2: Draft amendments to statement of policy – The PRA's methodologies for setting Pillar 2 capital

In this appendix, new text is underlined and deleted text is struck through.

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 capital requirements for credit risk.

Definition and scope of application

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2.3 A firm's Pillar 1 capital requirements for credit risk are determined in accordance with the PRA Rulebook and ~~Pillar 1 of~~ the Capital Requirements Regulation (CRR). However, the PRA ~~believes~~ considers that there may be cases where the standardised approach (SA) does not sufficiently capture the idiosyncratic credit risks of a firm. Additionally, there are asset classes for which the ~~standardised approach (SA)~~ may systematically underestimate~~s~~ the risk (~~eg~~ such as ~~zero risk-weighted sovereigns~~ exposures to certain central governments, as well as unconditionally cancellable commitments assigned to the retail exposure class). The PRA therefore assesses credit risk as part of its Pillar 2 review of firms' capital adequacy.

2.4 The methodologies~~y~~ detailed below ~~is~~ are applied to all ~~firms using~~ exposures risk-weighted under the SA, including off-balance sheet exposures. Therefore, these methodologies will also be applied to firms with permission to use the internal-ratings based (IRB) approach ('IRB permissions') in respect of portfolios which are risk weighted using the SA. Exposures modelled under the IRB approach are not in scope. This includes exposures risk-weighted under the SA when a firm becomes bound by the output floor. ~~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 capital requirements.

[Deleted] ~~Methodology for assessing Pillar 2A capital for credit risk~~

2.6 [Deleted] ~~The methodology used to inform the setting of firms' Pillar 2A capital requirement for credit risk is based on a comparison of firms' SA risk weights at a portfolio level to an IRB risk-weight benchmark. The PRA has created two sets of benchmarks. One is calculated based on both unexpected and expected losses (see Table A1). The other is based on unexpected losses only (see Table A2). The latter applies to firms using International Financial Reporting Standards and for which~~

~~12 months' expected credit losses may already be covered by the SA Pillar 1 capital charge. 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 [Deleted] ~~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 [Deleted] ~~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 [Deleted] ~~The PRA is going to collect data, as they become available, on a wider range of credit risk portfolios than in Table A1 and Table A2. When the PRA has sufficient data, the PRA may develop more formal benchmarks for those portfolios.~~

2.10 [Deleted] ~~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 [Deleted] ~~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 [Deleted] ~~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.~~

2.12A [Deleted] ~~Evidence indicates that IRB firms' commercial real estate (CRE) portfolios are not always comparable to SA firms' portfolios. In addition, there is significant heterogeneity between SA firms, in terms of the nature and riskiness of their CRE activities.~~

2.12B [Deleted] ~~For the purpose of calculating a benchmark that reflects an appropriate level of risk sensitivity, the PRA encourages firms with material CRE exposures and which use the SA in relation to these exposures to assign, as part of their ICAAP, risk weights to these exposures in accordance with Table 1 of CRR Article 153(5) and the draft EBA technical standards for specialised lending. The PRA's assessment of risk weights for CRE exposures will be informed by the outcome of the firm's~~

~~assignation of risk weights and the quality of its assessment. The PRA will take a proportionate approach where firms' CRE portfolios are not material.~~

2.13 [Deleted] ~~Initial analysis of the data indicates that relatively few firms would be subject to an add-on using the PRA's Pillar 2A credit risk methodology. 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 CRE.~~

2.13A [Deleted] ~~The PRA will monitor changes in IRB risk weights at least annually. Where significant changes are observed, the PRA will consider updating the IRB benchmark. This may include a partial update if this is only relevant for selected asset classes. In considering updates to the benchmark, the PRA will look to: minimise the lag between the data used to calculate the benchmark and its application to firms; and limit excessive volatility by smoothing out changes (for example, through the use of multi-year averages).~~

~~Table A1 Credit risk IRB benchmark~~[2]

	~~SA RW~~	~~Exposure weighted average risk weight~~	~~Lower range RW~~[2]	~~Upper range RW~~[3]
~~Mortgages~~				
~~Prime~~		~~5.3%~~		~~6.1%~~
~~0% <= LTV <50%~~	~~35.0%~~		~~4.5%~~	
~~50% <= LTV <60%~~	~~35.0%~~	~~9.1%~~	~~7.7%~~	~~10.5%~~
~~60% <= LTV <70%~~	~~35.0%~~	~~11.6%~~	~~9.8%~~	~~13.3%~~
~~70% <= LTV <80%~~	~~35.0%~~	~~16.6%~~	~~14.1%~~	~~19.1%~~
~~80% <= LTV < 90%~~	~~36.0%~~	~~22.4%~~	~~19.1%~~	~~25.8%~~
~~90% < = LTV < 100%~~	~~43.0%~~	~~33.3%~~	~~28.3%~~	~~38.3%~~
~~>=100%~~		~~55.6%~~	~~47.2%~~	~~63.9%~~
~~Buy to let~~				
~~0% <= LTV <50%~~	~~35.0%~~	~~7.8%~~	~~6.6%~~	~~9.0%~~
~~50% <= LTV <60%~~	~~35.0%~~	~~11.3%~~	~~9.6%~~	~~13.0%~~
~~60% <= LTV <70%~~	~~35.0%~~	~~15.1%~~	~~12.8%~~	~~17.3%~~
~~70% <= LTV <80%~~	~~35.0%~~	~~19.2%~~	~~16.3%~~	~~22.1%~~
~~80% <= LTV < 90%~~	~~36.0%~~	~~39.0%~~	~~33.2%~~	~~44.9%~~
~~90% < = LTV < 100%~~	~~43.0%~~	~~64.8%~~	~~55.1%~~	~~74.5%~~
~~Personal loans~~	~~75.0%~~	~~103.6%~~	~~88.0%~~	~~119.1%~~
~~Credit cards – revolving retail exposures~~				
~~UK credit cards~~	~~75.0%~~	~~120.7%~~	~~102.6%~~	~~138.8%~~
~~International credit cards~~	~~75.0%~~	~~175.8%~~	~~149.4%~~	~~202.2%~~
~~Corporate~~				
~~Large corporates~~		~~49.4%~~	~~42.0%~~	~~56.8%~~
~~Mid corporates~~		~~79.3%~~	~~67.4%~~	~~91.2%~~
~~SME~~		~~68.5%~~	~~58.2%~~	~~78.7%~~
~~Sovereign~~	~~0.0%~~[4]			
~~High grade (CQS1)~~		~~7.1%~~	~~6.1%~~	~~8.2%~~
~~Upper medium grade (CQS2)~~	~~20.0%~~	~~9.2%~~	~~7.8%~~	~~10.6%~~

2 ~~Credit risk IRB benchmark has been updated to include the 9% upper range risk weight for Buy to let mortgages in the 0%-50% LTV. This upper range of 9% was omitted due an error first published in on 30 April 2018 (effective from 1 January 2019).~~

3 ~~The range stated is +/- 15% and is not the simple range of IRB firms' average risk weights, with the exception of the possible range for CRE which is the full range of risk weights outlined by CRR Articles 153(5) and 158(6).~~

4 ~~To note, these SA risk weights would not apply to EU sovereign exposures which benefit from a 0% risk weight irrespective of their external credit rate (or CQS).~~

~~Lower medium grade (CQS3)~~	~~50.0%~~	~~42.0%~~	~~35.7%~~	~~48.3%~~
~~Non-investment grade speculative (CQS4)~~	~~100.0%~~	~~99.8%~~	~~84.9%~~	~~114.8%~~
~~Highly speculative (CQS5)~~	~~100.0%~~	~~172.1%~~	~~146.3%~~	~~197.9%~~
~~Commercial real estate~~				
~~Commercial real estate development~~	~~100%/150%~~[5]	~~Risk weights can vary between 50% and 250% which represents the full range of risk weights outlined by CRR Articles 153(5) and 158(6).~~		
~~Commercial real estate investment~~	~~100%~~			
~~Institutions~~				
~~High grade (CQS1)~~	~~20.0%~~	~~11.1%~~	~~9.4%~~	~~12.7%~~
~~Upper medium grade (CQS2)~~	~~50.0%~~	~~24.1%~~	~~20.5%~~	~~27.7%~~
~~Lower medium grade (CQS3)~~	~~50.0%~~	~~45.8%~~	~~39.0%~~	~~52.7%~~
~~Non-investment grade speculative (CQS4)~~	~~100.0%~~	~~92.2%~~	~~78.4%~~	~~106.0%~~
~~Highly speculative (CQS5)~~	~~100.0%~~	~~140.1%~~	~~119.0%~~	~~161.1%~~
~~Substantial risks (CQS6)~~	~~150.0%~~	~~287.3%~~	~~244.2%~~	~~330.4%~~

~~Table A2 Credit risk IRB benchmark – excluding expected losses~~

	SA RW	Expected weighted average risk weight	Lower range RW[6]	Upper range RW[6]
~~Mortgages~~				
~~Prime~~				
~~0% <= LTV <50%~~	~~35.0%~~	~~4.5%~~	~~3.9%~~	~~5.2%~~
~~50% <= LTV <60%~~	~~35.0%~~	~~7.7%~~	~~6.6%~~	~~8.9%~~
~~60% <= LTV <70%~~	~~35.0%~~	~~9.7%~~	~~8.3%~~	~~11.2%~~
~~70% <= LTV <80%~~	~~35.0%~~	~~13.9%~~	~~11.8%~~	~~16.0%~~
~~80% <= LTV < 90%~~	~~36.0%~~	~~18.7%~~	~~15.9%~~	~~21.5%~~
~~90% < = LTV < 100%~~	~~43.0%~~	~~26.4%~~	~~22.4%~~	~~30.3%~~
~~>=100%~~		~~41.0%~~	~~34.9%~~	~~47.2%~~
~~Buy to let~~				
~~0% <= LTV <50%~~	~~35.0%~~	~~6.9%~~	~~5.8%~~	~~7.9%~~
~~50% <= LTV <60%~~	~~35.0%~~	~~9.9%~~	~~8.4%~~	~~11.4%~~
~~60% <= LTV <70%~~	~~35.0%~~	~~13.2%~~	~~11.2%~~	~~15.2%~~
~~70% <= LTV <80%~~	~~35.0%~~	~~16.6%~~	~~14.1%~~	~~19.1%~~
~~80% <= LTV < 90%~~	~~36.0%~~	~~31.0%~~	~~26.3%~~	~~35.6%~~
~~90% < = LTV < 100%~~	~~43.0%~~	~~47.8%~~	~~40.6%~~	~~54.9%~~
~~Personal loans~~	~~75.0%~~	~~77.5%~~	~~65.9%~~	~~89.2%~~
~~Credit cards – revolving retail exposures~~				
~~UK credit cards~~	~~75.0%~~	~~79.6%~~	~~67.7%~~	~~91.5%~~
~~International credit cards~~	~~75.0%~~	~~112.6%~~	~~95.7%~~	~~129.5%~~
~~Corporate~~				
~~Large corporates~~		~~46.3%~~	~~39.3%~~	~~53.2%~~
~~Mid corporates~~		~~71.6%~~	~~60.9%~~	~~82.4%~~
~~SME~~		~~59.8%~~	~~50.9%~~	~~68.8%~~
~~Sovereign~~				
~~High grade (CQS1)~~	~~0.0%~~[7]	~~7.0%~~	~~6.0%~~	~~8.1%~~
~~Upper medium grade (CQS2)~~	~~20.0%~~	~~9.1%~~	~~7.7%~~	~~10.4%~~
~~Lower medium grade (CQS3)~~	~~50.0%~~	~~40.9%~~	~~34.8%~~	~~47.0%~~

5 ~~As outlined by the EBA, speculative immovable property finance (including residential development) is assigned a risk weight of 150% and other CRE is assigned a risk weight of 100%.~~

6 ~~The range stated is +/- 15% and is not the simple range of IRB firms' average risk weights, with the exception of the possible range for CRE which is the full range of risk weights outlined by CRR Articles 153(5) and 158(6).~~

7 ~~To note, these SA risk weights would not apply to EU sovereign exposures which benefit from a 0% risk weight irrespective of their external credit rate (or CQS).~~

~~Non-investment grade speculative (CQS4)~~	~~100.0%~~	~~91.8%~~	~~78.0%~~	~~105.5%~~
~~Highly speculative (CQS5)~~	~~100.0%~~	~~143.1%~~	~~121.6%~~	~~164.5%~~
~~Commercial real estate~~				
~~Commercial real estate development~~	~~100/150%~~[8]	~~Risk weights can vary between 50% and 250% which represents the full range of risk weights outlined by CRR Articles 153(5) and 158(6).~~		
~~Commercial real estate investment~~	~~100%~~			
~~Institutions~~				
~~High grade (CQS1)~~	~~20.0%~~	~~10.9%~~	~~9.3%~~	~~12.5%~~
~~Upper medium grade (CQS2)~~	~~50.0%~~	~~23.7%~~	~~20.2%~~	~~27.3%~~
~~Lower medium grade (CQS3)~~	~~50.0%~~	~~44.6%~~	~~37.9%~~	~~51.3%~~
~~Non-investment grade speculative (CQS4)~~	~~100.0%~~	~~87.0%~~	~~73.9%~~	~~100.0%~~
~~Highly speculative (CQS5)~~	~~100.0%~~	~~120.0%~~	~~102.0%~~	~~138.0%~~
~~Substantial risks (CQS6)~~	~~150.0%~~	~~206.5%~~	~~175.6%~~	~~237.5%~~

Approach to setting Pillar 2A capital for credit risk

2.13B To inform the setting of Pillar 2A capital for credit risk, the PRA considers a firm's own assessment of its risk profile in its Internal Capital Adequacy Assessment Process (ICAAP). The PRA sets out in supervisory statement (SS) 31/15 – The Internal Capital Adequacy Assessment Process (ICAAP) and the Supervisory Review and Evaluation Process (SREP), the expectation that the ICAAP should include credit scenario analysis to assess the adequate capitalisation of SA portfolios.

2.13C The PRA also makes use of systematic methodologies to assess two areas where the PRA considers firms' capital requirements are under-estimated under the Pillar 1 SA. These areas are: (i) exposures to central governments, central banks, regional governments or local authorities; and (ii) retail exposures which are unconditionally cancellable commitments (UCCs).

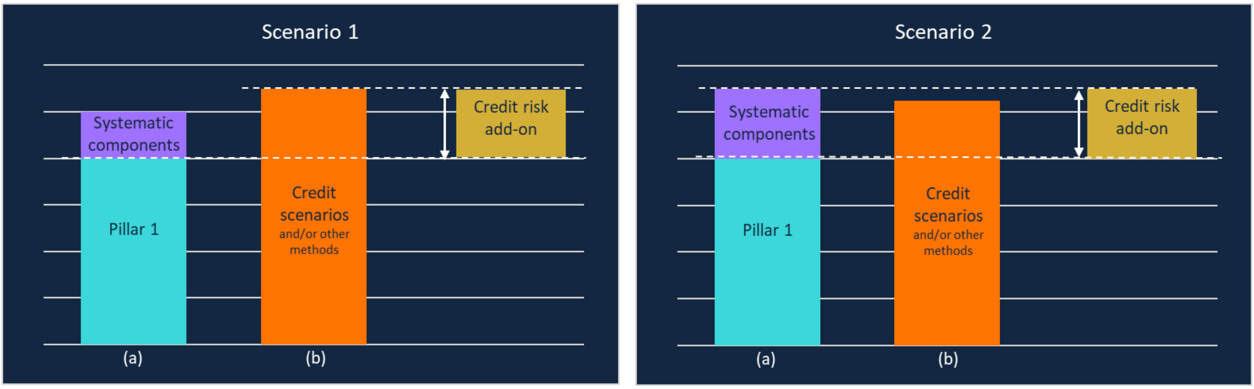
2.13D The credit risk Pillar 2A add-on set by the PRA is primarily informed by the difference between Pillar 1 requirements and the higher of:

a) Pillar 1 capital requirements for credit risk plus the additional capital deemed necessary according to the two systematic methodologies (the 'systematic components'); and

b) the capital needed for credit risk as identified through the credit scenarios analysis (and/or other methodologies used to assess the sufficiency of overall capital, accounting for idiosyncratic risks where appropriate).

[8] ~~As outlined by the EBA, speculative immovable property finance (including residential development) is assigned a risk weight of 150% and other CRE is assigned a risk weight of 100%.~~

Figure A Illustration of Pillar 2A credit risk add-on calculation



In scenario 1, a firm's (a) Pillar 1 capital requirements for credit risk plus the systematic components are **lower** than (b) the capital needed for credit risk as identified through the credit scenarios analysis (and/or other methodologies). Therefore, a firm's credit risk add-on would be equal to (b) minus Pillar 1.

In scenario 2, a firm's (a) Pillar 1 capital requirements for credit risk plus the systematic components are **higher** than (b) the capital needed for credit risk as identified through the credit scenarios analysis (and/or other methodologies). Therefore, a firm's credit risk add-on would be equal to the systematic components.

Systematic methodologies for assessing Pillar 2A capital for credit risk

Exposures to central governments, central banks, regional governments or local authorities

2.13E The PRA has set a number of minimum effective risk weights which are applied where the risk weight assigned to an exposure in accordance with the CRR and the Credit Risk: Standardised Approach (CRR) Part of the PRA Rulebook (the 'Pillar 1 RW') is below the applicable minimum effective risk weight. The minimum effective risk weights are applicable to 'exposures to central governments or central banks' and 'exposures to regional government or local authorities' (excluding exposures to the UK government, Bank of England or the UK devolved administrations). However, they are only expected to be binding for some exposures to central governments or central banks which are assigned a credit quality step (CQS) lower than CQS 1 (or minimum export insurance premiums (MEIP) lower than MEIP 1) and some exposures to regional government or local authorities. The minimum effective risk weights are also applicable to any part of an exposure subject to the IRB approach where an SA risk weight for a central government, central bank, regional government or local authority is assigned in accordance with the Credit Risk Mitigation (CRR) Part of the PRA Rulebook.

Table A Minimum effective risk weights as a percentage of relevant exposures

	CQS 1 / MEIP 0-1*	**CQS 2-3 / MEIP 2-3***	**CQS 4-6 / MEIP 4-7* / unrated**
Exposures to central governments or central banks (excluding the UK)	No minimum effective risk weight	5%	20%
Exposures to regional governments or local authorities (excluding the UK devolved administrations)	5%	20%	100%

*Minimum effective RWs for regional government or local authorities apply on the basis of CQS only. For other requirements on rating, see paragraph 2.13G

2.13F The difference between an exposure's Pillar 1 risk weight and the minimum effective risk weight (ie credit risk under-capitalisation) will inform the calculation of the systemic component for exposures to central governments, central banks, regional governments or local authorities. The systematic component will be calculated as the sum of the following calculation for each relevant exposure:

Exposure value x (Pillar 2A minimum effective risk weight – the risk weight assigned to the exposure in accordance with the CRR and the Credit Risk: Standardised Approach (CRR) Part of the PRA Rulebook)

2.13G Firms are only required to provide data through submitting FSA076 to enable the above calculation in respect of exposures where the Pillar 2A minimum effective risk weight exceeds the Pillar 1 risk weight. The PRA requires firms to provide exposure data using the CQS that that would have been assigned in accordance with the Credit Risk: Standardised Approach (CRR) Part to determine the risk weight treatment, had CRR Articles 114(7) and 115(4) been disapplied. For exposures to regional governments or local authorities, the CQS corresponding to the credit assessment of the regional government or local authority must be used unless none is available (in which case the credit assessment of the central government must be used, if available), and the minimum effective risk weight for regional government or local authority exposures will apply irrespective of whether the exposure is treated as an exposure to a central government in accordance with CRR Article 115(4).

2.13H The PRA will apply the P2A minimum effective risk weight to the protected part of an exposure where the Risk Weight Substitution or Financial Collateral Simple method has been used, and when credit protection is provided by a central government or central bank. The protected part of the exposure will receive an effective risk weight that is the higher of the risk weight of the protection provider as calculated under the SA and the P2A minimum effective risk weight for the protection provider.

Retail exposures which are UCCs

2.13I A Pillar 2A conversion factor (CF) is applied to firms' retail UCCs exposures to inform the calculation of the systematic component for retail UCCs. The systematic component will be calculated as the sum of the following calculation for each relevant exposure:

[Fully adjusted exposure value, ignoring CRM substitution effects] x (Pillar 2A CF – CF applied in accordance with the Credit Risk: Standardised Approach (CRR) Part of the PRA Rulebook) x the risk weight assigned to the exposure in accordance with Article 123 of the Credit Risk: Standardised Approach (CRR) Part of the PRA Rulebook

The Pillar 2A CF will be either:

- 20%; or
- a CF derived by the firm based on their portfolio, where the firm chooses to submit data to the PRA and the PRA considers that the firm has robustly substantiated this CF based on the realised CF(s) for the portfolio. This CF should be no less than 10%.

2.13J The PRA will consider the CF provided by the firm to be robustly substantiated if the firm has provided realised CFs from historical exposures as evidence and this evidence covers a representative mix of benign and downturn economic periods. Where firms do not have data over any downturn period, benign year CFs are expected to be suitably increased, reflecting an estimation of portfolio behaviour in a downturn event.

Credit scenarios and alternative methodologies for assessing idiosyncratic risk

2.13K The PRA expects firms to make use of credit scenario analysis to assess the adequacy of capital held for SA portfolios. This assessment should be used to ensure that minimum capital requirements across Pillar 1 and Pillar 2A provide sufficient capacity to absorb losses incurred in high-severity tail events over a 12-month horizon. The PRA's expectations of firms' credit scenarios are set out in SS31/15.

2.13L The PRA may also consider firms' alternative approaches in the ICAAP to inform the assessment of whether firms are adequately capitalised against credit risk. These may include assessments using proxy IRB approaches.

2.13M The PRA will not consider proxy IRB approaches to be appropriate where:

- the proxy IRB approach is used for exposures where the IRB approach is not available under Pillar 1 (eg exposures to central governments or central banks);
- the proxy IRB approach is used for exposures for which a firm with an IRB permission has been granted permission to permanently use the SA on the grounds that the firm cannot reasonably model the exposures; and
- the proxy IRB approach is used for a set of exposures in respect of which the proxied approach is not available under Pillar 1. This includes in particular:

    (i) proxy IRB approaches using firm estimates of LGD, where the AIRB approach is not available under Pillar 1;

    (ii) proxy IRB approaches using firm estimates of conversion factors or EAD, where either:

    - the AIRB approach is not available under Pillar 1, or
    - modelling conversion factors or EAD is not permitted under the AIRB approach;

    (iii) proxy IRB approaches that do not proxy the Slotting Approach, where the Slotting Approach is the only IRB approach available under Pillar 1; or

    (iv) proxy IRB approaches that proxy the Slotting Approach, where the Slotting Approach is not available under Pillar 1.

Reporting

2.14 ~~Firms using the SA for credit risk for wholesale and retail credit exposures are required by Reporting Pillar 2~~ As set out in Rules 2.7 and 2.7A ~~2.8~~ of the Reporting Pillar 2 Part of the PRA Rulebook, firms must complete the data item FSA076 where they have relevant exposures assigned to a risk weight for which capital requirements are calculated using the SA. ~~to complete the data items for wholesale and retail credit exposures under the SA (FSA076 and FSA077).~~

2.15 [Deleted] ~~The SA data cover a larger array of data than set out in Table A1 and Table A2 in order to inform the assessment of the credit portfolios reported under the SA.~~

2.16 [Deleted] ~~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.~~

3 Market risk

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Definition and scope of application

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3.3 The Pillar 2A approach to market risk applies to all firms and covers all positions in the trading and fair value through other comprehensive income (FVOCI) books, including loan underwriting commitments, securitisation instruments/positions and covered bonds booked in the trading and FVOCI 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.~~

…

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. Other risks include gap risk, intraday risks, market risks on fair-valued positions for which there is no market risk Pillar 1 capital (except where captured by IRRBB) and more generally, risks that may not be well captured under Pillar 1 risk measures (including any material risks not adequately captured under standardised approaches).

Illiquid risks

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~~ adequacy of the methods used for the identification of illiquid risks by the firm to evaluate the completeness of risk capture;
- 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~~ to an appropriate level of severity (and, if not, request the firm to apply alternative stresses);

…

- set a Pillar 2A capital add-on such that the sum of the Pillar 1 (~~and Pillar 1 adjustments for model risks~~ including any relevant adjustments, such as for risks not in models) and the Pillar 2A capital requirement is sufficient to cover losses in line with the PRA's target overall capital standard (99.9% over a 1-year horizon) ~~at a 1-in-1,000 year confidence level~~.

3.8A Firms are expected to have a comprehensive process, with adequate governance, for identifying illiquid risks. The PRA's assessment of the completeness of risk capture will in part be informed by the rigour of this process and its frequency. Examples of good practice include: the periodic reconciliation of illiquid risks against other relevant internal sources of information (eg level 3 assets, valuation adjustments, positions subject to collateral disputes); the involvement of and senior representative sign-off from market risk managers, product control and other relevant business areas; and the integration of the outputs in regular management reports.

3.8B When assessing the methodologies developed by firms to stress illiquid positions, the PRA will seek to gain assurance that the assumed liquidity horizons are sufficiently prudent, and that the nature of the scenario and the size of the market risk factor shocks are commensurate with the PRA's target overall capital standard. The PRA will assess the extent to which the proposed calculation methods adequately capture material non-linearity, eg for options positions. Where possible the PRA will benchmark firms' methods against the realised shocks from relevant stress periods (eg the global financial crisis). Consideration will be given as to whether an instantaneous market shock is the most plausible way in which a firm could make losses, or whether more extreme losses could be sustained over an extended period (eg through periodic re-hedging activities in a one-way market).

3.8C When considering the suitability of any proposed capital mitigants or reserves, the PRA will assess: (i) the extent to which the proposed Pillar 1 capital requirements offset can clearly be attributed to the positions in scope of the Pillar 2A add-on; and (ii) the extent to which valuation reserves would reasonably be expected to be released as a consequence of the proposed stress scenario. Given difficulties in attributing capital requirements derived from portfolio risk measures such as value-at-risk (VaR), the PRA will consider Pillar 2A capitalisation approaches which more directly quantify the incremental risks. For example, such an approach could involve calculating total losses over an extended liquidity horizon using a suitably calibrated stress scenario, and then subtracting losses from the liquidity horizon covered by Pillar 1 calculations.

3.8D For the purpose of directly calculating the incremental Pillar 2A add-on required, the PRA will benchmark to a method based on a standard 'square-root-of-time' scaling approach to convert overall stress shifts to stress shifts for the Pillar 1 liquidity horizons. For example, if a stress shift of 20% is applied to a position with horizon 60 days (ie 3 months), and the Pillar 1 horizon is 10 days, then the effective Pillar 1 stress shift would be calculated as 8.2% (equal to $\sqrt{10/60} \times 20\%$).

3.8E Where a position is sensitive to risk factors of more than one type for which different Pillar 1 liquidity horizons are defined, firms should provide details of the approach to recognising Pillar 1 offsets. For example, firms could determine a single weighted average Pillar 1 liquidity horizon for illiquid positions using weights determined from the ratio of the marginal contribution of each risk factor to the overall stress loss, eg using a 1st-order approximation:

$$Weight(RF_i) = \frac{|Sens(RF_i) * Shift(RF_i)|}{\sum_j |Sens(RF_j) * Shift(RF_j)|} C$$

3.8F For the purposes of aggregation, the PRA will generally add the stress results from different illiquid risks on a gross basis when determining the total Pillar 2A add-on. However, risks which can be demonstrated to be strongly related may be assessed together. Furthermore, the PRA will not in general require Pillar 2A add-ons to be applied to less material risks. Therefore, the use of appropriately sized thresholds to determine which risks need to be included is considered reasonable (subject to below-threshold risks continuing to be re-assessed on an ongoing basis). In its review, the PRA will assess both the size of any such thresholds, as well as the extent to which similar risks have either been sub-divided (eg to keep below threshold) or aggregated.

Other risks

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 for other market risks which the PRA has assessed not to be sufficiently captured through Pillar 1. Examples of such risks may include, but are not limited to, gap risk, intraday risks, non-interest rate market risks on fair-valued positions in available-for-sale books, and, more generally, risks that may not be well captured under Pillar 1 risk measures (including any material risks not adequately captured under standardised approaches). ~~where the PRA identifies deficiencies in a firm's market risk systems and controls.~~

3.9A For all such risks identified, the PRA will seek to ensure that, where material, these are included in Pillar 2A through the use of prudent methodologies designed to measure risk to an appropriate level of severity, in line with the PRA's target overall capital standard, over a period commensurate with the liquidity of the positions/risks. The PRA will aggregate the add-ons on a gross basis across different risk types in its assessment and allowance will be given for any relevant Pillar 1 mitigants (following the approach outlined in 3.10).

Syndicated leveraged loan underwriting

3.9B One particularly material type of risk that is not, in general, well captured in Pillar 1 is syndicated loan underwriting, particularly for leveraged loans. Under normal market conditions, a firm's underwriting commitments can be either fully or substantively met through syndication of the loan to other investors before the loan is drawn. However, should the syndication process fail (eg due to market stress) then significant fair-valued losses may be realised on the available-for-sale portion of the loan. For firms with material syndicated loan 'pipelines' (ie committed deals in the process of being syndicated, including signed but not countersigned positions), the PRA will assess the size of the required Pillar 2A add-on by comparison of the firm's proposal with the results of a benchmark model developed by the PRA.

3.9C The PRA's methodology adopts a stress testing approach, where stressed price shocks are applied to the syndicated loan pipeline positions. Calibration of the shocks is based on data from the global financial crisis, and uses the worst 6-month price declines of a set of loan indices, by credit rating:

Rating	Price Stress
A	10%
BBB	20%
BB	27.5%
B	35%
CCC	45%

3.9D These stresses are applied to the notional values of each individual loan commitment in the pipeline. Applying the shocks to the notional values implicitly assumes that the loans are trading close to par prior to the stress.

3.9E The often-drawn-out nature of the underwriting and syndication process means that it may not always be clear at what stage in the process a commitment needs to be included in the stress. The PRA expects positions for which firms have signed the loan documentation to be included, even where these have not yet been countersigned by the client. Further, to the extent that a firm considers itself 'on-risk' at an earlier stage in the process, the PRA would also expect these positions to be included.

3.9F The calculation generates the gross stress loss, to which various mitigating factors are applied:

- **Deal break:** Data from the global financial crisis indicates that around 20%-25% of deals did not proceed. The client may choose not to complete on the loan commitment as the funds are no longer required; a typical reason being that the underlying M&A deal for which the loan was originally needed falls through. Given this, the PRA generally applies a deal-break multiplier to the gross stress losses. However, the PRA expects firms to provide justification for the size of this in relation to the composition of their loan pipeline (eg M&A versus re-financing).
- **Fees & Flex:** The loan agreements typically include contractual fees and a degree of pricing flex. These are both available to reduce losses in the event that the syndication process does not proceed as expected. The PRA allows these to offset the gross stress loss.
- **Hedging:** Firms may choose to hedge the risks in their pipeline, for example through buying index CDS, index CDS options, or equity options. Typically these are macro-hedges and do not offer protection on the specific loans in the commitment pipeline. Where this is the case, and to allow for basis risk between the hedges and the specific names, the PRA assumes only a partial hedging benefit.
- **Pillar 1 capital:** The Pillar 2A add-on is net of any credit risk Pillar 1 capital held against the commitments. The PRA does not take account of any market risk capital associated with hedging activity that the firm may have undertaken.
- **Scale to peak:** The commitment pipeline is typically very 'lumpy' with significant single-name concentration, and can show large variation over time driven by deal flow. The PRA's Pillar 2 approach aims to take account of this variation by considering the exposure during the course of the whole year, not only at the ICAAP reporting date. Relevant reference points include the peak exposure, the average exposure, as well as the period-end exposure. The PRA's benchmark is based on the average exposure over the previous year to the ICAAP date. However, the PRA also gives consideration to whether this should be increased, for example if recent trends or future expectations of the size of the pipeline indicate an increased risk appetite. The PRA's broad principle is to prudently capitalise to a level that roughly captures the long-run, underlying risk of the business, taking account of any growth in risk appetite.

Reporting

3.10 ~~The PRA already collects information on illiquid, concentrated and one-way positions from firms participating in the Stress Testing Data Framework (STDF) programme. This information is used for assessing the adequacy of a firm's capital under Pillar 2A.~~ To support the PRA's assessment of market risk Pillar 2A capital requirements, firms are requested to provide at a minimum the information set out below alongside their ICAAP submission, with data as at their ICAAP reference date:

- For illiquid, concentrated and one-way positions:

  (i) Details of the process followed to identify all illiquid, concentrated, and one-way positions or other Pillar 2A risks (including any legacy/non-core positions) and to evidence that complete and comprehensive coverage is achieved;

  (ii) Illiquid and concentrated position spreadsheet (FSA080 illiquid risks). The submission should provide details of the methodologies (eg risk factor shocks by tenor, liquidity horizons, and historical calibration period) used to quantify risks of illiquid, concentrated and one-way positions, and any other positions for which Pillar 1 capital charges are judged to be insufficient;

  (iii) Where there is a material difference for a particular stress loss through time (eg versus previous ICAAP submissions), provide narrative explaining the drivers of the change;

  (iv) Detailed breakdown by product type of fair-valued Level 3 assets, including valuations. Provide a quantification of the risk associated with these Level 3 positions if not provided in FSA080 and the reason why they have been excluded;

  (v) A list of all concentration risk AVAs and fair value concentration reserves, mapped to the identified illiquid and concentrated risks used for Pillar 2A;

  (vi) Internal market risk reports (including stress test reports) for the legal entities as of ICAAP date; and

  (vii) Detailed rationale of any mitigants being used (eg 10-day stress loss, capital mitigants) to offset the proposed Pillar 2A stress losses. These should where necessary reflect the Pillar 1 liquidity horizons (LHs) set out in the IMA section. This should clearly set out the LHs being used and the way in which a Pillar 1 offset has been calculated (for example, by offsetting the first n days of the N-day stress loss, where n is the assumed LH).

- For syndicated loans (if relevant):

  (i) Detailed breakdown of syndicated loan positions in the non-trading book, covering all positions where the firm has made a commitment to the client irrespective of whether or not the client has accepted the commitment (ie signed but not countersigned positions), and also differentiating between commitments for which the syndication has not yet started and commitments where the syndication process is underway;

  (ii) Information at each individual position level showing (at a minimum):

    - Notional;
    - Rating;
    - Region;
    - Sector;
    - CR01;
    - Maturity of the underlying loan;
    - Duration of the underlying loan;
    - Fees and flex; and

- Status (ie stuck, signed and countersigned, signed but not countersigned, other committed trades). Markdowns taken on 'stuck' positions should be included.

(iii) Quantification of the risk arising from the syndication pipeline and the adequacy of Pillar 1 capital requirements or other mitigants relating to these positions to cover this risk. The quantification may, for example, be based on a stress test; in which case, details of and justification for the shocks applied should be provided; and

(iv) Information on the extent to which the loan balances and risk levels have varied across the year and how the capital assessment ensures that the risk is prudently capitalised over time.

3.11 Although the Pillar 2A capital requirement is mainly based on positions held as at the date specified above, in cases where positions relate to portfolios that are concentrated in a small number of underlying names and/or show variability over time (for example, syndicated loans and deal contingent trades), information on this variation and a description of how the firm's capital assessment leads to the risk being prudently capitalised over time should be included. ~~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 STDF programme. Firms that are in scope are required to submit the data with their ICAAP submissions.~~

4 Operational risk

…

4.2 [Deleted] ~~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 [Deleted] ~~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

…

4.4A Firms' Pillar 1 capital requirements for operational risk are determined in accordance with the Operational Risk Part of the PRA Rulebook. The PRA assesses operational risk as part of Pillar 2A to ensure that idiosyncratic risks that are not well captured in Pillar 1 are considered, including a firm's past operational risk losses. This ensures operational risk capital requirements are adequate given the risks firms face, whilst remaining flexible and risk sensitive.

4.5 [Deleted] ~~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 [Deleted] ~~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 [Deleted] ~~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).[9] 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 [Deleted] ~~The approach detailed below applies to firms using BIA, TSA or ASA to calculate Pillar 1 operational risk capital requirements.~~

4.9 [Deleted] ~~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 for all firms

4.9A In assessing Pillar 2A operational risk capital, the PRA reviews a firm's operational risk assessments in its ICAAP in a proportionate manner depending on the size, complexity and systemic relevance of the firms. The PRA considers the following factors:

(i) the firm's business model and exposure to operational risk – including firms' management of operational risk, the effectiveness and suitability of mitigating actions in place, any relevant external factors that might impact the firm's exposure to operational risk;

(ii) the firm's analysis in its ICAAP, with a focus on historical losses (when available) and scenario analysis (in line with the expectations set out in 2.18A to 2.18D in SS31/15);

(iii) quality of the firm's own Pillar 2A assessment, including appropriateness and robustness;

(iv) any insights gathered through engagement with the firm; and

(v) peer group comparison.

Further factors the PRA considers for significant firms

4.9B Significant firm means a deposit-taker or PRA-designated investment firm whose size, interconnectedness, complexity and business type give it the capacity to cause significant disruption to the UK financial system (and through that to economic activity more widely) by failing or carrying on its business in an unsafe manner.

4.9C Where a significant firm's operational risk measurement framework aligns with the good practices (set out in 2.18E to 2.18N of the SS31/15), the PRA will place greater emphasis on the firm's ICAAP when determining Pillar 2A capital for operational risk. Otherwise, the PRA will rely more on the methodology outlined below.

4.9D While the below methodology mainly applies to significant firms, it may be extended by the PRA to other firms depending on the size, nature and complexity of a firm and the availability of data inputs (particularly historical losses).

[9] ~~CRR Article 324.~~

4.10 The approach considers non-conduct risk separately from conduct risk. The Pillar 2A capital add-on is the sum of the capital adjustment for conduct risk and non-conduct risk.

4.11 [Deleted] ~~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.~~

4.11A 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).[9a] 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. All other Basel event types are considered non-conduct risk.

4.12 The PRA recognises that ~~S~~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 [Deleted] ~~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.~~[10]

4.14 [Deleted] ~~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.~~

Non-conduct risk

4.15 The PRA uses three loss estimates, described below, to inform the setting of a firm's Pillar 2A capital requirement 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. The event type (excluding CPBP) ~~This calculation is repeated for each of the past five years, and the event type~~ resulting in the largest capital requirement

[9a] See Annex 2 of the Operational Risk Part of the PRA Rulebook.
[10] ~~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.~~

(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 PRA will regularly review the calibration and the five-year horizon to ensure that they remain appropriate. ~~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 non-conduct 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 [Deleted] ~~The Pillar 2A capital add-on is the sum of the capital adjustment for conduct risk and non-conduct risk.~~

Conduct risk

4.17A Pillar 2A capital for conduct risk is driven predominantly by supervisory judgement, which 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 are considered. Where deemed appropriate, the PRA may also use the three loss estimates described above based on conduct risk data inputs.

Reporting

4.18 The PRA already collects information on operational risk historical losses from firms participating in the Stress Testing Data Framework (STDF) 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 rule 2.3 in the Reporting Pillar 2 Part in the PRA Rulebook, ~~2.3,~~ unless those data have already been submitted as part of the STDF programme. Firms are required to submit the data with their ICAAP submissions. ~~'Significant firm' means a deposit-taker or PRA-designated investment firm whose size, interconnectedness, complexity and business type give it the capacity to cause significant disruption to the UK financial system (and through that to economic activity more widely) by failing or carrying on its business in an unsafe manner. 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.~~

4.19 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. Expectations for non-Significant firms in relation to including information in their ICAAP are set out in Chapter 2 of SS31/15.

5 Counterparty credit risk

…

5.2 [Deleted] ~~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

…

5.3A The Pillar 2A approach to counterparty credit risk applies to all firms and covers all positions across both trading and banking books.

5.3B 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.

5.4 ~~For firms with advanced model permission,~~Where the underestimation of Pillar 1 capital is due to deficiencies of advanced models,[11] the PRA generally aims to address the capital shortfall by requiring the firm to remediate the shortcomings of the Pillar 1 model~~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 paragraph 4A.3 of SS12/13~~. Article 101 of the Capital Requirements Directive (CRD).[12]~~, rather than setting Pillar 2A capital requirements.

5.5 The Pillar 1 SAs for calculating exposures on derivatives and securities financing transactions (SFTs) are relatively simple and may not be appropriate for all trades (eg more complicated trades or trades with unusual features). The PRA will review any risks that are not adequately captured by SAs in its Pillar 2 assessment and may ask firms to maintain additional capital under Pillar 2A to address identified deficiencies. ~~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 [Deleted] ~~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.~~

[Deleted] ~~Qualitative requirements for CCR~~

5.7 [Deleted] ~~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~~

[11] These include the Internal Model Method in CRR Article 283 and the Internal Models Approach for Master Netting Agreements in CRR Article 221.
~~[12] See footnote (1) on page 5.~~

~~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 credit concentration risk, as set out in Chapter ~~5~~ 6. 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.

5.8A However, in line with the PRA's approach to assessing secured financing risks outlined below, the PRA expects firms' assessment of counterparty credit risk capital requirements to take account of additional risks associated with large, concentrated or otherwise illiquid collateral positions.

~~IT sufficiency and data quality~~ Methodology for assessing Pillar 2A capital for counterparty credit risk

5.9 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 are generally expected to relate to residual risks arising from credit risk mitigation, wrong-way risk, settlement risk, and more generally, tail risks that may not be well captured under Pillar 1 risk measures. ~~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 arising from a non-PvP (payment versus payment) settlement protocol may not be adequately capitalised under Pillar 1, and the PRA may challenge the appropriateness of a zero capital requirement for such risk and require firms to maintain additional capital under Pillar 2A. ~~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~~.

5.11 As exposure to settlement risk may be 'lumpy' with variation over time, firms' assessments of settlement risk should also recognise that their exposure to settlement risk varies through time. ~~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 [Deleted] ~~Where firms do not adequately manage settlement risk arising from products outside the scope of an advanced CCR model[13] (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.~~

…

~~[13] This would include products (eg cash equities and cash bonds) that can result in settlement risk that does not attract counterparty credit risk.~~

~~Collateral management~~ Residual risks, including residual risks relating to credit risk mitigation

5.14 Firms are expected to assess, and, if material, capitalise any residual risks arising from the use of credit risk mitigation techniques. ~~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 In particular, the PRA considers that the assumptions of Pillar 1 capital requirements may underestimate the risk on certain portfolios. This includes strongly over-collateralised portfolios where Pillar 1 capital requirements may be inadequate, trades where collateral received is concentrated in a single security or issuer, and large individual trades where the recognition of credit risk mitigation leads to comparatively low Pillar 1 requirements. The PRA expects firms to identify specific trades and portfolios where residual risks may be material and conduct their own assessment of the risk of loss associated with those positions. ~~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.~~

5.15A The PRA's review will consider firms' assessments for measuring the risk against such positions. The PRA will also consider the appropriateness of the margin periods of risk and liquidation periods used to calculate volatility adjustments or to estimate the exposure against collateral assets whose actual price risk may be materially understated as a result of illiquidity or concentration of collateral.

5.15B The PRA's review will also consider the risk at an overall portfolio level. This is particularly relevant for portfolios of strongly over-collateralised trades, where the only residual risks arise from low-probability events which may not be reflected in the volatility haircuts applied or adequately captured in IMM models. The PRA's review will consider risks that might arise in a concentrated segment of the portfolio under a severe but plausible scenario, combining a sharp decline in collateral value with a cluster of correlated defaults.

Wrong-way risk

5.16 Other than for specific wrong-way risk that is legally-connected,[14] the CCR capital framework assumes a generic and relatively low level of dependence ~~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. Concentrated wrong-way exposures, eg to one or more counterparties in a particular country with similar risk profiles, are of particular interest. The PRA will review the ~~reviews the firm's management~~ and capitalisation of any such positions as part of its assessment ~~wrong-way risk in its~~

14 As defined in CRR Article 291(1)(b).

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

~~Stress testing~~ Other risks

5.18 In addition to the risks associated with secured financing trades, wrong-way risk, or settlement risk, the PRA may also request a firm to hold additional capital under Pillar 2A for other counterparty credit risks which the PRA has assessed not to be sufficiently captured through Pillar 1 or otherwise mitigated. Example of such risk may include, but are not limited to, weaknesses in firms' stress testing, weaknesses of firms' model validation and governance processes, the adequacy of Pillar 1 capital requirements for CVA volatility risk, the accuracy of exposures under non-advanced methods, and any other tail risks that may not be well captured under Pillar 1 risk measures. ~~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.~~

5.18A For all such risks identified, the PRA will seek to ensure that, where material, these are included in Pillar 2A through the use of prudent methodologies designed to measure risk to an appropriate level of severity, in line with the PRA's target overall capital standard, over a period commensurate with the liquidity of the positions/risks. The PRA will aggregate the add-ons on a gross basis across different risk types in its assessment; allowance will be given for any relevant Pillar 1 mitigants.

~~Model validation~~

5.19 [Deleted] ~~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~~ Reporting

…

5.20A To support the PRA's assessment of CCR Pillar 2A capital requirements, firms are requested to provide at a minimum the information set out below alongside their ICAAP submission, with data as-at their ICAAP reference date.

5.21 Although the Pillar 2A capital requirement is mainly based on positions held as at the date specified above, in cases where positions relate to portfolios that are concentrated in a small number of underlying names and/or show variability over time (for example, for settlement risk), include information on this variation and describe how your capital assessment leads to the risk being prudently capitalised over time. ~~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.~~

General wrong-way risk (GWWR)

5.22 ~~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.~~ Firms are requested to provide the following information:

- Gross notional of all derivative and SFT positions where the country of risk of either the derivative underlying, or collateral posted to the firm, is the same as the country of risk of the counterparty, broken down by country; and
- Wrong-way risk stress scenario impact information.

Residual risk due to credit risk mitigation

5.23 In order to better understand the potential risks arising from concentrated collateral, as described above, the PRA requests detailed transaction-level information on all secured financing exposures (cash and synthetic) where the exposure (net of any cash margin) is secured against a single collateral asset or group of materially correlated assets. In collating this information, include reverse repos, securities borrowing transactions, collateral swaps, prime brokerage agreements, margin lending and total return swaps. An exposure should not be considered as secured against a single collateral asset if it is included in a legally enforceable netting agreement alongside other financing transactions against which different collateral assets have been posted to you. Exposures secured against US Treasuries and UK gilts should be excluded from the submission.

5.24 For all transactions meeting the criteria set out above, please provide the following information:

- Counterparty information:
  - (i) Counterparty name;
  - (ii) Counterparty country of domicile;
  - (iii) Counterparty sector; and
  - (iv) Counterparty credit rating
- Collateral information (applicable to all relevant assets):
  - (i) Issuer name;
  - (ii) Issuer country of domicile;
  - (iii) Collateral currency;
  - (iv) Issuer sector;
  - (v) Relevant credit rating; and
  - (vi) Assumed recovery in default (if available or best estimate)
- Transaction information:

(i) Current market value of cash or assets lent (net of any cash margin);

(ii) Current market value of collateral received; and

(iii) Amount of Pillar 1 counterparty credit risk capital held against the transaction.

Settlement risk

5.25 Although there may be Pillar 1 capital requirements for trades that have failed to settle, there are no ex-ante capital requirements to cover the principal risk that arises when a counterparty fails to deliver a security or value (eg cash) while the firm has already delivered its side of the trade. This risk potentially material for products which settle free of payment (FOP) rather than via a recognised PvP protocol.

5.26 The PRA requests that firms provide a quantification of the risk arising from non-PvP settlement failures along with details of the methodology used.

6 Credit concentration risk

…

Definition and scope of application

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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[15] and non-performing loans). All credit portfolios other than residential mortgage portfolios on the standardised approach, intragroup exposures and defaulted assets are considered for geographic concentration risk.

…

8 Pension obligation risk

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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

- the PRA's review of the firm's assessment ~~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 [Deleted] ~~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.~~

15 Where the calculation is in respect of a ring-fenced body on a sub-consolidated basis, intragroup exposures to group entities not included in the sub-consolidation are treated as if they were exposures to third parties.

8.10 The PRA's review uses an approach which corresponds to the value at risk of the accounting surplus or deficit consistent with a stress event that has no more than a 1 in 200 probability of occurring in a one-year period. This includes consideration of various factors including equity, credit, interest, inflation and longevity risks. ~~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 capital requirement for pension obligation risk. The higher of the two stress scenarios will form the starting point of the assessment.~~

8.11 [Deleted] ~~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 [Deleted] ~~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 [Deleted] ~~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 [Deleted] ~~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 [Deleted] ~~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 capital requirement 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. The PRA will review the firm's offsets and management actions and will adjust them, if necessary, when determining the PRA's view of the capital required.

8.18 The PRA will decide whether to accept offsets and management actions by applying the following criteria:~~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.

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Section II: Pillar 2B

9 The PRA buffer

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Setting the PRA buffer

9.6 The frequency of assessment of the PRA buffer is aligned to a firm's SREP cycle; annually for major UK firms, and every two to four ~~three~~ years for other firms. The PRA may reassess the PRA buffer more frequently when a firm's circumstances change. For example a change in business model or strategy, a material change in a firm's risk profile, or when RMG weaknesses are either identified or resolved.

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9.8 For all firms not participating in the Bank Capital Stress Test ~~annual stress tests (AST)~~, the hurdle rate is equal to total capital requirements (TCR). For firms participating in the Bank Capital Stress Test ~~AST~~, the hurdle rate is set out in the ~~annual~~ guidance published on the Bank's website.[35]

9.9 Firms subject to leverage requirements will also be subject to a hurdle rate based on the Tier 1 leverage measure. Refer to the Bank's website[36] for the applicable hurdle rate.

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The stress impact

9.13 The PRA carries out an assessment of firms' ICAAP stress testing as part of the SREP.[40] For the largest ~~major~~ and most systemic UK firms this is supplemented by periodic concurrent stress testing, in particular the Bank Capital Stress Test ~~annual stress test~~ (~~AST~~).[41]

…

Stress scenario

9.16 The Bank publishes the stress scenario that major UK firms should consider. These are used in the Bank Capital Stress Test's ~~AST~~ exercise.

9.17 For firms that are not part of this Bank Capital Stress Test ~~AST~~, the PRA regularly publishes scenarios to serve as a guide when designing their own scenarios for ICAAPs.[42] These scenarios provide a benchmark for the severity and nature of stress scenarios, to be considered, to ensure consistent assessments across firms.[43]

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Table E – Pillar 2A scaling bases[44]

Risk type	Scaling base
Operational risk[45]	Leverage exposure measure
Pension risk	No scaling – remains a fixed add-on
Interest rate risk in the banking book (IRRBB)	Leverage exposure measure
Credit concentration risk	Pillar 1 credit RWAs

35 The hurdle rate reflects the level of capital firms are expected to maintain in a stress. This is specific to each stress test. Firms participating in the Bank Capital Stress Test should refer to the guidance for each test: https://www.bankofengland.co.uk/stress-testing.
36 https://www.bankofengland.co.uk/stress-testing.
40 Stress testing and scenario analysis requirements are set out in Chapter 12 of the Internal Capital Adequacy Assessment Part of the PRA Rulebook ~~rules~~ and in Chapter 3 of the SS31/15 'The Internal Capital Adequacy Assessment Process (ICAAP) and the Supervisory Review and Evaluation Process (SREP)': https://www.bankofengland.co.uk/prudential-regulation/publication/2013/the-internal-capital-adequacy-assessment-process-and-supervisory-review-ss.
41 The Bank of England's approach to stress testing the UK banking system sets out how the PRA will use stress testing to inform the calibration of capital buffers, including the Bank Capital Stress Test and other types of concurrent exercises: https://www.bankofengland.co.uk/stress-testing/2024/boes-approach-to-stress-testing-the-uk-banking-system.~~https://www.bankofengland.co.uk/stress-testing.~~
42 https://www.bankofengland.co.uk/stress-testing.
43 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 PRA's published scenarios or the firms' idiosyncratic scenarios. The results of these sensitivity tests may be used to adjust the assessment of the stress impact.
44 Table E covers the material risks captured by Pillar 2A requirements for the firms participating in the ~~annual~~Bank Capital ~~s~~Stress ~~t~~Test. For other risks, the PRA will consider the best scaling base to apply while maintaining the simplicity of the calculation.
45 Including information technology risk.

Market and counterparty credit risk[46]	Pillar 1 market risk RWAs
Credit risk	Pillar 1 credit RWAs
RFB group risk	No scaling – remains a fixed add-on
Other risks	As appropriate

Management actions

9.24 The PRA recognises management actions that firms could and would realistically take to mitigate the impact of the stress scenario. Guidance on management actions is provided in SS31/15. Additional expectations on management actions for the major UK firms participating in the Bank Capital Stress Test's ~~Bank's AST~~ are published on the Bank's website.[47]

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9.26 The firms participating in the Bank Capital Stress Test's ~~Bank's AST~~ are expected to meet the projected demand for credit from UK households and businesses in the stress. This may limit the management actions recognised by the PRA in this context.

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Other factors

9.44 The PRA expects firms to hold a larger buffer or strengthen their capital position where necessary based on other factors. These include, but are not limited to: the firm's leverage ratio; Tier 1 and total capital ratios; risks associated with double leverage; and the extent to which potentially significant risks are not captured fully as part of the stress test. ~~Until the end of 2023, the PRA will also assess firms' capital positions under transitional arrangements for International Financial Reporting Standards (IFRS) 9,[53] where firms are using these arrangements~~.

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Reporting

9.46 The scope and intensity of the PRA's assessment is proportionate to the nature, scale, size, and complexity of the firms and is reflected in the granularity of the stress test data firms are required to submit. The Stress Test Data Framework (STDF) contains the data templates for the larger UK firms participating in the Bank~~'s~~ Capital Stress Test~~AST~~.

9.47 All firms with total assets equal to or greater than £5 billion, at the relevant level of consolidation used as the basis of their ICAAP, must report the data in the stress testing Pillar 2 data item (PRA111) in accordance with Reporting Pillar 2. Firms are required to submit the data with their ICAAP submissions. Firms with total assets less than £5 billion may be requested by supervisors to complete PRA111 on a case-by-case basis. The information in PRA111 includes information on firms' base and stress scenario projections used in the ICAAP. PRA111 is aligned to the STDF used in the Bank's annual Capital ~~s~~Stress ~~t~~Test with reduced granularity.

46 The Pillar 2A requirement for counterparty credit risk typically relates to the market risk aspect of counterparty credit risk. The credit risk component would typically be captured in credit concentration risk requirements.
47 https://www.bankofengland.co.uk/stress-testing.
~~53 IFRS 9 was issued in July 2014 and sets out new rules for accounting for financial instruments, replacing the rules in International Accounting Standard (IAS) 39. Following endorsement for use in the EU, IFRS 9 is effective for annual periods beginning on or after 1 January 2018. The PRA's communications to firms on IFRS 9 are available on the Bank's website at: https://www.bankofengland.co.uk/prudential-regulation/letter/2017/transition-disclosures-for-ifrs9-financial-instruments~~.