Review of Solvency II - Data Collection Exercise (DCE)

Instructions

June 2022

Contents

Part I – Valuation approach for assets with no direct market price

1.1   We are aware that for assets/asset classes where there is no direct market price then a valuation approach will be required that references the market prices of other assets and/or uses modelling techniques. For each of the asset types that we had set out in the instructions to the MA Asset and Liability Information Request issued in June 2021[1] (except cash/liquidity funds and reinsurance) we are seeking to understand the valuation approach that you (or your external asset manager) use. We would appreciate it if your response as a whole could cover at least 90% of the assets in your MA portfolio (MAP) by market value.

1.2   The full list of asset classes for which we are seeking this information is provided in Annex 1 for ease of reference. This list uses the same categorisation and definition of assets as was contained in the MA Asset and Liability Information Request that the PRA published in June 2021 (subject to some minor edits for clarification). Please set out a brief description of your valuation approach in Part I of the response template in each case, including a description of the data used in your valuation and the methodology that you apply. We are primarily seeking to understand how the assets were valued as at year-end 2020 (YE20) but if the approach would change according to economic conditions, including in stress, then it would also be useful if you could note this. We would appreciate it if you could provide most detail for those assets that are valued using an additional spread applied to a given index. If multiple approaches are used for a given asset type then please set this out explaining for which assets each approach would be utilised (and why). If you do not hold assets in a given category in your MAPs then please respond with 'n/a' in the relevant cell.

1.3   Please include as much detail as required here to allow cross-references to be made in Part II of the data request.

Part II – Additional columns in the MA Asset and Liability Information Request

2.1   We have added some new columns to the MA Asset and Liability Information Request template that you completed in summer 2021. The original data was provided as at YE20 and we would like the new data also to be provided at this

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[1] https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/solvency-ii/solvency-ii-reform-quantitative-impact-survey/ma-asset-liability-info-request-as-at-yr-end-2020.xlsx?la=en&hash=255332F77D813EE7503B569A3D66B257A245E2E0

date for consistency. For ease of reference the new columns in the template are clearly highlighted in yellow at the top of the worksheet. We would ask that for the purposes of completing this part of the template, you copy over your final submission to the PRA in 2021 (this should be the submission following any changes made after conversation with the PRA) and then add the new columns to this. If you would like to check with the PRA regarding the submission you intend to use as the basis for your response to this request then please feel free to do so via your usual supervisory contact. We explain what each of the additional columns is seeking to capture in the table below:

Column	What the column is intended to capture
'Notched' rating. (Column I)	Various industry participants have suggested that the granularity of the FS calibration should be increased to include 'notched' ratings. These are ratings that give additional granularity beyond the letter rating. Examples are BBB+, BBB, BBB-. For each asset you hold we are therefore seeking for you to provide your actual rating for the asset and not just the letter rating or CQS (if your actual rating is more granular than this). If your approach to notched ratings for all or some of your assets is bespoke (eg does not use a ratings scale typically used by an ECAI) then please provide your notched ratings in what you consider to be the most appropriate form, as well as mapping to an ECAI-rating scale if possible. In either case it would be helpful if you can provide any accompanying free-form commentary as necessary. It may be the case that you are only able to use a more granular rating scale for certain assets or asset classes – if this is the case then please can you ensure that this column is only completed for assets where you use a notched approach; for all other assets it should be left blank.
Is the asset internally valued with reference to an index (ie in the form of an additional spread applied to that index)? (Column J)	When completed this column should contain either: 'Yes – using an externally published index'; 'Yes – using an internally constructed index' or 'No' answer for each asset, other than those where there is a direct market price – in this case please put 'N/A'. We are seeking to better understand the extent to which assets are internally valued with reference to an index (or indices) plus an additional spread and also the nature of the index in each case.

If yes, please specify the relevant index (eg MSCI etc). (Column K)	For assets where you have selected "yes" in column J, this column is asking for the name of the index or indices used. We would request as much detail as possible as to the exact index/indices being used.
If the asset is not internally valued with reference to an index (in the form of an additional spread applied to that index), or if it is not internally valued at all, please set out what you consider an appropriate reference index would be for the asset in question. (Column L)	For assets that are not internally valued, or that are internally valued but not with reference to an index in the form of an additional spread applied to that index, please set out what you consider would be the most appropriate reference index (or indices) against which to compare the spread on the asset. Indices referenced should be externally published indices only. If you do not consider there to be an appropriate externally published index, but you consider that a suitable index could be internally constructed, then please make this clear. If you think there is no appropriate reference index for the asset in question, having regard to the use to which it would be put (see below), then please put 'None' in the relevant cell. We are seeking here to gather data as to the types of reference index that would be appropriate for use in the index-spread approach to calibrating the Credit Risk Premium (CRP).
Asset z-spread[2] less the relevant reference index z-spread as at YE20 (using the index/indices named in either column K or L as appropriate for the asset in question). (Column M)	Please provide the z-spread on the asset less the z-spread on the relevant index (using the index/indices named in either column K or L as appropriate for the asset in question) in percentage terms (eg if the z-spread on the asset is 2% and the z-spread on the reference index is 1.5% then the value in this column would be 0.5%). If you value an asset with reference to more than one index then please provide what you consider to be the most appropriate measure here along with a note to your response explaining what you have done.

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[2] The z-spread is the parallel shift to the basic risk-free rate such that the present value of the recognised cash flows (before any adjustment for Expected Loss (EL)) equals the market value of the assets.

Please set out the valuation methodology for each asset that does not use 'quoted market price in active markets for the same assets' per your asset and liabilities data request submission. (Column N)	This cell is looking for a short qualitative description of your approach. If the answer for any asset can be mapped to one of the boxes in your response to Part I then please simply give the mapping. Please also feel free to state 'same as asset x' to avoid repetition, where possible.
How would the spread over the reference index be expected to change over time eg following changes in economic conditions? (Column O)	This question should be answered qualitatively for all assets that are internally valued – including those not valued with reference to an index in the form of a spread applied to that index, except where the answer to column L is 'None'. Here we are looking to understand how the behaviour of the z-spread on the asset is expected to compare to the behaviour of the z-spread on the reference index (using the index/indices named in either column K or L as appropriate for the asset in question) over time. We are also looking to understand if there are specific circumstances in which the gap between the spread on the reference index and the spread on the asset would be expected to deviate from its normal level. Please provide as much detail as you consider necessary to capture the key points you want to make regarding behaviour over time. If there are points where you consider the reference index itself may need to be reassessed for appropriateness then please also note this either in the relevant cell or in the free-form comments if a more general point. Please feel free to state 'same as asset x' to avoid repetition, where possible. Also, if the answer for any asset can be mapped to one of the boxes in your response to Part I then please simply give the mapping.
For assets other than government, quasi government, supranational or corporate bonds: does this investment support a project or projects in the UK? (Column P)	We are seeking to understand the extent to which current MAPs are invested to finance projects in the UK. For this purpose we consider a project in the UK to be one where the physical asset is in the UK.

If entry in Column P is 'yes', ie it is supporting a UK project or projects, then please briefly describe the project(s) in question. (Column Q)	Where you have indicated that you are providing investment to a UK project (or projects), we are keen to understand better the nature of the project(s). Where the name makes it sufficiently clear as to what the project is then you need only provide its name in this column. However, if you consider more detail is required then please also provide this.

Part III

III A - Base balance sheet impact of the index-spread approach based on a possible calibration of X, Z and n and a given reference index[3]

3.1   We are seeking quantitative, base balance sheet output for the scenario outlined below, where X% is 35%, Z% is 17.5% and n is 5 (years). This scenario represents one possible calibration. It should not be interpreted as the PRA's preferred calibration nor a policy proposal at this stage. However, we consider it to be a suitable scenario to support further analysis given the PRA's view set out in DP2/22. We note that YE20 is only one point in time and that impacts may change depending on the exact date used and the prevailing economic conditions including the history of spreads at that time. YE20 has been chosen as this was the date used for both the MA Asset and Liability Information Request and the QIS and was therefore considered to be useful for consistency purposes.

3.2   Please provide the breakdown of your Eligible Own Funds as at YE20. This should be similar to S.23.01.01 submitted in your annual returns but allowing for QIS Run ID 2 (SONIA). Cell K6 should therefore be identical to the information entered in the QIS template for Run ID 2, cell J148.

3.3   Please provide the breakdown of the impact of the scenario outlined below in the following two steps.

(i)   Please update the Eligible Own Funds breakdown and breakdown of your MA benefit assuming that the FS CRP calibration is replaced with the index-spread approach, where X% should be set as 35% and the averaging period (value of n) should be 5 years. The relevant reference index 5-year average spreads (that should be used in all cases) are set out in paragraph 3.14. Z% should be 0%. The X-component should be subject to the floors and caps set out in paragraph 3.16, but no other

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[3] See paragraphs 82-85 of the Annex to DP2/22 for an overview of the index-spread approach: Solvency II Review: Matching adjustment and reforms to the fundamental spread (bankofengland.co.uk)

restriction should be applied to the MA on assets that are rated below CQS 3 (as per paragraph 3.6 below). In particular, what is commonly referred to as the 'BBB cliff' in the current FS construct does not apply.

(ii) Please update this Eligible Own Funds breakdown and breakdown of your MA benefit assuming that the FS CRP calibration is replaced with the index spread approach as above, but where Z% is now set to 17.5%. X% should remain set as 35% and the averaging period should still be 5 years. The relevant reference index 5-year average spreads are set out in paragraph 3.14 and the z-spreads on the reference index are in paragraph 3.15 (both of which should be used in all cases). The X-component should be subject to the floors and caps set out in paragraph 3.16, but no other restriction should be applied to the MA on assets that are rated below CQS 3 (as per paragraph 3.6 below). In particular, what is commonly referred to as the 'BBB cliff' in the current FS construct does not apply.

For both (i) and (ii) above, please show the impact:

(a) without a TMTP recalculation and with no other adjustments for changes in deferred tax, ring-fenced funds restrictions, capital tiering restrictions and changes in any items that you identified in your QIS submission as 'other liabilities';
(b) without a TMTP recalculation, but allowing for changes in deferred tax, ring-fenced funds restrictions, capital tiering restrictions and changes in any items that you identified in your QIS submission as 'other liabilities';
(c) after a TMTP recalculation and with no other adjustments for changes in deferred tax, ring-fenced funds restrictions, capital tiering restrictions and changes in any items that you identified in your QIS submission as 'other liabilities'; and
(d) after a TMTP recalculation, but allowing for changes in deferred tax, ring-fenced funds restrictions, capital tiering restrictions and changes in any items that you identified in your QIS submission as 'other liabilities'.

3.4 The FS formula for this scenario (ie as specified in paragraph 3.3 above) is set out below.

3.5 The Fundamental Spread (FS) should consist of an Expected Loss (EL) component (see paragraphs 3.8 – 3.11) and a Credit Risk Premium (CRP) component which includes an adjustment for basis risk. In formulaic terms this can be represented as:

FS = EL + X% * n-year average z-spread on the reference index + Z% * (asset spot z-spread less reference index z-spread)

3.6 The FS should also be subject to a cap and a floor set out in paragraph 3.16, applied only to the X component of the CRP (ie the cap and floor should be applied to: X% * n-year average z-spread on the reference index). The floor applies in both base and SCR calculations where the index-spread design is also applied in stress; the cap should only apply in base. This is for simplicity and also to reflect that in the SCR stress we would expect credit risk conditions to have worsened materially – the smoothing effect of a cap may therefore be less appropriate. However, we will consider the SCR results presented to us and revisit this point accordingly. Other than the cap and floors, no further restriction should be applied to the MA on assets that are rated below CQS 3. In particular, what is commonly referred to as the 'BBB cliff' in the current FS construct does not apply.

3.7 The Portfolio MA for the scenario should be calculated using the following procedure:

   (i)   Calculate the internal rate of return that equates the present value of the liability cash flows to the market value of the assigned portfolio of assets, ie the Component A assets. Paragraphs 3.8 – 3.11 below describe how the assigned portfolio of assets should be determined.
   (ii)   Value the liability cash flows at the basic risk-free rate (SONIA[4]) and then calculate the internal rate of return that equates the present value of the liability cash flows to this amount.
   (iii) Calculate the Portfolio FS component for sovereign, supranational and quasi government exposures using the method set out in paragraph 3.12.
   (iv)   Calculate the Portfolio FS component for CRP which includes the adjustment for basis risk, using the method described in section paragraphs 3.13 - 3.17.
   (v)   Calculate the Portfolio MA in basis points as the yield in (i) minus the yield in (ii) minus the Portfolio FS component for sovereign, supranational and quasi government exposures in (iii) minus the Portfolio FS component for CRP in (iv).

Expected Loss

3.8 Expected loss corresponds conceptually to the probability of default (PD) component of the FS under the current Solvency II regime. It is used to risk adjust the cash flows in order to establish the assigned portfolio of assets.

3.9 For the purpose of this exercise, the expected loss tables are aligned with the PD tables published by the PRA to calculate the current Solvency II Matching Adjustment. In order to risk adjust the cash flows, firms should use the

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[4] Please use the indicative SONIA-based Solvency II technical information that was published alongside the Data Collection Exercise (DCE).

probabilities of default published by the PRA as at YE 2020[5], a recovery rate assumption of 30% and the formula set out in paragraph 266 of EIOPA's Technical Documentation dated 16 December 2020[6].

3.10 An assigned portfolio of assets should be established such that the risk-adjusted cash flows replicate each of the expected cash flows of the portfolio of insurance or reinsurance obligations in the same currency.

3.11 The assigned portfolio of assets is referred to as Component A[7,8]. The additional assets needed to cover all the remaining components of the Portfolio FS are referred to as Component B. The collection of assets in the Matching Adjustment Portfolio (MAP) comprising any surplus above the assets held in Components A and B is referred to as Component C.

Adjustment for sovereign, supranational and quasi government exposures

3.12 For sovereign bonds, supranationals and quasi government exposures, the FS should be set equal to the FS under the current Solvency II regime. This should be converted into a Portfolio FS component using the procedure set out in paragraphs 3.18 below.

The Credit Risk Premium

3.13 The CRP is applied at the level of individual assets, for assets other than sovereign bonds, supranationals and quasi government exposures, and is made up of the following components:

(i) A percentage (X%) applied to the average spread on the reference index for the asset in question. For this purpose X% should be set as 35% and the averaging period should be 5 years. Paragraph 3.14 sets out the 5-year average of the reference index that should be used for this purpose for all assets.

(ii) A percentage (Z%) applied to the difference between the asset spot spread (its z-spread at a given point in time) and the z-spread on the reference index. For this purpose Z% should be set as 17.5% (except in step one of the scenario where it is 0%). The same reference index is used here as in (i) above and the index spot spreads to be used in the calculations for all assets are set out in paragraph 3.15.

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[5] Refer to footnote 4.
[6] https://www.eiopa.europa.eu/tools-and-data/risk-free-interest-rate-term-structures_en
[7] Components A, B and C are defined in paragraph 4.5 of Supervisory Statement SS7/18, Solvency II: Matching Adjustment.
[8] The alignment with EIOPA PDs and recovery rate means that the Component A assets can be taken to be the same as the current Solvency II regime, provided the PRA matching tests are met.

3.14 The 5-year average spreads to be used for the purposes of paragraph 3.13(i) above are as follows. These have been calculated using the same data and methodology as that set out in sections 10.C.3, 10.C.4 and 12.B.1 of EIOPA's Technical Documentation dated 16 December 2020[9] with the following modifications: (i) a 5-year average is used instead of a 30-year average; and (ii) the "all-term" iBoxx indices are used instead of the term-related indices. We also show the duration of the indices as at YE20 used in each case as we consider this may be needed by some firms when running the SCR scenarios that we have requested in Part III B:

| | 5-year average spreads (bps) | |
	Financials	Non-Financials
CQS 0	90	79
CQS 1	121	112
CQS 2	180	159
CQS 3	276	197
CQS 4	462	379
CQS 5	693	656
CQS 6	693	656

| | Duration (years) | |
	Financials	Non-Financials
CQS 0	6.6	13.9
CQS 1	6.6	13.9
CQS 2	5.8	10.6
CQS 3	6.7	8.6
CQS 4	3.7	4.5
CQS 5	3.4	3.9
CQS 6	3.4	3.9

3.15 The spot index spreads (as at YE20) to be used for the purposes of paragraph 3.13(ii) above are as follows. The spot index spreads are calculated using the same data as that described in paragraph 3.14 above:

Spot spreads (bps)

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[9] https://www.eiopa.europa.eu/tools-and-data/risk-free-interest-rate-term-structures_en

	Financials	Non-Financials
CQS 0	80	55
CQS 1	97	72
CQS 2	95	117
CQS 3	206	149
CQS 4	359	335
CQS 5	518	565
CQS 6	518	565

3.16 A floor and cap should be applied to the X-component of the CRP for each asset where relevant (other than in the SCR as requested in Part III B scenario 1a & 1b where only a floor should be applied and in scenario 2a & 2b where no floors or caps should be applied). The following table sets out the floor and cap to be applied to the X-component of the CRP.

	CRP floor (bps)		CRP cap (bps)	
	Financials	Non-Financials	Financials	Non-Financials
CQS 0	11	4	39	29
CQS 1	27	19	71	60
CQS 2	43	28	107	87
CQS 3	72	40	160	116
CQS 4	168	117	355	282
CQS 5	391	184	726	436
CQS 6	391	184	845	555

3.17 The CRP for each individual asset should be converted into a Portfolio FS component using the procedure set out in paragraph 3.18 below.

Conversion to Portfolio FS component

3.18 The FS components derived in paragraphs 3.12 to 3.16 are expressed in terms of an adjustment in basis points applied to individual assets. These should be converted to a Portfolio FS component using the following procedure[10].

(i) Calculate the risk-free portfolio value as the present value of recognised cash flows (before any adjustment for Expected Loss) of all assets in Component A using the basic risk-free rate. Please note that the basic risk-free rate for this purpose is based on SONIA and these calculations should therefore be performed using the risk-free curves published alongside the DCE.

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[10] The procedure should be applied separately for each FS component.

(ii)   Calculate the internal rate of return that equates the present value of the recognised cash flows to the risk-free portfolio value calculated in (i) above.

(iii) For each individual asset, convert the FS for the given component in basis points into risk-adjusted cash flow factors ($racfac_M$) for each tenor using the equation:

$$\frac{1}{(1 + r_M + \frac{bps_M}{10000})^M} = \frac{1}{(1 + r_M)^M} racfac_M$$

Where:

- M is the cash flow tenor
- r_M is the basic risk-free rate at tenor M
- bps_M is the FS component in basis points applicable at tenor M to be converted into a risk-adjusted cash flow factor. Where the FS component does not vary by tenor the same bps figure should be assumed for all tenors.
- $racfac_M$ is the risk-adjusted cash flow factor applicable at tenor M.

(iv)   Risk-adjust the recognised cash flows of each asset in Component A using the risk-adjusted cash flow factors derived in (iii) above. The cash flows at each tenor should then be added up for all assets to obtain the aggregate risk-adjusted cash flows by tenor for Component A as a whole.

(v)   Calculate the internal rate of return that equates the present value of risk-adjusted recognised cash flows derived in (iv) above to the risk-free portfolio value calculated in (i) above.

(vi)   Calculate the Portfolio FS component as (ii) minus (v).

Reinsurance and derivatives

3.19 Reinsurance and derivatives should be treated in line with your existing approach but using the FS calculation set out above where required. The PRA reminds firms that a 'gross of reinsurance' treatment is our expected approach[11].

III B - SCR (focussing on internal model firms but note specific point in paragraph 3.37 for standard formula firms)

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[11] See also paragraph 2.26 of SS7/18: https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisory-statement/2018/ss718.pdf

3.20 We are seeking to investigate how the SCR could change if changes are made to the design and calibration of the FS used in the base balance sheet. We are focussing on internal model firms here as this is where we expect the largest changes and impacts to be seen. There are two potential impacts of changes to the base FS on the SCR. These are:

(i) First-order impacts – changes to the SCR caused by changes to the modelling of the MA in stress for the purposes of calculating the credit risk SCR. We consider this can be estimated approximately as the change in the post-diversification Credit Risk SCR between Scenario 0 and the relevant SCR scenario (please see paragraphs 3.25 and 3.26 for the descriptions of these). We ask for the post-diversification credit risk SCR in each SCR scenario in the accompanying template.

(ii) Second-order impacts – changes to the SCR caused by changes to the MA (both in base and stress) feeding through to the impact on risks such as longevity risk and interest rate risk. We consider this can be estimated approximately as the change in the post-diversification SCR between Scenario 0 and the relevant SCR scenario that is not accounted for by the change in the post-diversification Credit Risk SCR. We ask for the post-diversification entity-level SCR in each SCR scenario in the accompanying template.

3.21 The PRA has developed a five-step framework that sets out how the MA could be considered in the context of the SCR calculation. This is set out in paragraph 3.1 of Supervisory Statement 8/18 and is as follows:

Step 1: re-value the MAP assets under a one-year credit spread stress;
Step 2: calculate updated fundamental spread values, reflecting the stressed modelled economic environment;
Step 3: verify whether the MA qualifying conditions are still met (allowing also for any changes in liability cash flows/values);
Step 4: if step 3 has failed, then the cost of re-establishing an MA compliant position should be estimated; and
Step 5: re-calculate the MA. Note that based on the analysis in the previous steps this may need to be based on a re-balanced MA asset portfolio.

3.22 Although use of the five-step framework is not mandatory, the PRA considers it good practice for firms to use it to validate that their approach to stressing the MA covers all material and quantifiable risks to which they are exposed. Given our experience of internal model review work, which shows that firms generally follow this, we consider the five-step framework to be a good reference which can be used to test the scenarios below.

3.23 We would ask that all SCR data is provided as at YE20 and that the SCR runs are based on a SONIA-based risk-free rate. However, we recognise that some firms may have made model changes in the period since YE20 that would make it difficult to re-run models as at this date. To allow for this we therefore have an order of preference for the results to be submitted in the SCR scenarios set out below (most favoured first):

- Please provide data as at YE20 using your approved model at this date if possible.
- Please provide data as at YE20 but taking account of any model changes made subsequently. Where you have done this, please provide details in the free-form comments tab as to the changes that have been incorporated in your internal model.
- Please provide data as at YE21 using your approved model as at this date.

3.24 All SCR data provided should be consistent, ie it should be at the same date and using the same starting version of your internal model (adjusted for each scenario set out as necessary). We note that to provide some of the information requested, the use of additional judgements and approximations will likely be necessary. We ask that these are set out in the free-form comments accompanying your submission together with details of if and how they limit the reliance that can be placed on any data provided. If you wish to discuss this with the PRA prior to undertaking the calculations necessary, or if you have concerns that the judgements and approximations necessary would be too extensive, then please get in touch with your normal supervisory contact in the first instance.

SCR Scenario 0 – your current SCR approach

3.25 Please provide the SCR data requested (assuming no changes have been made to the FS in the base balance sheet, but after the update to the SONIA risk-free curve) and based on the version of your model you have chosen following the options set out in paragraph 3.23.

SCR Scenarios for updated FS in base

3.26 We are asking for the following SCR scenarios to be run. The scenarios should apply to all assets that are modelled using your credit risk module(s) ie assets that are subject to spread widening and/or transition/default stresses. For assets where credit spread/transitions may not be a direct driver of the SCR capital (eg ERMs), please do not make any changes to your current approach but instead set out the assets that are in this category and their market value as a percentage of the total market value of your MAP. Scenarios 1a and 1b are based on a simplified 'mechanistic' approach to recalculating the FS (based on

an index-spread construct for the CRP) in stress; scenarios 2a and 2b assume the change in the CRP in stress is calculated as 35% of the change in the spot spread. All SCR scenarios (with the exception of Scenario 0) should assume that the base FS is calculated in line with the calibration set out in paragraph 3.3(ii) above.

SCR Scenario 1a – stressing the X-component without any defaults or downgrades

3.27 We ask firms to execute an SCR run where:

(i) The assets in the MAP are revalued under a one-year credit spread stress as per Step 1 of the PRA's five-step framework, using existing internal model assumptions.

(ii) The assets in the MAP do not suffer any transition or default stress over the next year. By this we mean that none of the assets in the portfolio should be assumed to upgrade, downgrade or default. We recognise that some firms may however implicitly allow for transitions in their spread stresses – if this is the case then please clearly explain what element(s) of transition risk you consider to have been captured in your internal model spread stresses, and where possible remove these elements from the spread stresses applied in this scenario, stating clearly what you have done in your response. If you are unable to remove these elements from the spread stress then please state this and also given an indication (if possible) as to what proportion of the spread stresses reflect the impact of transitions and defaults.

(iii) The reference index should be stressed. The one-year stress(es) applied to the index should be based on the same stress(es) that are used to revalue the corporate bond assets within the MAP as per Step 1 of the five-step framework. We have provided the spreads on the reference index (by CQS and for financial/non-financial exposure) as at YE20 as well as the associated durations. Based on this information we ask firms to apply what they consider to be the most appropriate stress to the reference index.

(iv) The five-year average of the reference index should be increased by 20% of the relevant stress to the index. The same floor should be applied to the X-component as in base but no cap should be applied.

(v) The FS applied to calculate the MA following the one-year stress should be equal to the base FS plus 35% of the change to the five-year average of the reference index, ie effectively only the X-component of the CRP is subject to stress.

SCR Scenario 1b – stressing the X-component including defaults and downgrades

3.28 We ask firms to repeat Scenario 1a but this time applying a transition and default stress after the credit spread stress to the assets in the MAP over the next year, where the transition and default stress is in line with their existing internal model assumptions.

3.29 The FS applied to calculate the MA following the one-year stress should be as per Scenario 1a, but additionally reflecting the change to the EL due to the transitions that have been applied. The recalculation of the X-component of the CRP should also take into account the transitions (ie the X-component should be based on the rating post-transitions); for simplicity the Z-component should be assumed not to change.

3.30 Cash flows should be risk-adjusted using the EL values of the relevant ratings post-transitions; but the EL values for each rating should be the same as in base, ie the EL for an asset should only change as a result of a rating change.

SCR Scenario 2a – applying the SCR stress with the change in FS specified as a percentage of spread widening on the portfolio of assets (no defaults or downgrades)

3.31 We ask firms to execute an SCR run where:

(i) The assets in the MAP are revalued under a one-year credit spread stress as per Step 1 of the PRA's five-step framework, using existing internal model assumptions.

(ii) The assets in the MAP do not suffer any transition or default stress over the next year. By this we mean that none of the assets in the portfolio should be assumed to upgrade, downgrade or default. We recognise that some firms may however implicitly allow for transitions in their spread stresses – if this is the case then please clearly explain what element(s) of transition risk you consider to have been captured in your internal model spread stresses, and where possible remove these elements from the spread stresses applied in this scenario, stating clearly what you have done in your response. If you are unable to remove these elements from the spread stress then please state this and also given an indication (if possible) as to what proportion of the spread stresses reflect the impact of transitions and defaults.

(iii) The FS applied to calculate the MA following the one-year stress should be equal to the base FS plus 35% of the change to the spread on the assets matching the liabilities. No floors or caps should be applied.

SCR Scenario 2b – applying the SCR stress with the change in FS specified as a percentage of spread widening on the portfolio of assets (with defaults and downgrades)

3.32 We ask firms to repeat Scenario 2a but this time applying a transition and default stress after the credit spread stress to the assets in the MAP over the next year, where the transition and default stress is in line with their existing internal model assumptions.

3.33 The FS applied to calculate the MA following the one-year stress should be as per Scenario 2a, but additionally reflecting the change to the EL due to the transitions that have been applied. The increase in the CRP should be equal to 35% of the spread widening, which is applied before any downgrades or defaults have been allowed for, as per Scenario 2a.

3.34 Cash flows should be risk-adjusted using the EL values of the relevant ratings post-transitions; but the EL values for each rating should be the same as in base, ie the EL for an asset should only change as a result of rating changes.

Summary table for SCR scenarios

3.35 Please see below a table summarising the SCR scenarios.

	Scenario 0	Scenario 1a	Scenario 1b	Scenario 2a	Scenario 2b
Scenario description	Baseline scenario used to measure impacts of other scenarios	The CRP in stress is determined using a simplified and relatively mechanistic stress to the index-spread approach. This assumes only the X-component changes in stress.		The CRP in stress is determined using a simplified, non-mechanistic stress which assumes that the change in the CRP is equal to 35% of the spread widening. 35% has been chosen as this is at the bottom of the range the PRA has identified for the CRP on average over time.	
Risk-free rate	SONIA	SONIA	SONIA	SONIA	SONIA
Base FS	FS as at YE20	FS as set out in paragraph 3.3 (ii)	FS as set out in paragraph 3.3 (ii)	FS as set out in paragraph 3.3 (ii)	FS as set out in paragraph 3.3 (ii)
Caps in stress	As per current internal model	No caps in stress	No caps in stress	No caps in stress	No caps in stress
Floors in stress	As per current internal model	Floor as per paragraph 3.16	Floor as per paragraph 3.16	No floor in stress	No floor in stress
Transitions	As per current internal model	No defaults or downgrades of MAP assets assumed	Defaults and downgrades of MAP assets assumed in line with current internal model	No defaults or downgrades of MAP assets assumed	Defaults and downgrades of MAP assets assumed in line with current internal model

SCR general comments

3.36 Please explain any limitations of using your existing internal model if the FS were to be calculated using an index-spread approach (in line with the formula in paragraph 3.5 above), and if and how you would expect to change your

existing internal model to address these. Comments separately on the design and calibration of the SCR would be helpful; please also consider any dependencies including if your response would be different depending on the granularity of reference indices used in base and the potential extent of any additional impacts that would arise from stressing the Z-component.

3.37 Standard formula firms that wish to provide either qualitative or quantitative observations regarding SCR impacts are welcome to do so in the free-form comments section.

III C - Implementation considerations – effort and cost-benefit

3.38 Please indicate how much time (in months) would be required to make necessary changes to models and systems to fully implement the MA calculation under the index-spread approach in base. Please also set out the key drivers of this timescale, ie what you expect to take longest and why.

3.39 Please indicate how much time (in months) would be required to make the changes you consider would be necessary to your internal model, if the index-spread approach were implemented in base. If you consider that the changes would constitute one or more Major Model Changes then please provide an estimate of the time (in months) you would need to be ready to submit a Major Model Change application to the PRA. Again, please set out the key drivers of this timescale, ie what you expect to take longest and why.

3.40 Please discuss the benefits and costs of the following approaches to implementation of any reform package:

(i) an immediate implementation of all reforms;
(ii) a phased implementation approach whereby some reforms (or parts of particular reforms) are implemented immediately but others at a later date; and
(iii) an approach where reforms are implemented fully at a point in time but with the impact of the reform spread over a period of time.

Annex 1 – List of asset classes

Asset Classes	Definition
Agricultural Mortgages	Assets where the exposure or underlying exposure is to Agricultural Mortgage proceeds.
Corporate Bonds	Assets where a standard formula firm would set the Spread SCR in accordance with Commission Delegated Regulation (EU) 2015/35 Article 176, and which are not captured elsewhere in this categorisation table.
Covered Bonds	Assets where a standard formula firm would set the Spread SCR in accordance with Commission Delegated Regulation (EU) 2015/35 Article 180(1).
Education Loans	Assets where the exposure or underlying exposure is to loans to a higher or further education institution.
Equity Release Mortgages (ERM)	Assets where the exposure or underlying exposure is to ERM proceeds. Retirement Interest-Only mortgages should be categorised as 'Other assets' instead.
Ground Rent	Assets where the exposure or underlying exposure is to Ground Rent proceeds.
Income Producing Real Estate (IPRE)	A method of providing funding to real estate where the prospects for repayment and recovery on the exposure depend primarily on the cash flows generated by the asset. Assets are structured into an SPV with loans made directly to the SPV. The SPV structure is used to isolate the collateral from bankruptcy and insolvency risks of the other entities that participate in the transaction.
Infrastructure Assets	As defined in Commission Delegated Regulation (EU) 2015/35, Article 1, 55(a) and 55(b). Where there is uncertainty over the classification of public service assets (such as utilities) please allocate assets according to the following hierarchy: (1) 'Quasi Government / Supranational' if they meet the definition below; (2) otherwise, if the asset is traded (IFRS level 1), as 'Corporate Bonds'; or (3) otherwise, if the asset is not traded (any approach other than IFRS level 1), as 'Infrastructure Assets'.
Object Finance	A method of funding the acquisition of physical assets (eg ships, aircraft, satellites, railcars, and fleets) where the repayment of the exposure is dependent on the cash flows generated by the specific assets that have been financed and pledged or assigned to the lender.
Other assets	Assets that do not fall into any of the other categories in this table.

Other Commercial Real Estate Lending (CREL)	A loan secured on a Commercial Real Estate (CRE) asset, other than IPRE.
Other Securitisations (eg RMBS / CMBS / ABS)	Assets where a standard formula firm would set the Spread SCR in accordance with Commission Delegated Regulation (EU) 2015/35 Article 178 (both Type 1 and Type 2).
Quasi Government Exposures / Supranationals	Assets where a standard formula firm would set the Spread SCR in accordance with Commission Delegated Regulation (EU) 2015/35 Article 180(2), other than (2)(b)
Sale and Leaseback Loans on Commercial Properties	Financing in the form of the purchase of a real estate asset, repaid by a lease upon that asset.
Secured Financing	Financing arrangements secured by collateral, which are not captured elsewhere in this categorisation table.
Social Housing	Assets where the exposure or underlying exposure is to loans to a provider of social housing.
Sovereigns - Other than UK	Assets (other than those issued by HM Treasury) where a standard formula firm would set the Spread SCR in accordance with Commission Delegated Regulation (EU) 2015/35 Article 180(2)(b), or Article 180(3).
Sovereigns - UK	Assets where a standard formula firm would set the Spread SCR in accordance with Commission Delegated Regulation (EU) 2015/35 Article 180(2)(b), and the issuer is HM Treasury.
Student Accommodation	Assets where the exposure or underlying exposure is to loans to a provider of student accommodation.
Trade Receivable / Supply Chain Financing	Assets where the exposure or underlying exposure is to trade receivables and factoring receivables, where an invoice has been issued for goods delivered or services provided by the seller to end customers.