BANK OF ENGLAND
PRUDENTIAL REGULATION AUTHORITY

Review of Solvency II – Quantitative Impact Study (QIS)

Instructions for completing the QIS template(s)

Version 1.1

20 August 2021

Version control

Version	Date	Comments
1.0	20 July 2021	Original version loaded onto QIS webpage
1.1	20 August 2021	Updates made: • Section 1 (Introduction), paragraph 19 – this has been updated to refer to Annex 3, A3.4. • Section 9 (Instructions by worksheet – Run ID 14 to 18 (Scenario B sensitivities)), paragraph 98 – this has been updated to say that the MA and VA should be unchanged in bps from Run ID 13 (rather than 7).

Contents

1. Introduction

1. This Quantitative Impact Study (QIS) is a data gathering exercise to assist in the PRA's analysis of potential Solvency II reform options.

2. The deadline for responses to the QIS is **Wednesday 20 October 2021**. Responses should be submitted via BEEDS.

3. The QIS will gather data in respect of three main areas:
   (a) Risk Margin
   (b) the calculation of the Matching Adjustment (MA)
   (c) Transitional Measure on Technical Provisions (TMTP).

4. It is important to note that the scenarios tested in the QIS are designed to gather relevant data to allow the PRA to model a range of potential policy options, and they do not represent reform proposals or decisions. Furthermore, the QIS only covers a subset of areas under consideration in the overall review of Solvency II.

5. The QIS is relevant to all PRA-regulated insurance firms. All firms are strongly encouraged to participate in the aspects that are relevant to them in order for the PRA to understand the potential impact of reforms on different insurance sectors, as well as the industry as a whole.

6. It is important for the PRA to receive high quality data from the QIS, and so we ask that firms take an appropriate level of validation before it is submitted. Specifically, we ask that firms:
   (a) ensure that the QIS data submitted is consistent with the QRTs where appropriate (and for firms with an MA approval, ensure the QIS is consistent with the 16 June MA asset and liability information request)
   (b) undertake reasonableness checks on the direction and magnitude of the balance sheet movements of each of the Run IDs (set out below).
   (c) obtain sign-off of the QIS submission by an appropriate individual approved under the Senior Insurance Managers Regime (SIMR)

7. We encourage participants to engage with the QIS early and provide any feedback or queries within the first few weeks of this publication. Please raise these to your usual supervisory contact or InsuranceData@bankofengland.co.uk. Please also refer to the QIS Q&A document below for further information, which will be kept updated over the period.

8. Unless otherwise stated, any references to EU or EU derived legislation refer to the version of that legislation which forms part of retained EU law.

2. Overarching Instructions

General instructions

9. Links to the QIS templates and instructions can be found here:

   https://www.bankofengland.co.uk/prudential-regulation/key-initiatives/solvency-ii/solvency-ii-reform-quantitative-impact-survey

10. The valuation date of the QIS and all scenarios is year-end 2020.

11. Please DO NOT amend the QIS template in any way, including renaming worksheets, adding or deleting rows.

12. Please complete all cells that are coloured blue. Please do not amend cells coloured grey as these are used for internal calculations. For ease, the template has been structured so that tables are in the same location in all sheets. Where a table is not required to be completed (for any firm), it has been filled in with the following pattern: ▩

13. In order to assist with our analysis and interpretation of your QIS submission, please use the free form "Comments" worksheet in the QIS template to:

    - provide any relevant commentary to support the data submitted
    - explain any simplifications or approximations made
    - explain any judgements made
    - highlight uncertainties in the data submitted

14. For year-end 2020 balance sheets calculated on risk free rates derived from SONIA[1], please use the indicative Solvency II technical information published alongside this QIS. This can be found via the webpage link above, under the section titled Links to supplementary documents.

15. Please assume that the sensitivities[2] in respect of interest rates, credit spreads and credit spreads & downgrades (set out in Annex A3.1, A3.2, and A3.3 respectively) apply consistently to assets and liabilities in all currencies.

[1] Run IDs 2 to 18
[2] Run IDs 3 to 6, 8 to 12, and 14 to 18

For annuity firms, including those with approval for the MA

16. Annuities, where referenced in the template, corresponds to product reporting codes beginning with 7 as defined in the Appendix to SS36/15 "Solvency II: Life insurance product reporting codes"[3].[4]

17. Please use the “Comments” worksheet to provide specific comments and explanations in respect of:

    - MA rebalancing - Please provide a qualitative narrative of the ‘Detailed information on MAPs’, summarising how you have rebalanced the MAP to address any cash flow or value shortfall in each of the relevant Run IDs. This should include details of any re-hypothecation of existing assets in the MAP between Components A, B and C; and, details of new assets introduced into the MAP including the source of these assets if transferred from elsewhere in the business and/or, if external trading has been assumed, the nature of assets bought and sold. It would also be useful if you could give an indication of the assumed cost of implementing the rebalancing strategy as well as the impact of rebalancing on the MA benefit in bps and/or in £m.

    - SCR. For Scenarios A and B we have not asked you to recalculate the SCR in each run to reflect the FS design/calibration being tested in the base balance sheet and have instead asked you to continue calculating the SCR as you currently do, adjusting only for different economic conditions (see *‘For the calculation of the SCR’* section below). This is a simplifying assumption for the purpose of this QIS exercise. However, for internal model firms, we would be interested in any comments you have as to how you would expect your approach to calculating the MA in the SCR to change if the MA in base were to be calculated as set out in Scenarios A and B respectively. We would also be interested to understand in each case if you would expect the SCR (£m) to reduce, stay about the same or increase and also whether you would consider the change(s) to be major or minor.

For firms with approval to use TMTP

18. For each of the relevant Run IDs please recalculate the TMTP after allowing for the impact on the Solvency II balance sheet of the Run ID specifications described below – i.e. after the effect of changes to the risk free rate basis (SONIA), Scenario A, Scenario B and the relevant sensitivities. This will aid our understanding about how the TMTP may change in value under these circumstances.

[3] i.e. product codes 700, 704, 710, 714, 720, 722, 724, 734, 740, 744, 754, 764, 774, 784 and 794
[4] Where information for annuities is requested alongside Solvency II lines of business, we are aware that the Annuities information will also be captured in other lines of business and thus result in a double count

For firms with approval to use the VA

19. For the volatility adjustment (VA), please use the values for the relevant run IDs set out in Annex 3, A3.4. Please note that for the purpose of the QIS it is assumed that the risk correction within the VA remains as calculated in Article 51 of the onshored version of the Commission Delegated Regulation (EU) 2015/35[5]. Therefore the amount of the VA only changes as a result of the use of SONIA based risk free rates and under the specified credit spread sensitivities in Annex 3.

For the calculation of the SCR

20. Firms should recalculate the SCR for any stresses i.e. interest rate, spread widening and downgrade stresses.

21. Firms with internal model approval should use their current models to compute the SCR requested in each of the risk free rate and credit risk sensitivities. No adjustment should be made to those models to reflect the FS design being tested under Scenarios A and B.

[5] www.legislation.gov.uk/eur/2015/35/article/51

3. Instructions by worksheet – basic information, Run ID 0 (baseline), Run ID 1 (TMTP recalculation)

Worksheet	Instructions
Basic information	22. We would expect this to be unchanged from that submitted at YE2020 for Solvency II reporting
Run ID 0 (Baseline information at YE2020)	*Instructions applicable to **all** firms, unless otherwise stated* **Table 1. Solvency II Balance sheet** 23. Please complete your Solvency II Balance Sheet as at YE2020. This should be identical to S.02.01.01 submitted in your annual returns. **Table 2. Own Funds** 24. Please complete your Own Funds as at YE2020. This should be identical to S.23.01.01 submitted in your annual returns. **Table 3. Summary balance sheet** 25. Parts of this table should auto populate based on other information provided in the Run ID. Please check that the values are as you expect. **Table 4. Technical provisions** 26. Please provide, by line of business (for life firms)[6] or at entity level (for non-life firms): (a) Value of technical provisions calculated as a whole. As per S.12.01 R0010 (life) and S17.01 R0010 (non-life). (b) Value of the gross best estimate. As per S.12.01 R0030 (life) and S17.01 R0260 (non-life).

[6] We note that 'annuities' are not considered a Solvency II line of business and therefore are not reported in the annual Solvency II returns.

	(c) Value of the net best estimate (best estimate minus recoverables from reinsurance/SPV and Finite Re). As per S.12.01 R0090 (life) and S17.01 R0270 (non-life). (d) Value of the risk margin. As per S.12.01 R0100 (life) and S.17.01 R0280 (non-life). (e) (Where applicable) Value of TMTP. As per S.12.01 R0100 (life) and S17.01 R0280 (non-life). (f) The duration of liabilities (in years, to 1 decimal place). This is equal to the Modified duration of the best estimate liability cash flows, net of reinsurance. For non-life business, this should include cash flows included in both the claims provision and premium provision but should exclude cash flows from future premiums. **5. Risk Margin** **Table 5.1. Basic information on the risk margin** 27. Please use the drop down menu to provide a description of the methodology used to calculate the risk margin, according to the methods described in the EIOPA Guidelines on the valuation of technical provisions (EIOPA-BoS-14/166) Guideline 62. **Table 5.2. Capital requirements underlying the MOCE calculation** 28. This information will enable us to analyse the impact of introducing alternative approaches to calculating the risk margin, such as the Margin Over Current Estimate (MOCE) that applies during the monitoring period for the Insurance Capital Standard (ICS)[7] [8]. This should not be taken to be an indication of a settled policy proposal or decision. 29. Please provide – by line of business (for life firms) or at entity level (for non-life firms) – the overall 99.5th percentile capital requirement (SCR_0') for underwriting and other non-hedgeable risks.

[7] The MOCE approach assumes a normal distribution of losses, with a mean equal to best estimate liabilities and 99.5th percentile equivalent to SCR_0', hence the MOCE at any percentile can be derived from the SCR_0' data requested in the template.
[8] Developed by the International Association of Insurance Supervisors (IAIS)

30. At an entity level, please provide a breakdown of the calculation of SCR_0' by the individual risks, diversification benefits, loss absorbing capacity of technical provisions (where applicable), and the separate impact of using the MA or VA in the valuation discount rate (where applicable).

31. Please refer to Annex 1 for further details about the MOCE specification.

32. Please note that Table 5.2 should be recalculated in Run ID 2 to 18 (for the Run IDs relevant to your firm as indicated in the Overview worksheet), i.e. the calculation of data underlying the MOCE is not limited to just Run IDs relating to Scenario A.

Table 5.3. Future undiscounted SCRs underlying the current risk margin calculation (net):

33. This information will enable us to analyse the impact of modifications to the existing risk margin approach, which we refer to as a 'cost of capital' approach. This should not be taken to be an indication of a settled policy proposal or decision.

34. Depending on risk margin methodology you currently use for Solvency II reporting (under the hierarchy of available methods[9]), please provide – by line of business (for life firms) or at entity level (for non-life firms) the following:

    (a) Firms using either Method 1 or 2 should report the value of the future SCR amounts, SCR_t (where t is denoted in 1 year increments), consistent with those used to calculate your YE2020 Solvency II risk margin.

    (b) Firms using Method 3 should complete the table corresponding to Simplification 3.

    (c) Firms using Method 4 should complete the table corresponding to Simplification 4.

[9] As defined in Guideline 62 and Technical Annex IV of the EIOPA 'Guidelines on the valuation of technical provisions' (EIOPA-BoS-14/166)

	35. The above information should be provided net of any reinsurance and risk mitigating techniques. **Table 5.4. Future undiscounted SCRs underlying the current risk margin calculation (gross):** 36. For the lines of business listed, please also provide the equivalent information as in Table 5.3, before the application of risk mitigation using reinsurance contracts or special purpose vehicles (i.e. before any transfers of underwriting risks, as if Article 38(1)(c) in the Commission Delegated Regulations were not applied). Consequently, all values should also exclude any capital requirements for credit risk with respect to reinsurance contracts or arrangements with special purpose vehicles (i.e. as if the first two items in the list in Article 38(1)(i)(iii) were not applied). 37. Please provide any information about the extent of reinsurance or other risk-mitigation techniques used explicitly for the purpose of managing the size or volatility of the risk margin in the "Comments" worksheet (e.g. high level impacts, a description of the effect it might have on interest rate sensitivity, which product lines are affected, etc.)." *Instructions applicable to firms with ring fenced funds or matching adjustment portfolios* **Table 6. Information on ring fenced funds (RFFs) and matching adjustment portfolios (MAPs)** 38. This information will support our analysis of the impacts of adjustments to own funds due to ring-fenced funds and matching adjustment portfolios. 39. Please provide all information consistent with your QRTs and cell references as stated in the QIS template. 40. Please exclude any RFFs or MAPs which you judge to be immaterial, and state in the "Comments" worksheet which ones have been excluded. *Instructions applicable to firms with approval for the MA*

	7. Matching adjustment (MA) **Table 7.1. Additional information on MAPs** 41. Please provide separately for each MAP: (a) Total market value of assets split by Components A, B and C (b) Total best estimate liabilities, including MA (c) Total amount of MA benefit in £m (d) Attribution of total entity-diversified SCR to the MAP. For this purpose, firms should use their usual capital allocation methodology. Standard formula firms should provide the SCR for the MAP (with no need for any attribution) (e) Attribution of entity-diversified SCR in respect of credit risk to the MAP. This should cover spread risk and transition risk. For avoidance of doubt it should include any MA offset in stress but should not include counterparty credit risk (f) SCR in respect of undiversified credit risk for the MAP. This should cover spread risk and transition risk and any diversification between these elements. For avoidance of doubt it should include any MA offset in stress but should not include counterparty credit risk (g) Overall calculation of the MA%, including components of the FS(%) and the duration of Component A assets. **Table 7.2. Additional information on credit risk SCR** 42. Please provide the SCR in respect of undiversified credit risk for the firm as a whole. This should cover spread risk and transition risk and any diversification between these elements. For avoidance of doubt it should include any MA offset in stress but should not include counterparty credit risk. 43. Please provide the SCR in respect of diversified credit risk for the firm as a whole. This should cover spread risk and transition risk. For avoidance of doubt it should include any MA offset in stress but should not include counterparty credit risk. **Section 7.3. Detailed information on MAPs** 44. Please note that for Run ID: 2, 4, 5, 6, 7, 10, 11, 12, 13, 16, 17 and 18, the QIS template requests completion of the 'QIS data sheets for

	MA asset and liability information'. This is a separate spreadsheet from the Solvency II review QIS webpage (see link in section 2) . Instructions for how to complete this is included within that spreadsheet. *Instructions applicable to firms with approval for TMTP* **Table 8.1. Overall calculation of the TMTP:** 45. Please populate the table with data from S.22.05.01. This should be consistent with the figures in your YE2020 QRT. **Table 8.2. Additional information on TMTP:** 46. Please provide the date of the last TMTP recalculation 47. Please provide the TMTP amount before application of the FRR cap. This should reflect the amortization of TMTP prior to application of the FRR cap. 48. Please provide the components of TMTP before application of the FRR cap split by the categories given in the table. The value of the components should reflect the amortization of TMTP prior to application of the FRR cap. 49. For each component noted above, please provide any information on 'Key Drivers' if possible on the "Comments" worksheet provided, i.e. any known relationships with macroeconomic and financial market variables (e.g. interest rates, equity prices, house prices). *Instructions applicable to firms with approval for MA, VA or TMTP* **Table 9. Impact of long term guarantees measures and transitionals** 50. Please populate the table with data from S.22.01.01. This should be consistent with the figures in your YE2020 QRT.
Run ID 1 (TMTP recalc as at YE2020)	51. Please update the tables in this worksheet for the areas relevant to your firm, assuming that there had been a recalculation of TMTP as at YE2020.

	52. Firms which have already recalculated TMTP as at YE2020 (and hence submitted their YE2020 annual reporting templates on that basis) should still complete this section for completeness. In such cases we expect the information provided therein would be identical to that provided in the preceding worksheet.

4. Instructions by worksheet – Run ID 2 (SONIA)

Worksheet	Instructions
Run ID 2 (Baseline (SONIA))	53. Please update the tables in this worksheet for the areas relevant to your firm, on the assumption that a SONIA-based GBP risk free rate curve had been effective as at YE2020. 54. This will inform a revised baseline Solvency II balance sheet and SCR position to compare subsequent Run IDs against. 55. Please use the indicative SONIA-based risk free rates as at YE2020 which has been published alongside this QIS. This is also to be used for Run IDs 3 to 18.

5. Instructions by worksheet – Run ID 3 to 6 (baseline sensitivities)

52. Run ID 2 forms the starting point to apply the sensitivities below.

53. Please assume that the sensitivities in respect of interest rates, credit spreads and credit spreads & downgrades apply consistently to assets and liabilities in all currencies.

54. Further details on the specification of the sensitivities are given in Annex 3.

<table>
<tr><th>Worksheet</th><th colspan="2">Instructions</th></tr>
<tr><td>Run ID 3 (+200bps IR)</td><td colspan="2">55. This sensitivity is applicable for all firms.

56. Please update the tables in this worksheet for the areas relevant to your firm, assuming interest rates rise by 200 basis points (bps)

57. Please assume that this sensitivity applies as a parallel shift in interest rates, and that the shift in interest rates applies consistently to the Solvency II risk free rates and government bond yields.

58. All asset and liability values should be recalculated under this interest rate sensitivity.

59. Where relevant, firms should assume that the MA and VA in bps is unchanged from Run ID 2.</td></tr>
<tr><td>Run ID 4 (‘Moderate spread widening’)</td><td>60. Please update the tables in this worksheet for the areas relevant to your firm, assuming a “Moderate Credit Spread widening”, as defined in Annex 3, section A3.2</td><td rowspan="3">61. These sensitivities are only applicable to firms that have approval to use the MA and/or VA.

62. For firms that have approval to use the MA, please assume that the MA moves in line with the sensitivities, based on the existing Solvency II MA construct.

63. For firms that have approval to use the VA, please use the relevant VA figures (in bps) provided in Annex 3, section A3.4 in each of these sensitivities.</td></tr>
<tr><td>Run ID 5 (‘Extreme spread widening’)</td><td>64. Please update the tables in this worksheet for the areas relevant to your firm, assuming an “Extreme Credit Spread widening”, as defined in Annex 3, section A3.2</td></tr>
<tr><td>Run ID 6 (‘Extreme spread widening and downgrades’)</td><td>65. Please update the tables in this worksheet for the areas relevant to your firm, assuming a “Combined spreads and downgrades” sensitivity, as defined in Annex 3, section A3.3.</td></tr>
</table>

6. Instructions by worksheet – Run ID 7 (Scenario A)

Worksheet	Instructions
Run ID 7 (Scenario A – base)	66. Run ID 2 forms the starting point to apply Scenario A. 67. Please update the tables in this worksheet for the areas relevant to your firm assuming the specification of "Scenario A", specifically: (a) the Risk Margin defined in Annex 1, A 1.1 – applicable for all firms (b) the Fundamental Spread defined in Annex 2 – only applicable for firms with approval to use the MA. 68. Please continue to use the SONIA-based Solvency II technical information as at YE2020 as per Run ID 2 above. *For firms with approval to use the MA* 69. For the avoidance of doubt, a floor should be applied to the Credit Risk Premium (CRP) for Scenario A at all times. A cap should also be applied to the CRP where explicitly specified (i.e. parts of Table 7.1 and the separate template referred to in Table 7.3). Where not specified (i.e. all other tables), no cap should be assumed. This also applies to each of the sensitivities under Scenario A.

7. Instructions by worksheet – Run ID 8 to 12 (Scenario A sensitivities)

70. Run ID 7 (Scenario A) forms the starting point to apply the sensitivities below.

71. Please assume that the sensitivities in respect of interest rates, credit spreads and credit spreads & downgrades apply consistently to assets and liabilities in all currencies.

72. For the table titled '3. Summary balance sheet (£m)' the SCR entry needs to be completed for Run ID 9 only. The SCR entry does not need to be completed for Run ID 7, 8, 10, 11 or 12.

73. Further details on the specification of the sensitivities are given in Annex 3.

Worksheet	Instructions	
Run ID 8 (Scenario A +200bps IR)	74. Please update the tables in this worksheet for the areas relevant to your firm, assuming interest rates rise by 200 basis points (bps)	75. These interest rate sensitivities are applicable for all firms. 76. Please assume that these sensitivities apply as parallel shifts in interest rates, and that the shifts in interest rates apply consistently to the Solvency II risk free rates and government bond yields. 77. All asset and liability values should be recalculated under these interest rate sensitivities. 78. Firms should assume for the purposes of these interest rate sensitivities that the MA and VA in bps is unchanged from Run ID 7.
Run ID 9 (Scenario A -100bps IR)	79. Please update the tables in this worksheet for the areas relevant to your firm, assuming interest rates fall by 100 basis points (bps)	
Run ID 10 (Scenario A 'Moderate spread widening')	80. Please update the tables in this worksheet for the areas relevant to your firm, assuming a "Moderate Credit Spread widening", as defined in Annex 3, section A3.2	81. *These sensitivities are only applicable to firms that have approval to use the MA and/or VA.*

Run ID 11 (Scenario A 'Extreme spread widening'	84. Please update the tables in this worksheet for the areas relevant to your firm, assuming an "Extreme Credit Spread widening", as defined in Annex 3, section A3.2	82. For firms that have approval to use the MA, please note that the MA under these credit sensitivities should move in accordance with how the Fundamental Spread is defined for Scenario A in Annex 2. 83. For firms that have approval to use the VA, please use the relevant VA figures (in bps) provided in Annex 3, section A3.4 in each of these sensitivities.
Run ID 12 (Scenario A 'Extreme spread widening and downgrades')	85. Please update the tables in this worksheet for the areas relevant to your firm, Assuming a "Combined spreads and downgrades" sensitivity, as defined in Annex 3, section A3.3	

8. Instructions by worksheet – Run ID 13 (Scenario B)

Run ID 13 (Scenario B – base)	86. Run ID 2 forms the starting point to apply Scenario B. 87. Please update the tables in this worksheet for the areas relevant to your firm, assuming the specification of "Scenario B", specifically: (a) the Risk Margin defined in Annex 1, A1.2 – applicable for all firms (b) the Fundamental Spread defined in Annex 2 – only applicable for firms with approval to use the MA 88. Please continue to use the SONIA-based Solvency II technical information as per Run ID 2 above. 89. The SCR does not need to be provided in table titled '3. Summary balance sheet (£m)'. This also applies to each of the sensitivities under Scenario B. This is because the SCR has already been provided under the corresponding Run IDs for either the Baseline or Scenario A. *For firms that have approval to use the MA* 90. For the avoidance of doubt, a floor should be applied to the CRP for Scenario B in general. No cap should be applied to the CRP. This also applies to each of the sensitivities under Scenario B.

9. Instructions by worksheet – Run ID 14 to 18 (Scenario B sensitivities)

91. Run ID 13 (Scenario B) forms the starting point to apply the sensitivities below.

92. Please assume that the sensitivities in respect of interest rates, credit spreads and credit spreads & downgrades apply consistently to assets and liabilities in all currencies.

93. Further details on the specification of the sensitivities are given in Annex 3.

Worksheet	Instructions	
Run ID 14 (Scenario B +200bps IR)	94. Please update the tables in this worksheet for the areas relevant to your firm, assuming interest rates rise by 200 basis points (bps)	95. These interest rate sensitivities are applicable for all firms. 96. Please assume that these sensitivities apply as parallel shifts in interest rates, and that the shifts in interest rates apply consistently to the Solvency II risk free rates and government bond yields. 97. All asset and liability values should be recalculated under these interest rate sensitivities. 98. Firms should assume for the purposes of these interest rate sensitivities that the MA and VA in bps is unchanged from Run ID 13.
Run ID 15 (Scenario B - 100bps IR)	99. Please update the tables in this worksheet for the areas relevant to your firm, assuming interest rates fall by 100 basis points (bps)	
Run ID 16 (Scenario B 'moderate spread widening')	100. Please update the tables in this worksheet for the areas relevant to your firm, assuming a "Moderate Credit Spread widening", as defined in Annex 3, section A3.2	101. *These sensitivities are only applicable to firms that have approval to use the MA and/or VA.* 102. For firms that have approval to use the MA, please note that the MA under these credit sensitivities should move in accordance with how the
Run ID 17 (Scenario B 'extreme	104. Please update the tables in this worksheet for the areas relevant to your firm, assuming an "Extreme Credit	

spread widening’	Spread widening”, as defined in Annex 3, section A3.2	Fundamental Spread is defined for Scenario B in Annex 2.
Run ID 18 (Scenario B ‘spread widening and downgrades’)	105. Please update the tables in this worksheet for the areas relevant to your firm, Assuming a “Combined spreads and downgrades” sensitivity, as defined in Annex 3, section A3.3	103. For firms that have approval to use the VA, please use the relevant VA figures (in bps) provided in Annex 3, section A3.4 in each of these sensitivities.

10. Summary of Run IDs and Scenarios A and B

106. The Run IDs, together with the tables that need to be completed under each of these runs, are summarised in the "Overview" worksheet in the QIS template.

107. Scenarios A and B and summarised as follows

		Scenario A	Scenario B
1. Risk Margin		MOCE - see A1.1 below	'Risk tapering' (lambda) - see A1.2 below
2. Fundamental Spread	Expected Loss (EL)	Consistent with the PD tables within the PRA's published Solvency II technical information for YE2020 (see A2.3)	
	Credit Risk Premium (CRP)	25% applied to current 'z spread' 25% applied to average spread	25% applied to current 'z spread' 0% applied to average spread
	CRP floor	Use tables provided in A2.5 - same in both scenarios	
	CRP cap	Where we have specified application of a cap, refer to table provided in A2.5.	No Cap is applied
	Valuation Uncertainty (VU)	VU for Scenario A - table in A2.6	VU for Scenario B - table in A2.6

108. Further technical details are provided in the Annexes

Annex 1 – Risk Margin

As a reminder, it is important to note that the scenarios tested in the QIS are designed to gather relevant data to allow the PRA to model a range of potential policy options, and they do not represent reform proposals or decisions.

A1.1. Margin over current estimate (MOCE) specification

Scenario A

1. For the balance sheets to be calculated in Scenario A (Run ID 7 to 12), the risk margin should be calculated using an approach similar to the margin over current estimate (MOCE) which is a risk margin method that applies during the monitoring period for the International Capital Standards (ICS)[10].[11] This should not be taken to be an indication of a settled policy proposal or decision.

2. The MOCE is an approximation of a percentile of the distribution of technical provisions. It assumes that technical provisions are normally distributed with a mean equal to best estimate liabilities and a 99.5th percentile equal to the SCR for non-hedgeable risks (SCR_0'). If we take Φ to be the cumulative distribution function (CDF) of the standard normal distribution, then the pth percentile MOCE, $MOCE_p$ is equal to:

$$MOCE_p = SCR_0' \cdot \frac{\Phi^{-1}(p)}{\Phi^{-1}(0.995)}$$

3. For the purpose of the QIS the non-hedgeable risks should include risks consistent with those in the current risk margin calculation[12], specifically:
   (a) underwriting risk with respect to the transferred business;
   (b) counterparty credit risk in respect of reinsurance contracts, arrangements with special purpose vehicles, intermediaries, policyholders;
   (c) any other counterparty credit risk closely related to (re)insurance obligations; and
   (d) operational risk.

4. The ICS MOCE calibrations have been chosen for the purpose of this QIS exercise, and should not be taken as an indication of future policy. Specifically for Scenario A:
   - for life insurance liabilities please calculate the MOCE based on the 85th percentile of the SCR for non-hedgeable risks (as defined above)
   - for non-life insurance liabilities please calculate the MOCE based on the 65th percentile of the SCR for non-hedgeable risks (as defined above).

[10] Developed by the International Association of Insurance Supervisors (IAIS)
[11] For reference purposes only, the ICS technical specifications for Version 2.0 of the monitoring period can be found here: https://www.iaisweb.org/page/supervisory-material/insurance-capital-standard
[12] As set out in Article 38(1)(i) of the Commission Delegated Regulation (EU) 2015/35

5. The SCR for non-hedgeable risks should also take into account the following assumptions:

   (c) *Diversification*: where applicable, firms should not assume any diversification between risks attributable to life insurance activities and those attributable to non-life insurance activities.

   (d) *Long-term guarantee measures* (where applicable to firms):

   - firms should apply a discount rate consistent with that used to determine the best estimate liabilities, i.e. they should include the MA or VA where appropriate.

   - firms should not include the impact of either the transitional measure on the risk free interest rate or the transitional measure on technical provisions.

   (e) *Adjustments*: firms should include an adjustment for the loss absorbing capacity of technical provisions. Firms should not include an adjustment for the loss absorbing capacity of deferred taxes.

   (f) *Basis*: the SCR for non-hedgeable risks should be calculated on the presumption that the firm will pursue its business as a going concern and must cover existing business, as well as new business expected to be written over the following 12 months.

6. The sensitivities applied under Run IDs 8 to 12 will impact the discount rates which are an implicit input to the MOCE, as the SCR for non-hedgeable risks is calculated with reference to changes in own funds, particularly as a result of changes in technical provisions. The discount curve used in calculating the SCR for non-hedgeable risks should be the same discount rate used to determine the best estimate liabilities – i.e. it should include MA or VA as appropriate.

7. For all firms, different risk free rate curves should be used in the calculation of the MOCE in Run IDs 7, 8 and 9, where the latter two reflect the interest rate sensitivities set out in Annex 3.

8. For firms with approval to use the MA, different values of the MA should be used in the calculation of the MOCE in Run IDs 7, 10, 11 and 12 to reflect the Fundamental Spread specification in Annex 2 and the application of the credit spread (and downgrade) sensitivities set out in Annex 3.

9. Similarly for firms with approval to use the VA, different values of the VA should be used in the calculation of the MOCE in Run ID 7, 10, 11 and 12 to reflect the effect of the credit spread (and downgrade) sensitivities set out in Annex 3.

A1.2. 'Risk tapering' (lambda) specification

Scenario B

10. For the balance sheets to be calculated in Scenario B (Run IDs 13 to 18), the risk margin should be calculated using a 'risk tapering' (also known as the 'lambda') approach. This approach is equivalent to that set out in section 3.2 of EIOPA's Opinion on the 2020 Review of Solvency II[13]. This should not be taken to be an indication of a settled policy proposal or decision.

11. The lambda approach allows for a time varying cost of capital within the current cost of capital framework.

12. The lambda approach is calculated in accordance with the following formula (modified from Article 37 in Commission Delegated Regulation 2015/35):

$$RM = CoC \cdot \sum_{t \geq 0} \frac{SCR_t \cdot \max(\lambda^t, 0.5)}{(1 + r_{t+1})^{t+1}}, where\ \lambda = 0.975$$

13. The remainder of the risk margin calculation should be consistent with Articles 38 and 39 of the Commission Delegated Regulation 2015/35.

14. Consistent with Guideline 2 of EIOPA's 'Guidelines on the implementation of the long-term guarantee measures' (EIOPA-BoS-15/111), firms with permission to use the MA, VA, transitional measure on the risk free interest rates or the transitional measure on technical provisions should assume that the reference undertaking described in Article 38 of the Delegated Regulation does not apply these measures (i.e. the SCRs should be calculated using the relevant basic risk-free interest rate curve and without the use of transitional measures).

15. Consistent with the current practice, firms may use simplifications for the calculation of the risk margin. Where undertakings apply one of the simplifications for the calculation of the risk margin, which are detailed in Guideline 62 and in the Technical Annex IV of the EIOPA Guidelines on the Valuation of Technical Provisions (EIOPA-BoS-14/166), the following adaptations should be made:

    - Firms using either Method 1 or Method 2 should apply the λ^t parameter to each future SCR, as defined for the full calculation.

[13] https://www.eiopa.europa.eu/sites/default/files/solvency_ii/eiopa-bos-20-749-opinion-2020-review-solvency-ii.pdf

- Firms using Method 3 should multiply the SCR obtained by the simplification by the parameter $\lambda^{\frac{Duration}{t}}$ to estimate the risk margin.

- Firms using Method 4 should multiply the percentage of the best estimate by λ to estimate the risk margin.

16. For all firms, different risk free rate curves should be used in the calculation of the lambda approach in Run IDs 13, 14 and 15, where the latter two reflect the interest rate sensitivities set out in Annex 3.

17. As noted above, firms should not apply either the MA or VA in their calculation of the risk margin. As a result, credit sensitivities will not apply for firms' calculation of the lambda approach.

Annex 2 – Fundamental Spread specification for Scenarios A & B

As a reminder, it is important to note that the scenarios tested in the QIS are designed to gather relevant data to allow the PRA to model a range of potential policy options, and they do not represent reform proposals or decisions.

A2.1. Structure

1. The Portfolio Fundamental Spread (FS) tested under Scenarios A and B is made up of the following components:
    - Expected loss
    - Adjustment for sovereign, supranational and quasi government exposures
    - Credit risk premium (CRP) which will include a floor such that it does not fall below a given level in bps
    - Valuation uncertainty (VU)

2. In addition to the above, we will seek to also test a cap to the CRP in certain circumstances.

A2.2. Calculation of Portfolio MA

3. The Portfolio MA for Scenarios A and B 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 i.e. the Component A assets. Section A2.3 describes how the assigned portfolio of assets should be determined.
    (ii) Value the liability cash flows at the basic risk free rate 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 section A2.4.
    (iv) Calculate the Portfolio FS component for CRP using the method described in section A2.5.
    (v) Calculate the Portfolio FS component for VU using the method described in section A2.6.
    (vi) 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) minus the Portfolio FS component for VU in (v).

A2.3. Expected loss

4. 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.

5. For the purpose of this QIS 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 probabilities of default published by the PRA as at YE 2020[14], a recovery rate assumption of 30% and the formula set out in paragraph 266 of EIOPA's Technical Documentation[15].

6. The 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.

7. The assigned portfolio of assets is referred to as Component A[16,17]. The additional assets needed to cover all the remaining components of the Portfolio FS are referred to as Component B. Any surplus above the values of assets held in Components A and B is referred to as Component C.

A2.4. Adjustment for sovereign, supranational and quasi government exposures

8. 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 section A2.7 below.

A2.5. Credit risk premium

9. The CRP is expressed as a percentage of spread applied at the level of individual assets. It should be applied to all assets except sovereign, supranational and quasi government exposures. The CRP is made up of the following components:

   (i) A percentage applied to the current z-spread[18] of the asset.
   Plus

[14] https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/solvency-ii/risk-free-fs-pod-and-cod-31-december-2020.xlsx
[15] https://www.eiopa.europa.eu/tools-and-data/risk-free-interest-rate-term-structures_en
[16] Components A, B and C are defined in paragraph 4.5 of Supervisory Statement SS7/18, Solvency II: Matching Adjustment.
[17] 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.
[18] The z-spread is the parallel shift to the basic risks free rate such that the present value of the recognised cash flows equals the market value of the assets.

(ii) A percentage applied to the 5-year average spread on an index of the same sector and CQS as the asset.

10. The percentages to be used in 9(i) and 9(ii) are as follows:

	Scenario A	Scenario B
Percentage applied to current z-spread	25%	25%
Percentage applied to average spread	25%	0%

11. The 5-year average spreads to be used for the purposes of 9(ii) above are as follows:

	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

12. For the purposes of this QIS, we will be testing both a floor and a cap applied to the total CRP. The floor will be applied in Scenarios A and B and all the sensitivities tested under them. The cap will be tested both on and off in Scenario A only[19]. The following table sets out the floor and cap to be applied to the total CRP.

	CRP floor for Scenario A and B (bps)		CRP cap for Scenario A (bps)	
	Financials	Non-Financials	Financials	Non-Financials
CQS 0	11	4	56	42
CQS 1	27	19	101	86
CQS 2	43	28	153	124
CQS 3	72	40	229	166
CQS 4	168	117	507	403
CQS 5	391	184	1,037	623
CQS 6	391	184	1,207	793

13. The following table summarises the scenarios in which the floor and cap should be applied.

[19] As stated above, there are a number of cells in Scenario A of the template with the explicit direction that figures are to be provided on the basis of a cap being applied. Unless such explicit direction is give, please provide figures on the basis that the cap is not applied.

	Scenario A	Scenario B
Floor	Yes	Yes
Cap	Cap on and off	No

14. The CRP for each individual asset should be converted into a Portfolio FS component using the procedure set out in section A2.7 below.

A2.6. Valuation uncertainty

15. VU applies at the level of individual assets and is expressed as a fixed amount in basis points depending on the CQS and IFRS fair value hierarchy level of the asset in question. It should be applied to all assets except sovereign, supranational and quasi government exposures.

The following table sets out the VU component of the FS to be tested in the QIS:

CQS	IFRS Level	VU for Scenario A (bps)	VU for Scenario B (bps)
All	Level 1	NIL	Nil
All	Level 2	7.5	3.75
0-3	Level 3	7.5	3.75
4-6	Level 3	25.0	12.50

16. The VU for each individual asset should be converted into a Portfolio FS component using the procedure set out in section A2.7 below.

A2.7. Conversion to Portfolio FS component

17. The FS components in sections A2.4 to A2.6 are expressed as 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[20].

    (i) Calculate the risk free portfolio value as the present value of recognised cash flows[21] of all assets in Component A using the basic risk free rate.

    (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.

[20] The procedure should be applied separately for each FS component.
[21] Recognised asset cashflows are promised (contractual) cashflows that have been adjusted for things like embedded optionality in line with SS7/18, for example cashflows up to the first call date and at a final redemption, omitting non-redemption cashflows after the first call date.

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

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

Where:

- M is the cash flow tenor
- $\mathrm{r_M}$ is the basic risk-free rate at tenor M
- $\mathrm{bps_M}$ 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 e.g. for CRP and VU, the same bps figure should be assumed for all tenors.
- $\mathrm{racfac_M}$ 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).

A2.8. Reinsurance and derivatives

18. 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.

Annex 3 – Specification of the sensitivities

A3.0. General

1. Please assume that the sensitivities in respect of interest rates, credit spreads and credit spreads & downgrades apply consistently to assets and liabilities in all currencies.

A3.1. Risk free rate (SONIA) sensitivities

2. There are two risk free rate sensitivities being tested in the QIS:
   a) +200bps parallel shift in the risk free rate curve; and
   b) -100bps parallel shift in the risk free rate curve.

3. Please assume that the shift in interest rates is applied consistently to both the Solvency II risk free rates and government bond yields (i.e. the curves move in parallel).

4. Where the sensitivity is a fall in the risk free rate curve, interest rates should be allowed to go negative.

5. All asset and liability values should be recalculated under the risk free rate sensitivities.

6. For firms with approval to use the MA, for simplicity, please assume that the Portfolio MA in bps is unchanged from that derived under Base spreads post the update to using SONIA as risk-free and the specified MA methodology (as per Run ID 7 and Run ID 13), i.e., that there are no second order impacts on the Portfolio MA in bps arising from the change in interest rates. The MA benefit in £ amount should be recalculated using the same Portfolio MA in bps but reflecting the change in interest rates.

A3.2. Credit spread sensitivities

For firms with approval to use the MA and/or VA

7. Please revalue each of your assets, both within and outside the MAP, based on the specified credit spread change (given by CQS and sector) in the following table. Please assume the spread change is applied additively to the asset annual z-spread as at YE2020.

Spread change (bps)	**Credit Spread Sensitivity 1: Moderate widening**		**Credit Spread Sensitivity 2: Extreme widening**
CQS / Sector	**Financial**	**Non-Financial**	**All**

CQS0	50	50	150
CQS1	75	50	200
CQS2	100	50	350
CQS3	125	50	700
CQS4	250	125	1400
CQS5	350	175	2100
CQS6	600	300	3500

8. For MAP assets, please assume that the elements used for the CRP calculation (5-year average spreads, CRP floor and CRP cap) and VU calculation are unchanged.

9. For assets which have been restructured for the purposes of creating MA eligible notes, please apply the spread change to the notes within the MAP in full according to their CQS (rather than applying the change to the spread of the underlying asset and then apportioning the impact to the MAP and non-MAP assets). No further restructuring should be assumed to take place following the spread change.

10. The Portfolio MA in bps and MA benefit in £ for the MAP should be recalculated accordingly, including the update of the spot asset spread element of the CRP, any rebalancing actions and / or asset injections that are required to restore matching within the MAP.

A3.3. Credit spread and downgrade sensitivity

For firms with approval to use the MA and/or VA

11. Please repeat Credit Spread Sensitivity 2 but with downgrades applied to all assets both within and outside the MAP, as specified in the table below. No diversification should be assumed between the credit spread widening and the downgrade events. Please assume that the spread change is applied before any downgrades, i.e., the spread change should be based on the original CQS.

12. Downgrades should be applied to all assets (i.e., both liquid and illiquid) on a probabilistic basis. For example, every CQS1 asset should be split into 2 assets that are identical to the original, but with the first asset being rated CQS1 and having 75% of the total market value and each projected cash-flow, and the second asset being rated CQS2 and having 25% of the total market value and each projected cash-flow.

% of assets assumed to downgrade by 1 CQS step	
CQS0	15%

CQS1	25%
CQS2	10%
CQS3	10%
CQS4-6	0% (for simplicity)

13. For MAP assets, please assume that the calibrations used for the EL calculation, CRP calculation (5-year average spreads, CRP floor and CRP cap) and VU calculation are unchanged for each CQS. However, please update the FS components for EL, CRP and VU as appropriate to reflect the new CQS for the proportion of the assets that are assumed to have downgraded. As per paragraph 11 above, please assume that there is no additional spread widening applied on downgrade i.e. the spread widening stress should be as per the original CQS.

14. For assets which have been restructured for the purposes of creating MA eligible notes, no further restructuring should be assumed to take place following the downgrade.

15. The Portfolio MA in bps and MA benefit in £ for the MAP should be recalculated accordingly, including the update of all relevant Portfolio FS components, any rebalancing actions and / or asset injections that are required to restore matching within the MAP.

A3.4. Volatility Adjustment (VA)

16. For the Run IDs where credit spread, and credit spread and downgrade sensitivities are applied, the relevant VA to be used is provided in the table below:

Currency	VA for YE2020 (Run IDs 2,3,7,8,9,13,14 and 15)	VA under 'moderate credit spreads' sensitivity (Run IDs 4,10 and 16)	VA under 'extreme credit spreads sensitivity' (Run IDs 5,6,11,12, 17 and 18)
EUR	7	27	108
DKK	20	44	104
NOK	30	57	157
SEK	13	27	72
GBP	15	35	113
AUD	6	18	52
CAD	22	40	105
JPY	9	13	30
USD	27	55	227

17. The key assumptions underlying the derivation of the VA figures above:

- The credit spread sensitivities are uniform across the relevant currencies
- Second-order effects of interest rate changes (Run ID 3, 8, 9, 14, 15) are ignored
- There is no equivalent 'IBOR' to 'ONIA' transition for non-GBP currencies
- The risk correction methodology for the VA remains as calculated in Article 51 of the Commission Delegated Regulation (EU) 2015/35[22] 'and is 'decoupled' from the Fundamental Spread specification for Scenarios A and B set out in Annex 2. Therefore there is no change to risk correction in Scenarios A and B (Run ID 7 - 18).

[22] www.legislation.gov.uk/eur/2015/35/article/51

End of instructions