

Statement of Policy

The PRA's methodologies for setting Pillar 2 capital

July 2015



BANK OF ENGLAND
PRUDENTIAL REGULATION
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1 Introduction

1.1 This statement of policy sets out the methodologies that the Prudential Regulation Authority (PRA) uses to inform the setting of Pillar 2 capital for firms to which CRD IV⁽¹⁾ applies.

1.2 Section I: *Pillar 2A methodologies* sets out the methodologies the PRA will use to inform the setting of a firm's Pillar 2A individual capital guidance for credit risk, market risk, operational risk, counterparty credit risk, credit concentration risk, interest rate risk in the non-trading book (hereafter referred to as interest rate risk in the banking book (IRRBB)) and pension obligation risk.

1.3 Section II: *Pillar 2B* provides information on the purpose of the PRA buffer, how it is determined and how it relates to the CRD IV buffers. Section II also provides details on the PRA's approach to tackling weak governance and risk management under Pillar 2B.

1.4 Firms are required by the Reporting Pillar 2 part of the PRA Rulebook, or may be asked, to submit data to inform the PRA's approach to setting Pillar 2A individual capital guidance.

(1) The Capital Requirements Regulation (575/2013) (CRR) and Capital Requirements Directive (2013/36/EU) (CRD), jointly 'CRD IV'.

Section I: Pillar 2A methodologies

2 Credit risk

2.1 This chapter sets out the methodology the PRA uses to inform the setting of a firm's Pillar 2A individual capital guidance for credit risk.

Definition and scope of application

2.2 Credit risk is the risk of losses arising from a borrower or counterparty failing to meet its obligations as they fall due.

2.3 A firm's capital requirements for credit risk are determined in accordance with Pillar 1 of the Capital Requirements Regulation (CRR). However, the PRA believes that there are asset classes for which the standardised approach (SA) underestimates the risk (eg zero risk-weighted sovereigns). The PRA therefore assesses credit risk as part of its Pillar 2 review of firms' capital adequacy.

2.4 The methodology detailed below is applied to all firms using the SA. It will also be applied to those portfolios capitalised using the SA by firms employing internal ratings-based (IRB) models (the methodology is therefore applied to exposures subject to a partial use exemption). Application of the methodology may be expected to be significant where a firm has higher-risk exposures on the SA and lower-risk exposures on the IRB approach, or where the SA treatment is especially favourable (eg sovereigns).

2.5 Where the underestimation of Pillar 1 capital is due to deficiencies in IRB models, the PRA addresses the capital shortfall by requiring the firm to remediate the shortcomings of the Pillar 1 models rather than setting Pillar 2A individual capital guidance.

Methodology for assessing Pillar 2A capital for credit risk

2.6 The methodology used to inform the setting of firms' Pillar 2A individual capital guidance for credit risk is based on a comparison of firms' SA risk weights at a portfolio level to an IRB risk-weight benchmark (see **Table A**). Benchmarks have been calculated for mortgages (distinguished by loan to value (LTV) bands into fourteen categories), credit cards (both domestic and international), corporates, sovereigns and institutions (the latter two mapped to credit quality steps).

2.7 The PRA's use of this methodology does not imply that estimated IRB risk weights are a better reflection of underlying

risk than the SA. For that reason the methodology includes scope for the exercise of supervisory judgement where there are acknowledged problems with IRB models (eg inadequate historical data).

2.8 The PRA has not calculated benchmarks for the portfolios:

- for which, whilst material for SA firms, the PRA does not have sufficient data to produce a reliable benchmark;
- that are immaterial for SA firms; and
- where the difference between the IRB and SA risk weight is small.

2.9 The PRA is going to collect data, as they become available, on a wider range of credit risk portfolios than in **Table A**. When the PRA has sufficient data, the PRA may develop more formal benchmarks for those portfolios.

2.10 The PRA uses data collected via regulatory returns, stress testing, hypothetical portfolio exercises, data on retail exposures under the IRB approach as required by Reporting Pillar 2, 2.5 and firm-specific data requests. Each portfolio average risk weight is weighted by exposure amount. While average risk weighting gives a greater degree of importance to larger portfolios, this also reflects the fact that the associated models have been subject to a greater degree of scrutiny by the PRA.

2.11 The method used to inform judgement as to whether a firm should hold additional capital for credit risk under Pillar 2A involves a calculation on an aggregate basis. If the IRB benchmark implies that the SA for calculating the Pillar 1 capital charge overestimates the overall level of capital required for a given portfolio when compared to IRB data, the calculated excess can be offset against shortfalls in those portfolios for which the benchmark implies that the SA Pillar 1 capital charge is lower than the IRB capital charge.

2.12 Supervisory judgement is then used to determine the credit risk add-on, taking into account considerations such as firms' own assessments, the IRB benchmark range, the PRA's confidence in the benchmarks and supervisory knowledge of the credit risk portfolios acquired via continuous assessment.

2.13 Initial analysis of the data indicates that relatively few firms would be subject to an add-on using this methodology.

Table A Credit risk IRB benchmark

	SA RW ^(a)	Exposure weighted average RW	Lower range RW	Upper range RW
Mortgages				
Prime				
0% <= LTV <50%	35.0%	3.3%	2.8%	3.8%
50% <= LTV <60%	35.0%	6.0%	5.1%	7.0%
60% <= LTV <70%	35.0%	8.9%	7.5%	10.2%
70% <= LTV <80%	35.0%	12.7%	10.8%	14.6%
80% <= LTV < 90%	36.0%	18.4%	15.6%	21.1%
90% < = LTV < 100%	43.0%	31.4%	29.9%	36.1%
>=100%		53.9%	45.8%	62.0%
Buy to let				
0% <= LTV <50%	35.0%	4.1%	3.5%	4.7%
50% <= LTV <60%	35.0%	9.7%	8.2%	11.1%
60% <= LTV <70%	35.0%	12.5%	10.6%	14.4%
70% <= LTV <80%	35.0%	17.5%	14.9%	20.2%
80% <= LTV < 90%	36.0%	32.0%	27.2%	36.8%
90% < = LTV < 100%	43.0%	43.1%	36.7%	49.6%
Credit cards				
Revolving retail expo				
UK credit cards	75.0%	107.0%	91%	123%
International credit cards	75.0%	168.0%	143%	193%
Corporates				
Large corporates		54.1%	46%	62%
Mid corporates		79%	67%	91%
SME	100.0%	77.7%	66.1%	89.4%
Sovereign				
High grade (CQS1)	0.0%	7.4%	6%	8%
Upper medium grade (CQS2)	20.0%	15%	13%	18%
Lower medium grade (CQS3)	50.0%	35%	30%	40%
Non-investment grade speculative (CQS4)	100.0%	77%	66%	89%
Highly speculative (CQS5)	100.0%	134%	114%	154%
Substantial risks (CQS6)	150.0%	220%	187%	253%
Commercial real estate				
Commercial real estate	100%	125%	100%	150%
Institutions				
High grade (CQS1)	20.0%	11.5%	10%	13%
Upper medium grade (CQS2)	50.0%	12%	10%	13%
Lower medium grade (CQS3)	50.0%	28%	24%	32%
Non-investment grade speculative (CQS4)	100.0%	42%	36%	48%
Highly speculative (CQS5)	100.0%	90%	76%	103%
Substantial risks (CQS6)	150.0%	278%	236%	320%

(a) These risk weights are indicative.

Therefore, the PRA applies it on an exceptions only basis. Firms that are likely to be subject to it include, but are not limited to, those with significant exposures to sovereigns, high LTV mortgages, credit cards and commercial real estate.

Reporting

2.14 SA firm data may be requested by supervisors on a case-by-case basis. Supervisors need to assess in advance of the Supervisory Review and Evaluation Process (SREP) whether a firm is likely to need an additional Pillar 2A credit risk add-on. If this is the case, supervisors may ask the firm to complete the data items for wholesale and retail credit exposures under the SA (FSA076 and FSA077). Firms that have significant exposures to certain types of asset (eg credit cards, high LTV non-prime mortgages, zero risk-weighted sovereign exposures and commercial real estate) are more likely to be asked to submit these data than firms that do not.

2.15 The SA data cover a larger array of data than set out in **Table A**, in order to inform the assessment of the credit portfolios reported under the SA.

2.16 To calibrate the Pillar 2 credit risk methodology the PRA collects data. Firms with permission to use the IRB approach for retail exposures are required by Reporting Pillar 2, 2.5 to submit data on retail exposures. Firms that are in scope are required to submit the data with their Internal Capital Adequacy Assessment Process (ICAAP) submissions. Significant firms with permission to use the IRB approach must submit the data annually in any event. '*Significant firm*' means a deposit-taker or designated investment firm whose size, interconnectedness, complexity and business type give it the capacity to cause very significant disruption to the UK financial system (and through that to economic activity more widely) by failing or by carrying on its business in an unsafe manner.

3 Market risk

3.1 This chapter sets out the methodology the PRA uses to inform the setting of a firm's Pillar 2A individual capital guidance for market risk.

Definition and scope of application

3.2 Market risk is the risk of losses resulting from adverse changes in the value of positions arising from movements in market prices across commodity, credit, equity, FX and interest rates risk factors.

3.3 The Pillar 2A approach to market risk applies to all firms and covers all positions in the trading and available-for-sale books, including securitisation instruments/positions and covered bonds booked in the trading and available-for-sale books.

3.4 The PRA's review of a firm's risks and risk management standards applies equally to positions covered by approved models or standardised approaches and, as such, is relevant to firms both with and without advanced model approval. In practice, however, the PRA expects the Pillar 2A regime for market risk to affect mainly firms with material trading books, which are typically those firms with advanced market risk model permission.

3.5 Where the underestimation of Pillar 1 capital is due to deficiencies of advanced models, the PRA addresses the capital shortfall by requiring the firm to remediate the shortcomings of the Pillar 1 model rather than setting Pillar 2A individual capital guidance.

Methodology for assessing Pillar 2A capital for market risk

3.6 CRR Part Three, Title IV sets out the methodologies that firms must apply when calculating capital requirements for market risk under Pillar 1. The PRA may require firms to hold additional capital under Pillar 2A to cover risks likely to be underestimated or not covered under Pillar 1. The majority of such risks relate to illiquid, one-way and concentrated positions (referred to collectively as illiquid risks), which may not be capitalised appropriately.

3.7 To inform the setting of Pillar 2A capital, the PRA relies on a firm's own methodologies for assessing illiquid and concentrated positions. This is because market risk is specific

to firms' individual positions. The PRA's focus is on the quality of firms' methodologies, including the magnitude of market shocks applied to assess illiquidity risks. The PRA also assesses the firm's abilities to manage the risk.

3.8 When assessing firms' own calculations, the PRA will:

- review the completeness of illiquidity risk identification by the firm;
- assess whether the stresses designed and calibrated by the firm are appropriate to measure the risk given a 1-in-1,000 year confidence level over one year (and, if not, request the firm to apply alternative stresses);
- assess the suitability of any existing capital mitigants or reserves which are proposed to offset the calculated stressed losses and discount these where not relevant; and
- set a Pillar 2A capital add-on such that the sum of the Pillar 1 (and Pillar 1 adjustments for model risks) and the Pillar 2A individual capital guidance is sufficient to cover losses at a 1-in-1,000 year confidence level.

3.9 In addition to the Pillar 2A add-ons for illiquid, concentrated and one-way positions, the PRA may also request a firm to hold additional capital under Pillar 2A where the PRA identifies deficiencies in a firm's market risk systems and controls.

Reporting

3.10 The PRA already collects information on illiquid, concentrated and one-way positions from firms participating in the Firm Data Submission Framework (FDSF) programme. This information is used for assessing the adequacy of a firm's capital under Pillar 2A.

3.11 Firms with significant illiquidity risk in their trading books are required by Reporting Pillar 2, 2.4 to submit data on market risk, unless those data have already been submitted as part of the FDSF programme. Firms that are in scope are required to submit the data with their ICAAP submissions. Significant firms must submit the data annually in any event.

4 Operational risk

4.1 This chapter sets out the methodology the PRA uses to inform the setting of a firm's Pillar 2A individual capital guidance for operational risk.

4.2 The approach applies to all PRA Category 1 firms but may be extended to other firms depending on the level of sophistication of the firm's internal operational risk management.

4.3 In determining whether to use the methodology described below to non-Category 1 firms, the PRA takes into account the size and complexity of a firm, as well as the sophistication of a firm's internal operational risk management. Where a firm is re-assessed as Category 1 or otherwise brought into scope, supervisors will agree a timetable for assessment that is fair, proportionate to the firm's resources and considers the sophistication of the firm's internal operational risk management. For firms not in scope, the PRA assesses operational risk on the basis of data provided by the firm, the firm's own assessment of operational risk and supervisory judgement.

Definition and scope of application

4.4 Operational risk is the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events, and includes legal risk.

4.5 Pillar 1 standardised approaches for operational risk use gross income as a measure of risk. This is not risk sensitive. During the recent economic downturn, incomes dropped but operational risk exposures, in many cases, remained the same or increased. The PRA therefore assesses operational risk as part of its Pillar 2 review of firms' capital adequacy.

4.6 Conduct risk has become a recurrent and a material source of losses for many firms but the existing approaches (the Basic Indicator Approach (BIA), the Standardised Approach (TSA) and the Alternative Standardised Approach (ASA)) for calculating Pillar 1 operational risk capital do not reflect the nature and scale of recent conduct risk losses.

4.7 For the purpose of the PRA assessment conduct risk losses are defined as losses in the Basel loss event category 'Clients, Products and Business Practices' (CPBP).⁽¹⁾ Currently, conduct and legal losses make up the bulk of CPBP losses. In the current environment CPBP losses are considered a proxy of conduct risk losses.

4.8 The approach detailed below applies to firms using BIA, TSA or ASA to calculate Pillar 1 operational risk capital requirements.

4.9 The approach does not apply to firms on the Advancement Measurement Approach (AMA) unless there are outstanding material remedial actions associated with their AMA approval. In that case additional capital may be required.

Methodology for assessing Pillar 2A capital for operational risk

4.10 The approach considers non-conduct risk separately from conduct risk.

4.11 Where a firm's operational risk management and measurement framework are of AMA standard, the firm's ICAAP will be the main input into the setting of Pillar 2A capital for operational risk.

4.12 Sizing capital for operational risk is a significant challenge. The loss distribution is unusually fat-tailed, with infrequent but very large losses, and there is a paucity of data. This problem applies to all operational risks but is especially acute for conduct risk. The loss estimates below do not overcome these fundamental problems but they deliver better outcomes than relying on inadequate Pillar 1 approaches. They provide a simple, transparent and consistent way for the PRA to assess Pillar 2A operational risk across firms.

4.13 Conduct risk is not assessed using pre-determined distributions or scalars because of the difficulties in estimating the tail of the loss distribution. Modelling such high-impact but low-frequency losses is extremely challenging. In addition, modelling techniques for extrapolating to the tail rely on the assumption that conduct risk events are independent and recent observed conduct loss patterns show this is not the case.⁽²⁾

(1) CRR Article 324.

(2) Two econometric studies provide such evidence:

- (i) Gillet, Roland, Georges Hübner and Séverine Plunus (2010), 'Operational Risk and Reputation in the Financial Industry', *Journal of Banking and Finance*, Vol. 34, pages 224–35, argues that poor firm management creates an expectation that operational events (in general) are correlated.
- (ii) Perry, Jason and Patrick de Fontnouvelle (2005), 'Measuring Reputational Risk: The Market Reaction to Operational Loss Announcements', unpublished Working Paper, Federal Reserve Bank of Boston, finds evidence of stickiness of internal fraud events.

4.14 Pillar 2A capital for conduct risk is informed by: supervisory knowledge of a firm's exposure to conduct risk; a firm's largest conduct losses over the past five years; the level of expected annual loss for conduct risk; and conduct-related scenarios where potential exposures over a shorter time horizon (eg five years) are considered. As a result, the determination of additional Pillar 2A capital for conduct risk is driven predominantly by supervisory judgement.

4.15 The PRA uses three loss estimates, described below, to inform the setting of a firm's individual capital guidance for non-conduct risk.

- (i) The first estimate (C1) is based on a firm's forecast of its expected losses due to operational risk in the next year(s), extrapolated to estimate the loss at the 1-in-1,000 year confidence level (assuming a given relationship between expected loss and unexpected loss). The expected loss forecasts exclude 'material conduct and legal risk'. The extrapolation is dependent on the type of business undertaken by a firm, distinguishing between universal banks, predominately domestic banks and wholesale banks.
- (ii) The second estimate (C2) is based on the average of the firm's five largest losses by Basel event type (excluding CPBP) for each year. This calculation is repeated for each of the past five years, and the event type resulting in the largest capital requirement (calibrated at a 1-in-1,000 year confidence level) is used. A Pareto distribution is used to calibrate the operational risk capital for each event type by using a predetermined shape parameter. Currently, the shape parameters are defined by event types but are constant for all firms. The calibration and five-year time horizon might be reconsidered as the PRA obtains more loss data.
- (iii) The third estimate (C3) uses a firm's scenario assessments (excluding scenarios associated with CPBP event types). For each scenario, either one frequency and at least two severity impacts, or at least two annual impact assessments, are used to fit a calibration-free, fat-tailed distribution to determine the annual impact at a 1-in-1,000 year confidence level. The C3 estimate is obtained by summing the five largest annual impacts to which a predefined diversification benefit (determined by the PRA) is applied. The same diversification benefit is applied to all types of firms.

4.16 Supervisory judgement is used to determine the operational risk add-on, taking into account considerations such as: the quality of the firm's own Pillar 2A assessment; the capital range generated by C1, C2 and C3 for non-conduct risk; confidence in the firm's scenario analysis process and internal loss data; the quality of the firm's operational risk management and measurement framework; and peer group comparisons.

4.17 The Pillar 2A capital add-on is the sum of the capital adjustment for conduct risk and non-conduct risk.

Reporting

4.18 The PRA already collects information on operational risk historical losses from firms participating in the Firm Data Submission Framework (FDSF) programme. All significant firms and firms with AMA permission must report the data contained in the operational risk Pillar 2 data items in accordance with Reporting Pillar 2, 2.3, unless those data have already been submitted as part of the FDSF programme. Firms that are in scope are required to submit the data with their ICAAP submissions. Significant firms and firms with AMA permission must submit the data annually in any event. The PRA may also request some firms that are not significant to report the same data and will notify the firms accordingly in advance of their submitting an ICAAP document.

5 Counterparty credit risk

5.1 This chapter sets out the methodology the PRA uses to inform the setting of a firm's Pillar 2A individual capital guidance for counterparty credit risk (CCR), including settlement risk.

5.2 The PRA's review of a firm's CCR and risk management standards applies equally to positions covered by advanced models or standardised approaches and, as such, is relevant to firms both with and without advanced model approval. In practice, however, the PRA expects the Pillar 2A regime for CCR to affect mainly those firms with material derivatives, margin lending, securities lending, repurchase and reverse repurchase or long settlement transaction businesses.

Definition and scope of application

5.3 CCR is the risk of losses arising from the default of the counterparty to derivatives, margin lending, securities lending, repurchase and reverse repurchase or long settlement transactions before final settlement of the transaction's cash flows and where the exposure at default is crucially dependent on market factors.

5.4 For firms with advanced model permission,⁽¹⁾ deficiencies or issues in the quantification of the capital needed to mitigate CCR adequately, or other shortcomings in the management of such risk, are addressed as part of the model approval and review process, with any additional capital requirements reflected via model multipliers or add-ons under Pillar 1 in line with Article 101 of the Capital Requirements Directive (CRD).⁽²⁾

5.5 For firms with advanced model permission, the PRA will focus on areas of risk that are not covered by internal modelling. Examples include concentration risk and settlement risk.

5.6 For firms without advanced model permission, or for products and counterparties not included in a CCR advanced model permission, the focus of the Pillar 2A review will be broader and cover key areas that would otherwise be assessed as part of model permission. In particular: qualitative requirements for CCR; credit concentration risk; IT sufficiency and data quality; settlement risk; collateral management; wrong-way risk; stress testing of CCR; model validation; and the limitations of non-advanced methods.

Qualitative requirements for CCR

5.7 CRR Articles 286–294 set out a number of qualitative requirements that firms must meet in order to use the advanced model for CCR. The PRA's view is that these qualitative standards should be the basis for assessing CCR risk management by all firms. The PRA assesses firms' management standards for CCR against these qualitative standards and may require firms to hold additional capital under Pillar 2 to address material deficiencies. The PRA focuses on the following areas: collateral disputes, collateral concentration and stress testing.

Relationship with concentration risk

5.8 The PRA captures CCR exposures in the firm's assessment of concentration risk, as set out in Chapter 5. The PRA addresses concentration risk by looking at single name, sectoral and geographical credit concentration across all exposures, including exposures and facilities across the trading and banking book.

IT sufficiency and data quality

5.9 IT and data issues can compromise the effectiveness of risk management and the calculation of capital requirements. For firms with advanced model permission, IT sufficiency and data quality are reviewed as part of an internal model application. For firms using standardised approaches, and for products not included within the scope of internal models, the Pillar 2A review focuses on IT sufficiency and data quality related to trade capture, exposure information for risk management and capital calculation. The PRA may require a firm to hold additional capital under Pillar 2A to address identified deficiencies.

Settlement risk

5.10 Settlement risk for transactions where the settlement or delivery date is no later than the market standard or five business days after the transaction date is not capitalised under Pillar 1.

(1) These include the Internal Model Method in CRR Article 283 and the Internal Models Approach for Master Netting Agreements in CRR Article 221.

(2) See footnote (1) on page 5.

5.11 For firms with advanced model permission, the risk management framework for settlement risk is reviewed as part of the advanced model application and its ongoing review.

5.12 Where firms do not adequately manage settlement risk arising from products outside the scope of an advanced CCR model⁽¹⁾ (eg through pre-deal checking, defined limit frameworks, appropriate reporting), the PRA may challenge the appropriateness of a zero capital requirement for such risk and require firms to hold additional capital under Pillar 2.

5.13 The review of settlement risk management will also include those products that do not attract CCR capital but give rise to settlement risk (eg cash securities transactions that are not conducted on a delivery versus payment basis).

Collateral management

5.14 The risk mitigation effects of collateral on derivative and repo-style transactions are incorporated into exposure calculations. However, the way in which collateral is used can give rise to additional risks. One particular area of concern is the re-use of collateral, for example when securities posted by a counterparty are re-used to collateralise an exposure with a riskier counterparty which does not segregate them. In such cases a firm may face liquidity constraints and losses if the counterparty defaults.

5.15 Collateral management is reviewed as part of the advanced model application and its ongoing review. For firms without advanced model permission, the PRA reviews firms' management of risks arising from collateral and may ask such firms to hold additional capital under Pillar 2 to address risks not sufficiently covered under Pillar 1.

Wrong-way risk

5.16 Other than for specific wrong-way risk,⁽²⁾ the CCR capital framework assumes independence between the creditworthiness of a firm's counterparty and the level of exposure to that counterparty. Wrong-way risk, where there is an adverse relationship between the exposure to the counterparty and the creditworthiness of that counterparty, arises in circumstances in which this assumption does not hold.

5.17 Wrong-way risk frameworks of firms with advanced model permission are reviewed as part of their Internal Model Method application process. The PRA expects firms without advanced model permission to identify, monitor, manage, mitigate and capitalise their wrong-way risk appropriately. Misidentification of wrong-way risk leads to underestimation of risks and undercapitalisation. The PRA reviews the firm's management and capitalisation of wrong-way risk in its Pillar 2

assessment and may ask firms to hold additional capital under Pillar 2A to address identified deficiencies.

Stress testing

5.18 The PRA considers stress testing to be an important complement to business-as-usual measures of CCR exposure used for risk management. Firms with advanced model permission are required to carry out comprehensive stress testing analysis for both risk management and capital adequacy assessments. The PRA expects a firm without advanced model permission, or with material proportions of business outside the scope of advanced model permission, to carry out stress testing that is commensurate with the complexity of its business. The PRA focuses on CCR stress testing capabilities in its Pillar 2 assessment and may ask firms to hold additional capital under Pillar 2A to address identified deficiencies.

Model validation

5.19 Models are used extensively in the measurement of CCR, for the modelling of risk factors, the pricing of instruments and the quantification of risk. Firms with CCR advanced model permission have their model validation functions reviewed as part of the application and review processes. The PRA expects firms without CCR advanced model permission (but still using models in their CCR management) to have a model validation function that meets the PRA's expectations. The PRA focuses on the model validation function in its Pillar 2 assessment and may ask firms to hold additional capital under Pillar 2A to address identified deficiencies.

Accuracy of the exposures and of the inputs under non-advanced methods

5.20 There are a number of known areas of weakness in the calculation of exposure under some of the non-advanced Pillar 1 approaches for CCR (eg the Mark-to-Market Method and the Standardised Method).

5.21 In particular, the standardised approaches are relatively crude and may not be appropriate for more complicated trades or trades with unusual features. While regulation is being amended to cover some of these issues,⁽³⁾ some firms may be undercapitalised. The PRA reviews the risks that are not adequately captured by standardised approaches in its Pillar 2 assessment and may ask firms to hold additional capital under Pillar 2A to address identified deficiencies.

(1) This would include products (eg cash equities and cash bonds) that can result in settlement risk that does not attract counterparty credit risk.

(2) As defined in CRR Article 291.

(3) The Basel Committee has agreed a new Non-Internal-Model-Method (NIMM) to replace the Current Exposure Method and the Standardised Method in March 2014, see www.bis.org/publ/bcbs279.pdf.

5.22 Finally, inputs to the standardised approaches may come from a model or rely on prudent valuation. Where such inputs are inaccurate firms may fail to manage their exposures properly and may be under-capitalised. The PRA reviews the accuracy of those inputs to calculate Pillar 1 CCR charges and may ask firms to hold additional capital under Pillar 2A to address identified deficiencies.

6 Credit concentration risk

6.1 This chapter sets out the methodology the PRA uses to inform the setting of a firm's Pillar 2A individual capital guidance for single name, sector and geographical credit concentration risk in the banking and trading books.

Definition and scope of application

6.2 Credit concentration risk is the risk of losses arising as a result of concentrations of exposures due to imperfect diversification. This imperfect diversification can arise from the small size of a portfolio or a large number of exposures to specific obligors (single name concentration) or from imperfect diversification with respect to economic sectors or geographical regions.

6.3 For the purposes of the methodology specified below, only wholesale credit portfolios are considered for single name and sector concentration risk (excluding securitisation, intra-group exposures and non-performing loans). All credit portfolios other than residential mortgage portfolios on the standardised approach are considered for geographic concentration risk.

Methodology for assessing Pillar 2A capital for credit concentration risk

6.4 Firms are required to calculate a credit concentration risk measure, the Herfindahl-Hirschman Index (HHI), for all relevant portfolios (single name, pre-defined industry sectors and geographic regions). The HHI is defined as the sum of the squares of the relative portfolio shares of all borrowers (these portfolio shares are calculated using risk-weighted assets (RWAs)). Well-diversified portfolios have an HHI close to 0, whilst the most concentrated portfolios have a number close to 1. The HHI is a good indicator of the level of credit concentration risk within a portfolio. Mapping models translate a firm's HHI into a proposed capital add-on range. The table mapping the HHI for single name, sector and geographical credit concentration to capital add-on ranges is set out in **Figure 1**.

6.5 The mapping models for single name, sector and geographical credit concentration are described below.

Single name concentration risk

6.6 The Gordy-Lütkebohmert (GL) methodology⁽¹⁾ is an extension of the Basel risk-weight function and aims to

quantify the undiversified idiosyncratic risk in a credit portfolio not considered to be sufficiently granular. The GL methodology uses credit risk parameters to quantify the single name risk in a portfolio and suggests the necessary capital add-on range to account for single name concentration risk.

Sector and geographic credit concentration risk

6.7 When assessing the degree to which a firm might be subject to industry sector or geographical credit concentration risk, the PRA adopts a methodology based on published multi-factor capital methodologies (eg Düllmann and Masschelein).⁽²⁾

6.8 The PRA has constructed a benchmark portfolio based on the average lending distribution from a sample of well-diversified firms. The PRA developed a multi-factor capital model, which takes into account the default rate volatilities (intra-sector and intra-region correlation) of eight pre-defined geographic regions and industry sectors as well as default rate volatility correlations between pre-defined geographic regions and industry sectors (inter-sector and inter-region correlations).

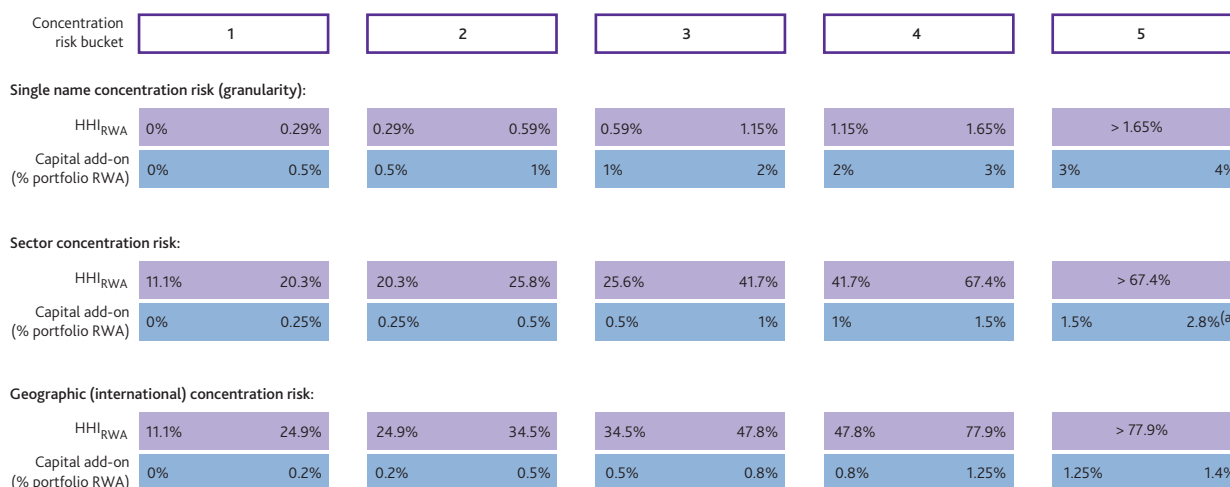
6.9 Sectors are broadly aligned to standard industry classification (SIC) codes and NACE (Nomenclature of Economic Classification) codes (set out in **Table B**), while the geographical regions are based on the International Monetary Fund's definition of the main global economic regions (set out in **Table C**). The United Kingdom is considered separately.

6.10 The multi-factor model is calibrated so that the capital requirement for a well-diversified lending portfolio (the benchmark portfolio) using the multi-factor model and a single risk factor model (on which the IRB framework is based) are equal. The PRA created a sequence of portfolios with increasing levels of concentration and compared the capital requirements derived from the multi-factor model with those derived from the single-factor risk model. The difference in the capital requirements between the multi-factor and single-factor risk model (capital add-ons) was compared to the HHI measures of concentration. The relationship between the two measures is strong. The PRA has therefore mapped

(1) Gordy, M and Lütkebohmert, E (2007), 'Granularity adjustment for Basel II', *Discussion Paper 01/2007*, Deutsche Bundesbank.

(2) Düllmann, K and Masschelein, N (2007), 'A tractable model to measure sector concentration risk in credit portfolios', *Journal of Financial Services Research*, Vol. 32, pages 55–79.

Figure 1 Concentration risk — mapping of capital add-on ranges to HHI



(a) 2.8% for CRE but 2% for financial.

Table B Breakdown of sectors

Agriculture, forestry and fishing
 Construction
 Financial industry (bank and non-bank)
 Real estate (commercial)
 Manufacturing
 Mining and quarrying
 Wholesale and retail trade
 Services and other
 Transport, storage and utilities

Table C Geographical breakdown

United Kingdom
 North America
 South/Latin America and Caribbean
 European (west) area
 Eastern Europe and Central Asia (including Russian Federation)
 East Asia and Pacific
 South Asia
 Middle East and North Africa
 Sub-Saharan Africa

the HHI measures to capital add-on ranges derived from its multi-factor capital model.

6.11 Given a capital add-on range produced by the concentration risk models, the PRA exercises its judgement as to where within that range the capital add-on should be set. In order to promote consistency of judgement, the mid-point of the range acts as a starting point. When setting the Pillar 2A credit concentration risk capital add-on, the PRA may consider a range of factors including firms' own concentration risk assessments; firms' ability to manage concentration risk; the degree to which conservatism is reflected in firms' Pillar 1

RWAs; instances where portfolio correlations are not adequately captured; any other factors not adequately captured under the quantitative assessment; and business models.

6.12 The PRA will continue to be proportionate in its approach to setting capital; supervisors may exercise judgement for small firms where they identify that the credit concentration risk methodology could overstate risks, or could incentivise risk-taking behaviour.

6.13 The quantitative methodologies informing the recommended capital add-on ranges have been constructed so as to apply independently of one another in order to avoid double counting. The capital add-on for credit concentration risk is therefore the sum of the respective add-ons for each credit concentration risk type.

6.14 The measure of credit concentration risk is based on the Pillar 1 risk assessment (ie the risk weighting of the obligor, sector or geographic regions). Exposures with low risk weights therefore attract a lower concentration risk add-on compared to exposures with higher risk weights, everything else constant.

6.15 Where the PRA considers that a firm's credit risk RWAs do not accurately reflect the underlying credit risk within a portfolio, the Pillar 2A credit concentration risk capital add-on may be adjusted upwards.

6.16 Capital held against potential losses from credit valuation adjustments are excluded from the credit concentration risk assessment.

Reporting

6.17 All firms must report the data contained in the credit concentration risk Pillar 2 data items in accordance with Reporting Pillar 2, 2.2. Firms are required to submit the data with their ICAAP submissions. These data items include information on the portfolio HHI for each of the concentration risk types and additional information on portfolio composition.

7 Interest rate risk in the banking book

7.1 This chapter sets out the methodology the PRA uses to inform the setting of a firm's Pillar 2A individual capital guidance for interest rate risk in the non-trading book, commonly known as interest rate risk in the banking book (IRRBB).

Definition and scope of application

7.2 IRRBB is the risk of losses arising from changes in the interest rates associated with banking book items.

7.3 For larger or more complex firms the PRA employs a comprehensive approach to its IRRBB risk assessment that reviews duration risk, basis risk and, as necessary, optionality risk.

- Duration risk arises when the re-pricing of banking products (assets and liabilities) is mismatched across time buckets. Firms generate these positions via the normal running of their banking book and manage the resultant risks through their internal management processes and hedging activities.
- Basis risk is generated by banking book items that re-price in relation to different reference rates. The most common and material basis risks seen within UK banks derive from products re-pricing against policy rates (eg Bank Rate) and market rates (eg Libor). As part of the review of basis risk the PRA also considers asset swap spread risk, which typically arises when firms hedge the duration risk associated with fixed rate securities using derivatives (typically interest rate swaps).
- Optionality risk arises from the discretion that a bank's customers and counterparties have in respect of their contractual relations with the bank in the form of financial instruments. Embedded options are diverse and firm-specific and include prepayment risk on fixed rate loans and deposits and switching risk on non-interest bearing current accounts. Optionality risk is considered separately when material.

7.4 Smaller and less complex firms are subject to a standard approach which is based on reviewing their own policy limits for interest rate risk and, where appropriate, basis risk. A proportionate approach is applied where a firm demonstrates some aspects of complexity with a detailed review undertaken of the policy limit-setting approach, the potential for any

breaches and the ability of the firm to manage the associated risks.

Comprehensive methodology for assessing Pillar 2A capital for IRRBB

7.5 Large firms or those with more complex IRRBB risk exposures are subject to a comprehensive risk assessment process. This assessment involves the collection and processing of granular risk data provided by the firm and a review process including firm meetings and discussion. Together this ensures that the PRA has the appropriate information to understand and evaluate the firm's IRRBB risks and management processes.

7.6 The data for this process are collected in a standard data report from the firm. The data are processed using internal PRA systems. A range of value-at-risk and earnings-at-risk based measures are used to calculate capital requirements. The FSA017 regulatory return, which provides more aggregated re-pricing information, can be used to validate the data provided.

7.7 The methodology with respect to duration risk, basis risk and optionality risk is detailed below.

Duration risk

7.8 To assess duration risk, firms are first requested to allocate all items to the relevant time bucket and to report their exposure in each time bucket, as follows:

- fixed-rate assets or liabilities are allocated to the time bucket corresponding to their maturity (allowing for behavioural prepayment adjustments);
- floating-rate assets or liabilities are allocated to the time bucket corresponding to the frequency of re-set, with behavioural adjustments for administered rate products;
- derivatives are allocated according to their contractual re-pricing dates; and
- non-determinate items (ie those that do not have a pre-set contractual maturity, such as sight deposits and current accounts) are allocated to time buckets based on firms' assumptions. The PRA expects firms to justify these assumptions and any changes to them.

7.9 Second, the net interest rate gap of the firm for each time bucket is calculated for each material currency.

7.10 A shock is then applied to the net interest rate position for each respective time bucket. The methodology uses a range of currency-specific yield curve volatility parameters and a set of different interest rate shocks.

7.11 The VaR model is calibrated to a 1-in-100 year confidence level and uses a one-year holding period to reflect the potentially illiquid nature of banking book positions. Historical observations normally include ten years of yield curve data and are designed to capture stressed market conditions.

7.12 For each significant currency, the different interest rate shocks are applied to the net interest rate gaps in each time bucket. The methodology uses both government yield curves and Libor swap curves by material currency in order to calculate the potential impact of the interest rate risk shocks.

7.13 Economic value (EV) changes are then summed up across all time buckets in order to assess the change of the firm's EV due to its IRRBB exposure to an interest rate shock.
Basis risk

7.14 The review of basis risk concentrates on net policy rate and net Libor (contractual and behavioural) exposures including on-and off-balance sheet positions. The assessment is designed to capture the risk of market funding costs rising relative to a more stable policy benchmark.

7.15 The assessment process involves collecting information on variable rate re-pricing in order to calculate the net policy rate position by currency. These positions include: customer products linked contractually to policy rates; customer products that are expected to price in line with policy rates behaviourally; balances held with central banks that are currently priced in line with policy rates; and derivative hedges based on policy rates or correlated indices.

7.16 The PRA measures basis risks by applying to each firm's nominal exposure a change of the spread between the two reference rates on which the bank incurs basis risk exposure. The potential movement between the reference rates employs a statistical approach based on historical observations, at a 1-in-100 year confidence level.

7.17 The PRA measures how significant shifts in the market pricing of hedging Libor versus policy rate exposures for a one-year period can move over a three-month timeframe. This is likely to involve the use of Overnight Indexed Average and Libor swaps.

7.18 The approach generates a one-year earnings at risk (EaR) measure to assess the capital requirement for basis risk. The

calculation considers the net Bank Rate position exposed to a Libor funding shock.

7.19 Swap spread risk arises when firms hedge the duration risk associated with fixed rate securities using derivatives (typically interest rate swaps). This generates a valuation risk through asymmetric movements between the value of the bond (eg gilt) and the derivative (eg swap). The ongoing valuation risks should be managed within appropriate risk limits and capitalised.

7.20 The PRA considers relative movements in the value of securities, eg gilts versus swaps (of similar maturities) over a ten-year period via a Value at Risk (VaR) model calibrated at a 1-in-100 year confidence level assuming a one-year holding period.

Optionality risks

7.21 In the United Kingdom, prepayment risk on lending is limited by the typically short re-pricing duration of fixed-rate products (retail mortgages and unsecured lending are typically fixed for terms not exceeding five years).

7.22 The impact of behavioural factors on certain non-determinate liabilities such as current accounts (eg customer switching) should be considered by firms. The behaviour of some components of these current account balances remains uncertain and may be affected by a change in interest rates.

7.23 The comprehensive approach involves discussing optionality risks with the firm during the risk assessment process in order to understand the materiality (or otherwise) of embedded option features. Dependent on the nature of a firm's business this could include non-UK products that have material embedded option features for which additional information may be requested.

Other IRRBB risks

7.24 Other IRRBB risks that may be considered, if material, include the risks arising from hedge accounting operations and structural foreign exchange exposures. The PRA monitors these and other emerging risks to ensure such risks are capitalised adequately.

Aggregation of IRRBB risks

7.25 Individual capital requirements for the different sub-components of IRRBB referenced above are then summed to calculate a firm's IRRBB individual capital guidance based on the data provided.

7.26 The process also assesses the quality of the firm's management, data and governance of IRRBB under the comprehensive approach and considers any additional capital required to reflect failings in a firm's practice.

Standard methodology for assessing Pillar 2A capital for IRRBB

7.27 The PRA reviews the internal policy limits used by a firm. If appropriate (and these are most usually based on the economic impact of a 200 basis point shift in interest rates) the policy limits are used as the basis for determining IRRBB.

Basis risk

7.28 Under the standard methodology, the PRA does not assess Pillar 2A individual capital guidance for basis risk. Nevertheless, the PRA expects that a bank or building society mitigates its basis risk by setting limits on:

- its exposure to basis risk for each type of basis risk mismatch; and
- the sensitivity of its net interest margin to basis risk.

Behavioural adjustments

7.29 The PRA may allow firms, on a case-by-case basis, to allocate maturities based on behavioural assumptions.

Reporting

7.30 The PRA uses existing data reports, such as the Firm Data Submission Framework (FDSF) programme for larger firms, or FSA017 for smaller firms, and works with individual firms to set out additional bespoke data requirements where needed for the IRRBB assessment. The PRA may also ask firms to submit internal management information relevant to IRRBB.

8 Pension obligation risk

8.1 This chapter sets the methodology the PRA uses to inform the setting of a firm's Pillar 2A individual capital guidance for pension obligation risk.

Definition and scope of application

8.2 Pension obligation risk is the risk:

- to a firm caused by its contractual or other liabilities to, or with respect to, a pension scheme (whether established for its employees or those of a related company or otherwise); and
- that a firm will make payments or other contributions to, or with respect to, a pension scheme because of a moral obligation or because the firm considers that it needs to do so for some other reason.

8.3 Pension obligation risk relates to defined benefit pension schemes and defined contribution schemes offering guaranteed returns that are not fully matched by underlying investments. Hybrid schemes are considered to be defined benefit pension schemes. Pension obligation risk includes the risk arising from overseas pension schemes.

8.4 A sponsoring firm is a firm with contractual or potential commitments to one or several defined benefit pension schemes covering its employees or the employees of another entity within the same group.

8.5 Pension obligation risk manifests itself in different forms. The PRA's focus is on the impact that changes in value of a pension scheme could have on Common Equity Tier 1 (CET1). Under CRD IV, the accounting deficit of a firm's pension scheme is deducted from CET1. Any surpluses are de-recognised. Firms are therefore exposed to pension obligation risk because a material increase in the pension scheme's deficit under adverse conditions will have a negative impact on their CET1.

8.6 A firm that does not deduct its pension scheme deficit from CET1 (eg because another company within the group recognises the deficit on its balance sheet) may still be exposed to indirect pension obligation risk, where the UK Pensions Regulator (TPR) has the power to require the firm to support the pension scheme, or where the failure of the

company that recognises the deficit could destabilise the group, leading to the risk of contagion.

8.7 The PRA does not have a remit to protect members of defined benefit pension fund schemes against the failure of those plans. Nevertheless a firm must at all times comply with the overall financial adequacy rule. Accordingly, the PRA aims to ensure that firms are adequately capitalised against their defined benefit pension obligations.

Methodology for assessing Pillar 2A capital for pension obligation risk

8.8 The PRA's framework for Pillar 2A pension obligation risk capital consists of two elements:

- the firm's own assessment of the appropriate level of Pillar 2A pension obligation risk capital; and
- a set of stresses on the accounting basis which will be used by the PRA in assessing the adequacy of the firm's own assessment of the level of capital required.

8.9 The firm's own assessment and the PRA stress tests on the accounting basis can be reduced by offsets and management actions, and any pension scheme deficit deducted from CET1.

8.10 The PRA uses the results of two scenarios it prescribes to assess the adequacy of the firm's own assessment of the appropriate level of capital and to inform the setting of the Pillar 2A individual capital guidance for pension obligation risk. The higher of the two stress scenarios will form the starting point of the assessment.

8.11 The two scenarios applicable from 1 January 2016 are set out in **Table D**.

Table D PRA pension obligation risk stress scenarios (applicable from January 2016)

Per cent	Scenario 1	Scenario 2
Fall in equity values	15	30
Fall in property values	10	20
Percentage reduction in long-term interest rates	10	15
Absolute increase in assumed inflation	0.5	0.75
Percentage change in credit spreads	-25	+25
Increase in liabilities due to a longevity stress	3	6

8.12 The PRA recognises that the assumptions underpinning the stress scenarios may not be appropriate for the risk profile of all pension schemes. Where the PRA believes that the risk profile of a firm's pension scheme deviates significantly from the assumptions underlying the published scenarios, it will use other models to inform the appropriate level of Pillar 2A pension obligation risk capital to compare against the firm's own assessment.

8.13 For the purposes of the stress scenarios, the PRA expects the valuation measure of liabilities to be the same as that used for IFRS reporting. Firms' approaches to setting the valuation assumptions should be stable over time and any changes to the approach should be justified in the ICAAP. The PRA will review the robustness of the valuation assumptions and may adjust the surplus or deficit in the capital requirements calculations where the assumptions are found to be out of line with other firms, or where an alternative set of assumptions better satisfies the capital adequacy rules.

8.14 The stress scenarios have been designed to produce an appropriate level of capital for a typical pension scheme. From time to time, it may be necessary to update the scenarios to ensure that they continue to remain appropriate. This may be done, for instance, where significant movements in market conditions mean that the scenarios produce inappropriate levels of capital or where the average risk profile of the pension schemes sponsored by PRA-regulated firms deviates from the risk profile the PRA has assumed when calibrating the stress scenarios.

8.15 The scenarios described in **Table D** are distinct from the multi-year firm-wide scenarios the PRA expects firms to develop in their ICAAP in accordance with the general stress test and scenario analysis rule in Internal Capital Adequacy Assessment 12.1 in the PRA Rulebook.

8.16 The PRA reviews the scenarios on an annual basis, but only expects to make changes to them every few years. Any changes will be consulted on before being implemented.

Offsets and management actions

8.17 The firm's own assessment of the appropriate level of capital and the results of the PRA stress scenarios may be reduced by eligible offsets and management actions recognised by the PRA. Offsets are reductions in a firm's Pillar 2A individual capital guidance to reflect factors present at the ICAAP effective date which would reduce the impact of a stress on the firm. Management actions are steps the firm could, and would, take when a stress occurs in order to reduce its impact.

8.18 To be accepted by the PRA, offsets and management actions in relation to the PRA stress scenarios should comply with the following eligibility criteria:

- financial performance — the efficacy of offsets and management actions should not depend on assumptions as to the future financial performance of the firm, either before or after a stress;
- independence from the decisions and actions of third parties — the efficacy of offsets and management actions should not depend on assumptions as to the future agreement or behaviour of third parties, either before or after a stress; and
- immediacy — recognised offsets should reflect a risk mitigation benefit that is already effective when the offset is taken. Management actions should be capable of taking effect quickly enough to mitigate the stress to which they are the proposed response.

8.19 The PRA expects firms to explain any offsets or management actions they propose. Where practical, management actions will be formulated after discussion with pension scheme trustees. The PRA will apply the eligibility criteria in a strict manner on a case-by-case basis. Offsets and management actions that do not meet the eligibility criteria will not be accepted.

Reporting

8.20 The PRA already collects information on defined benefit pension schemes from firms participating in the Firm Data Submission Framework (FDSF) programme. All PRA firms with defined benefit pension schemes are required to report the data contained in the pension risk data item in accordance with Reporting Pillar 2, 2.6, unless those data have already been submitted as part of the FDSF programme. Firms that are in scope are required to submit the data with their ICAAP submissions.

Section II: Pillar 2B

9 The PRA buffer

9.1 The PRA buffer is an amount of capital that firms should hold, in addition to their individual capital guidance, to cover losses that may arise under a severe stress scenario, but avoiding duplication with the CRD IV buffers. Its purpose is to increase firms' resilience to such stress, in line with the PRA's risk appetite, so that firms can continue to meet their minimum individual capital guidance during a stress period.

9.2 Where the PRA assesses a firm's risk management and governance⁽¹⁾ (RM&G) to be significantly weak, it may also set the PRA buffer to cover the risks posed by those weaknesses until they are addressed. This will generally be calibrated in the form of a scalar applied to the amount of CET1 required to meet Pillar 1 capital requirements plus Pillar 2A individual capital guidance. Depending on the severity of the weaknesses identified, the scalar could range from 10% to 40%.

9.3 If an overall RM&G scalar is applied, RM&G weaknesses identified in specific risk categories should not be reflected separately in Pillar 2A individual capital guidance for those categories. Once the identified weaknesses have been remedied, the scalar should be removed.

9.4 To ensure consistency, RM&G scalar decisions will be subject to a peer review process. As with other risks identified, supervisors will discuss RM&G weaknesses with firms.

9.5 Where the PRA sets additional capital to cover the risks posed by weaknesses in RM&G, it will not offset the CRD IV buffers for the purposes of that part of the PRA buffer assessment.

The PRA buffer assessment

9.6 The PRA carries out a PRA buffer assessment for all firms. This is informed by the concurrent stress testing (CST) results⁽²⁾ for those firms participating in the exercise as well as the results of each firm's own stress testing. Stress testing and scenario analysis requirements are set out in Chapter 12 of the Internal Capital Adequacy Assessment rules and in Chapter 3 of the supervisory statement, *The Internal Capital Adequacy Assessment Process (ICAAP) and the Supervisory Review and Evaluation Process (SREP)*.

9.7 The PRA reviews a firm's buffer assessment annually for firms participating in the CST exercise. For all other firms the PRA approach is aligned to the SREP and the frequency of

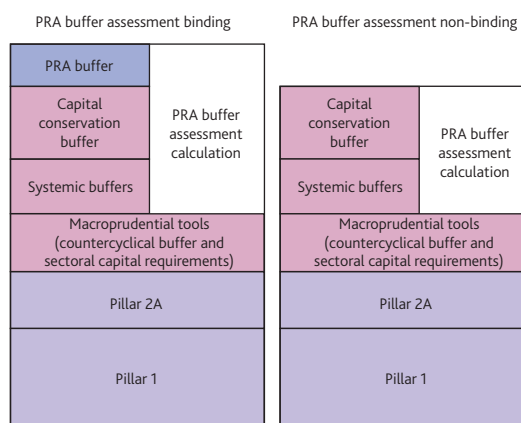
review depends on a number of factors, including the firm's size, complexity, business model and growth plans.

9.8 The PRA may carry out PRA buffer assessments more often when firms' circumstances change, in particular when RWAs change more rapidly than assumed previously.

9.9 When setting the PRA buffer, the PRA considers the extent to which the CRD IV buffers already capture the risks identified in the PRA buffer assessment. The PRA will normally conclude that there is potential overlap between the CRD IV buffers and the PRA buffer assessment, and thus the PRA buffer is set as any excess capital required over and above the systemic risk buffers (SRB) and the capital conservation buffer (CCoB).

9.10 **Figure 2** illustrates a firm's total capital requirement and its relationship with the PRA buffer. In some instances, the PRA does not set a buffer if the CRD IV buffers are deemed sufficient, as illustrated in the right-hand column of the chart. Capital that firms use to meet their Pillar 1 capital requirements and Pillar 2A individual capital guidance cannot be counted towards meeting their buffers. All buffers are in CET1 capital.

Figure 2 The Pillar 2 Capital framework



(1) The assessment of RM&G is linked closely to our supervisory assessment of risk management and controls and management governance and culture which is set out in *The PRA's approach to banking supervision*, June 2014; www.bankofengland.co.uk/publications/Documents/prapproach/bankingappr1406.pdf.

(2) In October 2013 the Bank of England published DP10/13, a discussion paper setting out the main features of the proposed stress testing framework over the medium term, also known as the Concurrent Stress Testing Framework. The discussion paper stated that this framework would apply to 'the major UK banks as well as significant UK subsidiaries of foreign global systemically important banks'. Currently, eight firms are covered by concurrent stress testing. Over time, medium-sized banks may also be covered by the framework, though subject to a proportionate version of the exercise.

9.11 For macroprudential policy decisions to be transmitted effectively, capital needs arising from the deployment of macroprudential instruments, including the countercyclical buffer and sectoral capital requirements, must be additive to the PRA buffer assessment.

9.12 The PRA buffer assessment is carried out in two steps.

- (i) First, the PRA considers the maximum change in capital resources and requirements from the stress testing results (from CST or the firm's own stress test scenarios). These results are a function of the severity of the stress scenario and the PRA's starting assumption as to the amount of capital that it expects banks to maintain in a stress scenario.
- (ii) Second, the PRA takes into account other factors that may influence the vulnerability of a firm to a stress.

9.13 In addition to carrying out an assessment as to whether a firm needs to hold additional capital to ensure it meets its minimum requirements in a stress, the PRA may also, if necessary, require a firm to take actions to strengthen its capital position over a specified time period.

Severity of the stress scenario

9.14 Each firm's PRA buffer assessment depends partly on the severity of the stress scenario, but will be determined finally following the review by supervisors of a range of factors detailed further below.

9.15 The PRA publishes a scenario to serve as a guide and, where relevant, as a severity benchmark, for firms designing their own stress scenarios.

9.16 The PRA uses the FPC and PRA Board scenario framework to inform published scenarios.

9.17 The PRA may also ask firms to run additional sensitivity analyses, the purpose of which will be to explore the impact on portfolios and/or regions, which are not covered in the common scenarios (the CST scenario or the PRA published scenarios as appropriate) or the firms' idiosyncratic scenarios. The results of these sensitivity tests may be used to adjust the impacts of the firm's chosen scenarios or the common scenarios.

9.18 The results of all relevant stress tests and sensitivity analyses will be used to inform the PRA buffer assessment.

9.19 The PRA evaluates the key assumptions adopted and management actions recognised in firms' stress testing. Where they have a material impact on the stress test results,

or the results are uncertain, the PRA may also take this into account as part of the PRA buffer assessment.

Starting assumption as to the amount of capital a firm is expected to maintain under stress

9.20 All firms should be able to meet Pillar 1 plus Pillar 2A CET1 individual capital guidance under a stress. This is the amount of CET1 capital the PRA considers firms should hold at all times to meet the overall financial adequacy rule in Internal Capital Adequacy Assessment 2.1 of the PRA Rulebook.

9.21 Using the stress test results, the PRA sets the PRA buffer assessment to reduce the risk that a firm's capital ratio will fall below the sum of Pillar 1 and Pillar 2A CET1 requirements in a stress.

9.22 Additionally, the PRA expects a firm to hold a larger buffer or strengthen its capital position where necessary based on other factors. These include but are not limited to: the FPC's view on the level and composition of capital needed to ensure resilience against stress arising out of the FPC's review of the medium-term capital framework for banks; the firm's leverage ratio; the extent to which the firm has used up its CRD IV buffers (eg the Systemically Important Financial Institution (SIFI) and capital conservation buffers); Tier 1 and total capital ratios; and the extent to which potentially significant risks are not captured fully as part of the stress.

Other factors affecting the PRA buffer assessment

9.23 Here, the PRA sets out other factors it can take into account when carrying out the PRA buffer assessment.

Holding systemically important firms to a higher standard

9.24 The PRA reflects a firm's systemic importance in its PRA buffer assessment.

9.25 There are a number of reasons why the PRA holds systemically important firms to a higher standard, in line with its primary objective of promoting safety and soundness of firms, including:

- these firms should be safer than other firms because their distress or failure is particularly associated with negative effects on the wider economy: in particular adverse feedback loops created when these firms are too capital constrained to continue to lend;

- to reduce the moral hazard created by their systemic importance, such as funding cost advantages caused by perceived implicit subsidies;⁽¹⁾⁽²⁾ and
- given the uncertainty associated with stress testing outcomes the PRA wants additional comfort that these banks will not fall below their individual capital guidance.

Management actions

9.26 By 'management actions' the PRA refers to the steps that firms could take in response to capital or liquidity inadequacies in a given scenario. They are not intended to capture 'business as usual' responses that firms would expect to take in that scenario.

9.27 Management actions are recognised when setting a firm's PRA buffer if they meet the principles specified below.

- The PRA only recognises a limited set of credible management actions that firms could realistically take in a stress.
- Firms should include management actions in the modelled impact of a scenario only if they could, and realistically would, take such actions. In doing so, they should take into account factors such as market conditions in the stress scenario and any effect those actions would have on the firm's reputation with its counterparties, investors and customers.
- Firms should be able to present their results gross and net of these management actions, focusing in particular on the impact on the capital position. Additionally, they should indicate the triggers for taking management actions, the main risks to executing them and the time necessary to implement the actions and to see their results coming into effect.
- The PRA only permits limited recognition of deleveraging, especially for large firms (relative to firms' baseline plans) in particular if it leads to a material decline in aggregate credit supply.

Impact of projections under the base case

9.28 Firms are expected to run a base case or expected scenario in conjunction with the stress scenarios and to be able to meet their CRD IV and PRA buffers under the base case.⁽³⁾

9.29 If a firm falls into its PRA buffer under the base case, this would point to the PRA buffer being used for a different purpose than that intended (for instance to support a growth strategy). This could lead to the PRA buffer being insufficient to ensure a firm can meet its individual capital guidance should a stress scenario materialise.

9.30 Where a firm falls into the PRA buffer in the base case, the PRA's response will depend on the situation. For example, the PRA may require the firm to review its base case capital plan or may subject the firm to enhanced supervision.

Weaknesses in stress testing processes and data quality

9.31 The PRA looks at the adequacy of a firm's stress testing processes and the quality of its data. Where shortcomings are identified, the PRA can have less confidence in the results of stress testing and may set a higher PRA buffer assessment in such circumstances.

Shortfalls in other projected capital ratios

9.32 The PRA takes into consideration the ability of a firm to meet its Tier 1 and total capital ratios under a stress scenario.

New entrants and expanding banks

9.33 The PRA will continue to apply a more flexible approach to new entrants and expanding smaller banks when setting the PRA buffer as set out for the Capital Planning Buffer (CPB) in the July 2014 FCA and PRA publication *A review of requirements for firms entering into or firms expanding in the banking sector: one year on*.⁽⁴⁾ RM&G is reviewed as part of the authorisation process. This suggests that no automatic scalar should be applied for management and governance simply because the management team and board are new. As a matter of prudence, the PRA will exercise its supervisory judgement to apply a capital add-on if it considers it necessary on a case-by-case basis.

(1) See Basel Committee on Banking Supervision (2013), 'Global systemically important banks: updated assessment methodology and the higher loss absorbency requirement'; Alfonso, G, Santos, J and Traina, J (2014), 'Do 'Too-Big-to-Fail' Banks Take on More Risk?', *Federal Reserve Bank of New York Economic Policy Review 2*; International Monetary Fund (2014), *Global Financial Stability Report*, Chapter 3; and Acharya, V, Anginer, D and Warburton, A (2013), 'The End of Market Discipline? Investor Expectations of Implicit State Guarantees', *mimeo*.

(2) International initiatives have been agreed that are expected to reduce expectations of taxpayer support for firms that are perceived to be 'too big to fail'. These are targeted at significantly reducing implicit subsidies over time.

(3) This would include the CCoB, the countercyclical capital buffer and the systemic risk buffer, if any.

(4) July 2014; www.bankofengland.co.uk/pra/Documents/publications/reports/2014/barriers2014.pdf.