt deleveraging by banks could have disproportionately large effects. The FPC's gradual approach is consistent with its primary objective for the CCyB being to match resilience to risks, rather than to manage credit growth.

Stage 3: Risks in the financial system become elevated: stressed conditions become more likely

As risks in the financial system become elevated, borrowers are likely to be stretching their ability to repay loans, underwriting standards will generally be lax, and asset prices and risk appetite tend to be high. Often risks are assumed by investors to be low at the very point they are actually high. The distribution of risks to banks' capital at this stage of the financial cycle might have a 'fatter tail', such as that shown by the magenta line in **Figure 1**. Stressed outcomes are more likely. In such environments, the FPC would expect to increase the CCyB rate beyond the region of 1%. There is no upper bound on the rate that can be set by the FPC. But under EU law and internationally agreed standards, foreign authorities are mandated to reciprocate increases in the rate on UK exposures only up to 2.5% of risk-weighted UK exposures.

The FPC recognises that, while historical relationships contain significant information about the link between risk indicators and crises, it must take into account how those relationships evolve in response to structural changes in the financial system. For instance, active use of the CCyB will itself help to reduce the likely losses in high-risk environments because, in having the capacity to absorb shocks, the banking system will be less of an amplifier of economic shocks than in the past. Moreover, structural reforms introduced since the financial crisis, notably ring-fencing, but also limits on large counterparty exposures and reforms to derivatives markets, will reduce the impact on banks of even elevated risk levels. Historical levels and growth rates of credit and asset prices may also not be a good guide to sustainable future levels and growth rates.

The absence of reliable historical guides to the appropriate CCyB rate in higher-risk environments is another factor driving the FPC's gradual approach. It is also consistent with the FPC's intended approach to informing the setting of the CCyB using the annual stress test of major UK banks.

Stage 4: Risks in the financial system crystallise

Should a stress materialise, the FPC may cut the CCyB rate, including where appropriate to 0%. Reducing the CCyB rate pre-emptively before losses have crystallised may reduce banks' perceived need to hoard capital and restrict lending, with consequent negative impacts for the real economy. And if losses have crystallised, reducing the CCyB allows banks to recognise those losses without having to restrict lending to meet capital requirements. This will help to ensure that

capital accumulated when risks were building up can be used, thus enhancing the ability of the banking system to continue to support the economy in times of stress.

FPC decisions on the CCyB are made each quarter and a decision to reduce the CCyB takes immediate effect. The FPC is required to accompany such a decision with an indication of the period during which no increase to the CCyB is expected and its rationale for choosing that period.

4 Monitoring risks and resilience

The FPC's approach to assessing the threat level on UK exposures has three basic elements.

- First, the FPC assesses the likelihood and severity of potential future adverse 'shocks' to the UK economic outlook. This includes an analysis of domestic and global economic and financial imbalances whose correction could have material adverse consequences for UK economic activity.
- Second, the FPC monitors characteristics of households' and companies' balance sheets that would determine how macroeconomic and financial shocks could translate into defaults and losses.
- Third, the FPC assesses the banks' capacity to absorb losses on their UK exposures and their sensitivity to shocks.

This section begins by presenting some of the indicators the FPC regularly monitors in this regard.⁽¹⁾ The indicators provide a simple gauge of the propensity of borrowers' balance sheets to amplify shocks and of banks' capacity to absorb losses, the second and third elements in the risk assessment framework above. These indicators are only a subset of the wide range of economic and financial indicators, and the wealth of supervisory and market intelligence that support the FPC's assessment of the risk environment and its judgements on the CCyB. Moreover, judgement plays a material role in all FPC decisions and policy is not mechanically tied to any specific set of indicators. The section then describes the role of stress testing in informing the FPC's CCyB decisions. Stress testing is a particularly valuable tool for assessing how the sensitivity of banks' balance sheets to stress may be evolving.

4.1 Core indicators

The FPC's core indicators for the CCyB can be grouped into three categories. The first category includes measures of 'non-bank balance sheet stretch', capturing leverage in the broader economy and in the private non-financial (ie household and corporate) sector specifically. The second category includes measures of 'conditions and terms in markets', which capture borrowing terms on new lending and investor risk appetite more broadly. The third category includes measures of 'bank balance sheet stretch', which capture leverage and maturity/liquidity transformation in the banking system.

The indicators are presented in **Table B**, alongside historical reference values to provide context for interpreting their readings. The choice of these indicators reflects the large academic literature on financial crises, which has identified a number of early warning metrics that have been found to

signal build-ups in vulnerabilities prior to financial crises in the past.⁽²⁾

The **non-bank balance sheet stretch category** includes various measures of households' and companies' indebtedness, and hence their vulnerability to adverse shocks. Rapid expansions in credit (and hence indebtedness) have often preceded financial crises in the past. The category includes the annual growth in credit, the level of the credit-to-GDP ratio and the credit-to-GDP gap, defined as the difference between the ratio of credit-to-GDP and its long-term trend. The credit-to-GDP gap has particular prominence in Basel III standards, CRD, and the Treasury Regulations relating to the CCyB: each designated authority is required to calculate a 'buffer guide' based on this indicator to guide the exercise of its judgement in setting the CCyB. While the credit-to-GDP gap performs well in retrospective studies of past crises, its reliability as a macroprudential indicator is limited by its reliance on a simple statistical measure for calculating the long-term trend. It may also be a poor indicator of the need to reduce the CCyB in the face of deteriorating credit conditions as it typically continues to increase at the onset of a crisis. The non-bank balance sheet stretch category also includes various measures of the United Kingdom's external balance sheet position, including net foreign assets-to-GDP, gross external debt-to-GDP, and the current account balance.

The **conditions and terms in markets category** includes indicators such as the long-term real interest rate and the spreads charged by banks on new lending to households and companies. When long-term interest rates are historically low or when spreads appear unduly narrow, borrowers may be vulnerable to adverse shocks that cause terms to become less favourable, making it harder for them to continue servicing debts. This category also includes an indicator of spreads on global corporate bond markets and an indicator of the volatility investors expect in equity markets. These indicators can be broadly indicative of overall levels of risk appetite and uncertainty in the financial system. For instance, compressed spreads in global debt markets or low volatility may indicate that risk is being priced too cheaply and that investors are searching for yield.

Indicators in the **bank balance sheet stretch category** provide a simple gauge of the banking system's capacity to absorb losses on its UK exposures. They include metrics of the banking system's current loss-absorbing capacity such as risk-weighted capital ratios, un-weighted leverage ratios and

(1) The indicators are consistent with the ESRB's guidance on setting the CCyB, as is the FPC's strategy for communicating its decisions; see ESRB Recommendation 2014/1 'Recommendation on guidance for setting countercyclical capital buffer rates'.

(2) See, for instance, Kaminsky, Lizondo and Reinhart (1998), Borio and Lowe (2002) and (2009), Detken *et al* (2014), Drehmann, Borio and Tsatsaronis (2011), Giese *et al* (2014). On the selection of macroprudential instruments, see ESRB (2014).

Table B Core indicator set for the CCyB^(a)

Indicator	Average, 1987–2006 ^(b)	Average 2006 ^(c)	Minimum since 1987 ^(b)	Maximum since 1987 ^(b)	Previous value (oya)	Latest value (as of 18 March 2016)
Non-bank balance sheet stretch^(d)						
1 Credit to GDP ^(e)						
Ratio	124.0%	157.4%	93.8%	176.7%	141.6%	139.7% (2015 Q3)
Gap	5.7%	5.3%	-27.6%	21.4%	-26.8%	-24.4% (2015 Q3)
2 Private non-financial sector credit growth ^(f)						
	10.1%	9.8%	-3.1%	22.8%	1.3%	2.2% (2015 Q3)
3 Net foreign asset position to GDP ^(g)						
	-3.6%	-13.1%	-24.9%	19.4%	-24.9%	-18.8% (2015 Q3)
4 Gross external debt to GDP ^(h)						
	193.4%	320.8%	122.8%	406.6%	323.7%	298.2% (2015 Q3)
of which bank debt to GDP	127.9%	201.9%	84.3%	275.4%	174.0%	163.5% (2015 Q3)
5 Current account balance to GDP ⁽ⁱ⁾						
	-1.8%	-2.3%	-6.2%	0.4%	-5.5%	-3.7% (2015 Q3)
Conditions and terms in markets						
6 Long-term real interest rate ^(j)						
	3.10%	1.27%	-0.88%	5.29%	-0.70%	-0.71% (18 Mar. 2016)
7 VIX ^(k)						
	19.1	12.8	10.6	65.5	14.8	18.1 (18 Mar. 2016)
8 Global corporate bond spreads ^(l)						
	115 bps	87 bps	52 bps	486 bps	107 bps	135 bps (30 June 2015)
9 Spreads on new UK lending						
Household ^(m)	480 bps	352 bps	285 bps	840 bps	676 bps	652 bps (Jan. 2016)
Corporate ⁽ⁿ⁾	106 bps	100 bps	84 bps	386 bps	232 bps	230 bps (June 2015)
Bank balance sheet stretch^(o)						
10 Capital ratio						
Basel II core Tier 1 ^(p)	6.6%	6.3%	6.2%	12.3%	n.a.	n.a.
Basel III common equity Tier 1 ^(q)	n.a.	n.a.	n.a.	n.a.	11.3%	12.6% (2015 Q4)
11 Leverage ratio ^(r)						
Simple	4.7%	4.1%	2.9%	6.7%	5.9%	6.7% (2015 H2)
Basel III (2014 proposal)	n.a.	n.a.	n.a.	n.a.	4.4%	4.8% (2015 H2)
12 Average risk weights ^(s)						
	53.6%	46.5%	34.6%	65.4%	37.4%	35.2% (2015 H2)
13 Return on assets before tax ^(t)						
	1.0%	1.1%	-0.2%	1.5%	0.5%	0.4% (2015 H2)
14 Loan to deposit ratio ^(u)						
	114.5%	132.4%	95.9%	133.3%	95.9%	96.7% (2015 H2)
15 Short-term wholesale funding ratio ^(v)						
	n.a.	24.3%	10.4%	26.5%	12.5%	10.4% (end-2015)
of which excluding repo funding ^(v)	n.a.	15.6%	5.8%	16.1%	6.3%	6.6% (end-2015)
16 Overseas exposures indicator: countries to which UK banks have 'large' and 'rapidly growing' total exposures ^{(w)(x)}						
	In 2006 Q4: AU, BR, CA, CH, CN, DE, ES, FR, IE, IN, JP, KR, KY, LU, NL, US, ZA				In 2014 Q4: JP, KY, SG	
					In 2015 Q4: KY	
17 CDS premia ^(y)						
	12 bps	8 bps	6 bps	298 bps	63 bps	104 bps (Mar. 2016)
18 Bank equity measures						
Price to book ratio ^(z)	2.14	1.97	0.52	2.86	0.90	0.67 (Mar. 2016)
Market-based leverage ratio ^(aa)	9.7%	7.8%	1.9%	15.7%	5.8%	4.6% (Mar. 2016)

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

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

(c) 2006 was the last year before the start of the global financial crisis.

(d) The current vintage of ONS data is not available prior to 1997. Data prior to this and beginning in 1987 have been assumed to remain unchanged since *The Blue Book 2013*.

(e) Credit is defined as debt claims on the UK private non-financial sector. This includes all liabilities of the household and not-for-profit sector except for the unfunded pension liabilities and financial derivatives of the not-for-profit sector, and private non-financial corporations' (PNFCs) loans and debt securities excluding derivatives, direct investment loans and loans secured on dwellings. The credit to GDP gap is calculated as the percentage point difference between the credit to GDP ratio and its long-term trend, where the trend is based on a one-sided Hodrick-Prescott filter with a smoothing parameter of 400,000. See *Countercyclical Capital Buffer Guide* at www.bankofengland.co.uk/financialstability/Pages/fpc/coreindicators.aspx for further explanation of how this series is calculated. Sources: BBA, ONS, Revell, J and Roe, A (1971), 'National balance sheets and national accounting — a progress report', *Economic Trends*, No. 211 and Bank calculations.

(f) Twelve-month growth rate of nominal credit. Credit is defined as above. Sources: ONS and Bank calculations.

(g) As per cent of annual GDP (four-quarter moving sum). Sources: ONS and Bank calculations.

(h) Ratios computed using a four-quarter moving sum of GDP. MFLs cover banks and building societies resident in the United Kingdom. Sources: ONS and Bank calculations.

(i) As per cent of quarterly GDP. Sources: ONS and Bank calculations.

(j) Five-year real interest rates five years forward, derived from the Bank's index-linked government liabilities curve. Sources: Bloomberg and Bank calculations.

(k) The VIX is a measure of market expectations of 30-day volatility as conveyed by S&P 500 stock index options prices. Series starts in 1990. One-month moving average. Sources: Bloomberg and Bank calculations.

(l) 'Global corporate debt spreads' refers to the global broad market industrial spread. This tracks the performance of non-financial, investment-grade corporate debt publicly issued in the major domestic and eurobond markets. Index constituents are capitalisation-weighted based on their current amount outstanding. Spreads are option adjusted, (ie they show the number of basis points the matched-maturity government spot curve is shifted in order to match a bond's present value of discounted cash flows). One-month moving average. Series starts in 1997. Sources: BofA Merrill Lynch Global Research and Bank calculations.

(m) The household lending spread is a weighted average of mortgage and unsecured lending spreads, with weights based on relative volumes of new lending. The mortgage spread is a weighted average of quoted mortgage rates over risk-free rates, using 90% LTV two-year fixed-rate mortgages and 75% LTV tracker, two and five-year fixed-rate mortgages. Spreads are taken relative to gilt yields of matching maturity for fixed-rate products until August 2009, after which spreads are taken relative to OIS of matching maturity. Spreads are taken relative to Bank Rate for the tracker product. The unsecured component is a weighted average of spreads on credit cards, overdrafts and personal loans. Spreads are taken relative to Bank Rate. Series starts in 1997. Sources: Bank of England, CML and Bank calculations.

(n) The UK corporate lending spread is a weighted average of: SME lending rates over Bank Rate; CRE lending rates over Bank Rate; and, as a proxy for the rate at which banks lend to large, non-CRE corporates, UK investment-grade company bond spreads over maturity-matched government bond yields (adjusted for any embedded option features such as convertibility into equity). Weights based on relative volumes of new lending. Series starts in October 2002. Sources: Bank of England, BofA Merrill Lynch Global Research, BBA, Bloomberg, De Montfort University, Department for Business, Innovation and Skills and Bank calculations.

(o) Unless otherwise stated, indicators are based on the major UK bank peer group defined as: Abbey National (until 2003); Alliance & Leicester (until 2007); Bank of Ireland (from 2005); Bank of Scotland (until 2000); Barclays; Bradford & Bingley (from 2001 until 2007); Britannia (from 2005 until 2008); Co-operative Banking Group (from 2005); Halifax (until 2000); HBOS (from 2001 until 2008); HSBC (from 1992); Lloyds TSB/Lloyds Banking Group; Midland (until 1991); National Australia Bank (from 2005); National Westminster (until 1999); Nationwide; Northern Rock (until 2011); Royal Bank of Scotland; Santander (from 2004); TSB (until 1994); Virgin Money (from 2012) and Woolwich (from 1990 until 1997). Accounting changes, eg the introduction of IFRS in 2005 result in discontinuities in some series. Restated figures are used where available.

(p) Major UK banks' aggregate core Tier 1 capital as a percentage of their aggregate risk-weighted assets. The core Tier 1 capital ratio series starts in 2000 and uses the major UK banks peer group as at 2014 and their constituent predecessors. Data exclude Northern Rock/Virgin Money from 2008, and Bank of Ireland and National Australia from 2011. From 2008, core Tier 1 ratios are as published by banks, excluding hybrid capital instruments and making deductions from capital based on PRA definitions. Prior to 2008, that measure was not typically disclosed and Bank calculations approximating it as previously published in the *Financial Stability Report* are used. The series are annual until end-2012, half-yearly until end-2013 and quarterly afterwards. Sources: PRA regulatory returns, published accounts and Bank calculations.

(q) The Basel II series was discontinued with CRD IV implementation on 1 January 2014. The 'Basel III common equity Tier 1 capital ratio' is calculated as aggregate peer group common equity Tier 1 levels over aggregate risk-weighted assets, according to the CRD IV definition as implemented in the United Kingdom. The Basel III peer group includes Barclays, Co-operative Banking Group, HSBC, Lloyds Banking Group, Nationwide, RBS and Santander UK. Sources: PRA regulatory returns and Bank calculations.

- (r) A simple leverage ratio calculated as aggregate peer group equity (shareholders' claims) over aggregate peer group assets (note a discontinuity due to the introduction from 2005 of IFRS accounting standards, which tends to reduce reported leverage ratios thereafter). The Basel III (2010) series corresponds to aggregate peer group Tier 1 capital (including grandfathered instruments) over aggregate Basel 2010 leverage ratio exposure. The Basel III (2014) series corresponds to aggregate peer group CRD IV end-point Tier 1 capital over aggregate Basel 2014 exposure measure, and the previous value is for December 2014. Note that the simple series excludes Northern Rock/Virgin Money from 2008. The Basel III series consists of Barclays, Co-operative Banking Group, HSBC, Lloyds Banking Group, Nationwide, RBS and Santander UK but does not include Co-operative and Nationwide for 2015 H2. The series are annual until end-2012 and half-yearly afterwards. Sources: PRA regulatory returns, published accounts and Bank calculations.
- (s) Aggregate end-year peer group risk-weighted assets divided by aggregate end-year peer group published balance sheet assets. Data for 2014 H1 onwards are on a CRD IV basis. Sample excludes Northern Rock for all years and excludes National Australia Bank, Co-operative Bank and Nationwide in the 2015 H2 data point. Series begins in 1992 and is annual until end-2012 and half-yearly afterwards. Sources: Published accounts and Bank calculations.
- (t) Calculated as major UK banks' annual profit before tax as a proportion of total assets, averaged over the current and previous year. When banks in the sample have merged, aggregate profits for the year are approximated by those of the acquiring group. Series is annual until 2015 when it becomes semi-annual. 2015 H2 data point does not include Co-operative, National Australia Bank and Nationwide. Latest value shows return on assets between 2015 H1 and 2015 H2. Previous value is for 2014 as a whole. Sources: Published accounts and Bank calculations.
- (u) Major UK banks' loans and advances to customers as a percentage of customer deposits, where customer refers to all non-bank borrowers and depositors. Repurchase agreements are excluded from loans and deposits where disclosed. One weakness of the current measure is that it is not possible to distinguish between retail deposits from households and deposits placed by non-bank financial corporations on a consolidated basis. Additional data collections would be required to improve the data in this area. The series begins in 2000 and is annual until end-2012 and half-yearly afterwards. Sources: Published accounts and Bank calculations.
- (v) Share of total funding (including capital) accounted for by wholesale funding with residual maturity of under three months. Wholesale funding comprises deposits by banks, debt securities, subordinated liabilities and repo. Funding is proxied by total liabilities excluding derivatives and liabilities to customers under investment contracts. Where underlying data are not published estimates have been used. Repo includes repurchase agreements and securities lending. The series starts in 2005. 2015 H2 data point does not include Co-operative bank, National Australia Bank and Nationwide. Sources: Published accounts and Bank calculations.
- (w) This indicator highlights the countries where UK-owned monetary financial institutions' (MFIs) overall exposures are greater than 10% of UK-owned MFIs' tangible equity on an ultimate risk basis and have grown by more than 1.5 times nominal GDP growth in that country. Foreign exposures as defined in BIS consolidated banking statistics. Uses latest data available, with the exception of tangible equity figures for 2006-07, which are estimated using published accounts. Sources: Bank of England, ECB, IMF *World Economic Outlook (WEO)*, Thomson Reuters Datastream, published accounts and Bank calculations.
- (x) Abbreviations used are: Australia (AU), Brazil (BR), Canada (CA), Switzerland (CH), People's Republic of China (CN), Germany (DE), Spain (ES), France (FR), Ireland (IE), Italy (IT), Hong Kong (HK), India (IN), Japan (JP), Republic of Korea (KR), Cayman Islands (KY), Luxembourg (LU), Malaysia (MY), Netherlands (NL), Singapore (SG), Taiwan (TW), United Arab Emirates (AE), United States (US) and South Africa (ZA).
- (y) Average of major UK banks' five-year senior CDS premia, weighted by total assets until 2014 and by half-year total assets in 2015. Series starts in 2003. Includes Nationwide from July 2003. Sources: Markit Group Limited, published accounts and Bank calculations.
- (z) Relates the share price with the book, or accounting, value of shareholders' equity per share. Simple averages of the ratios in the peer group, weighted by end-year total assets. The sample comprises the major UK banks excluding Britannia, Co-operative Banking Group and Nationwide. Northern Rock/Virgin Money is excluded from 2008. Series starts in 2000. Sources: Thomson Reuters Datastream, published accounts and Bank calculations.
- (aa) Total peer group market capitalisation divided by total peer group assets (note a discontinuity due to introduction of IFRS accounting standards in 2005, which tends to reduce leverage ratios thereafter). The sample comprises the major UK banks excluding Britannia, Co-operative Banking Group and Nationwide. Northern Rock/Virgin Money is excluded from 2008. Series starts in 2000. Sources: Thomson Reuters Datastream, published accounts and Bank calculations.

market-based metrics such as credit default swap premia on UK banks' senior term debt. They also include metrics of the banking system's future loss-absorbing capacity, such as its price-to-book ratio, its market-based leverage ratio, and its average return on assets. The category also includes two measures of banking system maturity/liquidity transformation, and hence its susceptibility to a system-wide bank run: the aggregate loan-to-deposit ratio; and banks' reliance on short-term wholesale funding. Finally, this category includes an overseas exposure indicator, which highlights countries to which UK banks have large and rapidly-growing exposures.

The core indicators are published alongside the wider information set informing the FPC's decisions in its *Financial Stability Report* every six months and on the Bank's website every quarter.⁽¹⁾ The FPC will update this list of indicators over time as it learns from experience, as the financial system evolves, as data availability and quality improve, and as new research is undertaken.

4.2 The role of stress testing in setting the countercyclical capital buffer

Each year, the Bank conducts concurrent stress tests of the UK banking system, covering the major UK banks. From this year, the severity of the annual stress test scenario will be linked systematically to policymakers' assessments of risk levels across markets and regions.⁽²⁾ The stress being tested against will generally be severe and broad, in order to assess the resilience of major UK banks to 'tail-risk' events. In

addition, where risks are judged to be heightened, the related aspects of the test will be more severe and *vice versa*.

While there is no mechanical link between the outputs of the stress test and the CCyB — the CCyB will be set at the FPC's discretion with reference to its strategy, drawing on a range of indicators and analysis — the tests will inform the FPC in setting this tool. In particular, stress tests provide information on whether the system, and banks within it, has buffers of equity that are sufficient to absorb the stress articulated. If the test shows that the stress would impact on the capital ratios of the banking system by more than can be absorbed by the system-wide conservation buffer and by the prevailing CCyB, the FPC will consider increasing the CCyB rate. If existing buffers are more than sufficient for the system as a whole given the level of stress, the FPC will consider reducing the CCyB rate. In this way, stress tests will serve as a check on the FPC's judgement and discretion, and will help it to detect changes in the structure and composition of bank balance sheets that affect their resilience to unexpected developments.

The results of the annual concurrent stress tests will also help the FPC and PRA Board to co-ordinate the setting of the CCyB with the PRA buffer. To facilitate that co-ordination and avoid double-counting, the FPC will move first. It will consider the case for adjusting the CCyB. The PRA will then consider the case for amending individual banks' PRA buffers, taking into account the FPC's action.

(1) See www.bankofengland.co.uk/financialstability/Pages/fpc/coreindicators.aspx.

(2) See 'The Bank of England's approach to stress testing the UK banking system' for details of this countercyclical approach.

5 The impact of raising the countercyclical capital buffer

An increase in the CCyB will affect the financial system in two ways:

- First, by increasing the resilience of the banking system by providing banks with an additional cushion of capital with which to absorb potential losses, helping to ensure the stable provision of financial intermediation services. This has a positive effect on the expected level of GDP in the medium term;
- Second, by changing the funding mix away from debt and deposits and towards more expensive capital, it is likely to tighten credit conditions. All else equal, this has a negative effect on the level of GDP in the near term.

5.1 Impact of the countercyclical capital buffer on banks' resilience

The impact on each bank's overall equity requirement will reflect the importance of UK exposures in its risk-weighted assets. While there will be a wide dispersion of effects on individual banks, UK assets on average accounted for only around 35% of major UK banks' credit exposures in 2015. So a 1% CCyB rate on UK exposures, say, equates to an increase of about 0.35 percentage points in the aggregate requirement for capital relative to risk-weighted assets. Given current risk-weighted assets, this is equivalent to around £10 billion of additional loss-absorbing capital.

There is significant evidence that well-capitalised banking systems are likely to be more resilient to adverse shocks. This manifests itself in several ways.

First, better capitalised banks are more likely to survive in a crisis. For example, in their study of US and European banks during the crisis, Vazquez and Federico (2015) find that banks with stronger capital and structural liquidity positions in the pre-crisis period were less likely to fail in its aftermath. Berger and Bouwman (2013) report a similar finding using a longer-run data set of US banks. Relatedly, Demircuc-Kunt, Detragiache and Merrouche (2010) and Beltratti and Stulz (2012) find that poorly capitalised banks had lower stock returns during the financial crisis.

Second, better-capitalised banks are less likely to cut lending during periods of economic stress. For example, Carlson, Shan and Warusawitharana (2013) find that US banks with higher pre-crisis capital ratios had stronger loan growth in its aftermath, with the effect particularly pronounced at lower capital ratios. Similarly, Cornett *et al* (2011) and Kapan and Minoiu (2013) report that banks that relied more heavily on stable sources of funding such as core deposits and equity

capital continued to lend relative to other banks during the crisis. And Jimenez *et al* (2012) find that, in periods of economic weakness, loan applications were less likely to be rejected by Spanish banks that were well-capitalised.

Third, well-capitalised banks are less likely to suffer funding problems that could result in forced sales of assets with damaging knock-on consequences for the financial system. For instance, Boyson, Helwege and Jindra (2014) find that banks that entered the recent financial crisis with lower capital were less able to issue debt during the crisis.

5.2 Impact of the countercyclical capital buffer on credit conditions

In addition to its direct impact on the resilience of the banking system, increases in the CCyB will also have knock-on effects on credit conditions and hence the central outlook for the economy. This effect is expected to be small, particularly if the policy steps taken by the FPC are gradual.

When the CCyB is increased, banks that do not have sufficient capital resources to meet the new regulatory capital requirements must either:

- Raise capital, either by retaining a greater proportion of their earnings or by issuing new shares; or
- Reduce risk-weighted assets, either by reducing lending or other exposures, or by rebalancing portfolios away from assets that carry high regulatory risk weights.

Banks that have capital resources in excess of requirements may choose to retain a voluntary buffer by taking similar actions.

The effect on credit conditions is likely to vary depending on which adjustment channel is taken. Overall, the effect is likely to be small if banks are able to adjust by retaining a greater proportion of their earnings. This is likely to be the case if the policy steps taken by the FPC are small and gradual and occur in stable economic environments.

To see why the CCyB is likely to have a small impact on credit conditions, consider the following simple example. Suppose, conservatively, that the cost of equity for banks is 10 percentage points higher than their cost of debt, and also that risk-weighted assets are around half of total exposures. Then a 1 percentage point increase in the UK CCyB rate will raise the cost of funding UK exposures by just 5 basis points, all else equal (ie $1\% \times 10$ percentage points $\times 0.5 = 0.05$ percentage points). Banks are likely to pass on some of these higher funding costs in the form of higher lending rates or lower deposit rates, but overall this 'price' impact is likely to be small.

There are a number of ways of extending this simple example to provide an indicative estimate of the likely effects of the CCyB on credit conditions. First, the calculation ignores the tax advantages of debt finance. Assuming a 20% tax rate on corporate profits, this increases the impact of a 1 percentage point increase in the CCyB on banks' funding costs by 2.5 basis points. Second, the calculation ignores empirical evidence that banks' cost of equity funding tends to be negatively correlated with their capital ratios.⁽¹⁾ For instance, Miles *et al* (2013) and Brooke *et al* (2015) both provide evidence that such a relationship holds for UK banks. Incorporating this channel by using the estimates in these studies would halve the overall effect. Third, the calculation ignores the liquidity advantages provided by banks' short-term debt, which reduces their cost of debt finance. Hanson *et al* (2011) find that incorporating this effect increases the impact of a 1 percentage point increase in the capital requirements on banks' funding costs by 1 basis point.

There are a range of existing research findings on this topic, as summarised in **Table C**.

Table C The impact of a 1 percentage point increase in capital requirements on lending spreads

Study	Lending spread (basis points)
Macroeconomic Assessment Group (2010)	5–25
Slovik and Courmede (2011)	16
King (2010)	15
Cosimano and Hakura (2011)	9–13
Brooke <i>et al</i> (2015)	5–10
Elliot (2009)	5–10
Baker and Wurgler (2015)	6–9
Hanson, Kashyap and Stein (2011)	2.5–4.5

Such estimates of the impact of the CCyB should be interpreted with caution, however, because there is limited empirical evidence of the impact of varying system-wide capital buffers over the financial cycle. Moreover, it is well known that past relationships are often a poor guide to the future, particularly when there are large structural changes in the economy. The creation of the FPC might be one such

structural change. To give one example of how this might affect the CCyB impact multipliers described above, if financial markets come to anticipate that an increase in the CCyB will be reinforced by further increases in the future if excessive risk-taking continues, then an FPC action to increase the CCyB could lead banks collectively to reduce their risky lending, with a larger overall impact on credit conditions than the estimates in **Table C** would suggest.

The impact of the CCyB on credit conditions may also be highly non-linear if applied quickly, in large steps, or in conditions where banks' capacity for raising capital is low. For instance, Aiyar, Calomiris and Wieladek (2014) examine firm-specific supervisory changes in capital requirements, and find that a 1 percentage point increase in capital requirements leads to a 6 to 9 percentage point reduction in corporate loan growth. Bridges *et al* (2014) find an impact of similar magnitude in banks' commercial property loans, but a significantly smaller response in household lending. The effect on lending is also likely to be state-contingent. Bahaj *et al* (2016) present evidence that an increase in individual banks' capital requirements has little effect on lending during periods of strong lending growth, but that the effect can be large when lending is already weak.

One possible explanation for the magnitude of these results is that equity funding is especially costly for individual banks experiencing capital shortfalls, perhaps because investors interpret an equity issuance as a signal that the firm's stock is overvalued. In these circumstances, individual banks facing capital shortfalls may choose to adjust by restricting lending growth. The CCyB is less likely to imply such high costs of equity because it applies to the entire UK banking system, and related equity issuance will not give rise to the same interpretation. The FPC is alert to these potential costs, which reinforce its intended strategy of moving the CCyB in gradual increments.

Improving understanding of the quantitative effects of the CCyB will be an important future topic for research by academics and staff in policy institutions, including the Bank of England.

(1) The theoretical underpinnings of this effect were provided in Modigliani and Miller (1958). These authors showed that, under certain idealised conditions, the overall funding costs for a firm would be independent of its capital structure.

6 Communicating decisions on the countercyclical capital buffer

The FPC is required to set the CCyB each quarter. The FPC intends to communicate its decisions in a transparent and systematic manner. All CCyB decisions are published in the quarterly Record that follows its policy meetings and communicated to the ESRB. The FPC provides a more

in-depth explanation of its decisions in its six-monthly *Financial Stability Report*. In addition, the prevailing CCyB rate chosen by the FPC, as well as the core indicators that support its decisions, are published on the Bank of England's website each quarter. Banks are also required under EU law to disclose their institution-specific CCyB rates (as defined in Section 2.3 above), as well as information regarding the geographical location of their credit exposures.⁽¹⁾

(1) See the EBA Regulatory Technical Standards, <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015R1555&from=EN>.

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