

Supervisory Statement | SS5/14

# Solvency II: calculation of technical provisions and the use of internal models for general insurers

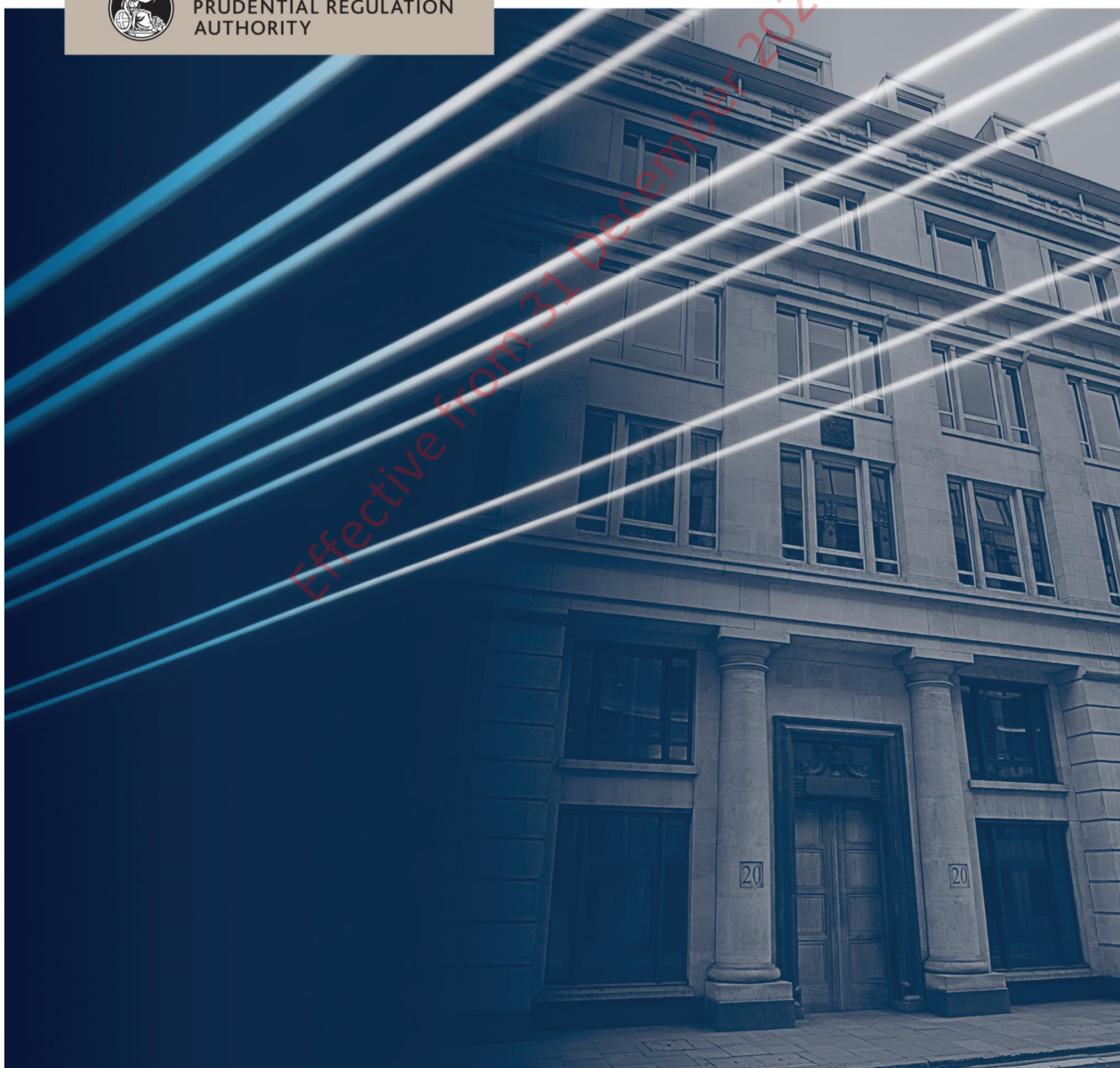
February 2024

(Updating April 2014)



BANK OF ENGLAND  
PRUDENTIAL REGULATION  
AUTHORITY

Effective from 31 December 2024



This SS is effective from 31 December 2024 and was published as part of PS2/24.

Please see: [www.bankofengland.co.uk/prudential-regulation/publication/2024/february/review-of-solvency-ii-adapting-to-the-uk-insurance-market-policy-statement](https://www.bankofengland.co.uk/prudential-regulation/publication/2024/february/review-of-solvency-ii-adapting-to-the-uk-insurance-market-policy-statement)

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Prudential Regulation Authority  
20 Moorgate  
London EC2R 6DA

Prudential Regulation Authority, registered office: 8 Lothbury, London EC2R 7HH.  
Registered in England and Wales No: 07854923



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## 1 Introduction

1.1 This supervisory statement (SS) is relevant to all UK Solvency II firms, the Society of Lloyd's and its members and managing agents. To ensure that general insurers set an adequate level of technical provisions and hold sufficient capital, this SS sets out the PRA's expectations of firms in relation to the calculation of technical provisions and the requirements associated with internal models.

1.2 This statement seeks to ensure that general insurers set an adequate level of technical provisions and hold sufficient capital. Firms should read this SS in conjunction with the relevant parts of the PRA Rulebook, and supervisory statement (SS) 1/24 – Expectations for meeting the PRA's internal model requirements for insurers under Solvency II.<sup>1</sup>

1.2A Firms should also refer to:

- the Bank of England and PRA statement of policy – Interpretation of EU Guidelines and Recommendations: Bank of England and PRA approach after the UK's withdrawal from the EU;<sup>1a</sup>
- SS1/19 – Non-binding PRA materials: The PRA's approach after the UK's withdrawal from the EU;<sup>1b</sup> and
- SS2/19 – PRA approach to interpreting reporting and disclosure requirements and regulatory transactions forms after EU withdrawal.<sup>1c</sup>

1.2B Any reference to any provision of direct EU legislation is a reference to it as it forms part of retained EU law.

1.3 [Deleted]

### Feedback to responses

This section has been deleted

## 2 Technical Provisions

### Realistic assumptions and adequate methods

2.1 Technical Provisions 3.1 and 3.2 require technical provisions to be calculated based upon up-to-date and credible information and realistic assumptions, using adequate, applicable and relevant actuarial and statistical methods.

### Risk margin

2.2 The PRA considers the risk margin to be a significant part of the technical provisions calculation, so it is important that firms consider whether the methods used there are in fact adequate. This should include consideration of the underlying assumptions.

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<sup>1</sup> February 2024: <https://www.bankofengland.co.uk/prudential-regulation/publication/2024/expectations-for-meeting-the-pra-internal-model-requirements-ss>.

<sup>1a</sup> April 2019: <https://www.bankofengland.co.uk/paper/2019/interpretation-of-eu-guidelines-and-recommendations-boe-and-praapproach-sop>.

<sup>1b</sup> April 2019: <https://www.bankofengland.co.uk/prudential-regulation/publication/2019/non-binding-pra-materials-the-pra-approach-after-the-uks-withdrawal-from-the-eu-ss>.

<sup>1c</sup> April 2019: <https://www.bankofengland.co.uk/prudential-regulation/publication/2019/pr-a-approach-to-interpreting-reporting-and-disclosure-reqs-and-reg-trans-forms-ss>

2.3 For example, firms should not approximate the future Solvency Capital Requirements used to calculate the risk margin as proportional to the projected best estimate unless this has been shown not to lead to a material misstatement of technical provisions.

#### Events not in data

2.4 Many firms use reserving methods that project forwards from historical data. On its own, this is unlikely to satisfy the requirements as set out in the PRA Rulebook for a probability-weighted average of future cash-flows, since not all possible future cash-flows — or the events that cause them — may be represented in the data.

2.5 Although these events are sometimes referred to as ‘binary events’ or ‘extreme events’, such terms suggest that events not found in the data are necessarily extreme or rare. This is not the case, so the PRA prefers to use the term ‘events not in data’, or ENID.

2.6 Firms should take ENID into account when calculating technical provisions. Applying a simple percentage uplift without justification is not an adequate method.

2.7 Where outliers are removed from the data as part of the reserving process, this removes events from the data. Firms should make an allowance for this in the technical provisions calculation unless they have shown that it would not be possible for these, or similar, events to occur again in future.

#### Premium provisions

2.8 Many firms use business plan loss ratios to set the level of premium provisions. Using optimistic business plan loss ratios for this purpose is not realistic, and will not produce a best estimate as required under the Technical Provisions and Solvency Capital Requirement – General Provisions Part of the PRA Rulebook.

#### Approximations

2.9 A number of firms have approximated an aspect of the technical provisions calculation on grounds of materiality. Where this is the case, firms should quantify the materiality. Where firms make a number of such approximations, their cumulative materiality should also be considered; it is not adequate simply to demonstrate that each aspect taken alone is immaterial.

2.10 For example, where firms have assumed that the impact of lapses on technical provisions is not material, they should quantify the materiality, and consider this together with the impact of other simplifying assumptions made.

### 3 Internal Models

#### Material risks

3.1 [Deleted]

#### Events not in data

3.2 The concept of ENID also applies to the data used to set the parameters for the internal model, in line with Solvency Capital Requirement – Internal Models 11.4. Firms should not assume that parameterising the internal model using only historical data will take into account all quantifiable risks, unless an unadjusted distribution has been shown to capture the full range of possible future events, for example by way of stress and scenario testing.

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3.3 For example, for liability lines, data sets covering recent years may not include sufficient examples of liability catastrophes, which can significantly increase the dependency between policies, and, as a result, the volatility. Parameterising the internal model using such a data set alone would omit the possibility of future liability catastrophes, failing to cover all material risks.

### **Risks covered by third party models.**

3.4 Where firms use third party models, firms should take particular care to demonstrate that the model covers all material risks in their own risk profile as stipulated under Solvency Capital Requirement – Internal Models 16. For example, where firms have used a third party model for earthquake exposure, they should ensure that the internal model also covers related risks, such as corresponding tsunami exposure.

### **Consistency with technical provisions**

3.5 Solvency Capital Requirement – Internal Models 11.2 requires the methods used in the internal model to be ‘consistent with the methods used to calculate technical provisions’.

### **Technical provisions in the internal model**

3.6 In order to calculate the movement in basic own funds over one year, the methods firms use to calculate the technical provisions should be consistent with the methods used to calculate the probability distribution forecast, in line with Solvency Capital Requirement – Internal Models 11.2. When selecting a method for this purpose, firms should ensure that the method produces similar results to a full technical provisions calculation throughout the probability distribution forecast, and not just in benign circumstances.

3.7 [Deleted]

### **Uncertainty around parameters**

3.8 [Deleted]

### **Uncertainty around parameters**

3.9 Firms should allow for estimation error where this is material and it is practicable to do so, in line with Solvency Capital Requirement – Internal Models 11.2 and Technical provisions 19.3(b).

3.10 For example, where there is significant uncertainty around a sensitive parameter, so that the correct value could lie anywhere in a range, firms should seek to reflect the parameter uncertainty in their choice of parameter value unless they have otherwise quantified and allowed for this estimation error in the model.

### **Calendar year effects**

3.11 Calendar year effects, such as claims inflation, can have a significant impact on the volatility of future reserve development. Firms should only use methods that do not capture calendar year effects explicitly if they have shown that the resulting distribution appropriately reflects the volatility introduced by these effects, or if such volatility is captured elsewhere in the model.

### **Improvements in performance**

3.12 Firms should not assume an improvement in performance relative to that seen in the past unless such an improvement has been clearly justified, in line with Solvency Capital Requirement – Internal Models 11.2. For example, it would not be realistic to base the internal



model on a business plan which assumes improved underwriting results unless the measures taken have been shown to be effective.

### One-year emergence of risk

3.13 Firms should not assume that insurance risk emerges simply according to a historical paid or incurred development pattern. Where firms use an emergence factor method (where one-year risk is assumed to be a proportion of ultimate risk), firms should not base the emergence factor purely on the incurred or paid pattern, in line with Solvency Capital Requirement – Internal Models 11.2.

3.14 Where historical paid or incurred patterns are used in the model, firms should not assume that these will be repeated in future, unless the firm has shown that this is a realistic assumption throughout the probability distribution forecast.

### Industry standards

3.15 While, in line with Solvency Capital Requirement – Internal Models 12.3, firms should ensure that the internal model reflects progress in generally accepted market practice, assumptions cannot be justified solely on the grounds that they are ‘industry standard’ or ‘established good practice’. Firms should justify assumptions on the basis of their own specific risk profile.

### Default options

3.16 When justifying the assumptions underlying an external model, it is not sufficient to justify the assumptions on the grounds that they are selected by default. Firms should justify all assumptions on the basis of their own specific risk profile, in line with Solvency Capital Requirement – Internal Models 11.2 and 16.

3.17 For example, where a catastrophe model is set by default not to allow for clustering of storms, firms should demonstrate that this assumption is appropriate for their risk profile, and cannot justify this assumption on the grounds that it is selected by default.

### Data

3.18 [Deleted]

### Data used

3.19 Any data that can have an impact on the outputs of the internal model should be considered to be ‘used for the internal model’, and must therefore be accurate, complete and appropriate, in line with Solvency Capital Requirement – Internal Models 11.4. For example, where a firm has material natural catastrophe risk, the exposure data input into the catastrophe model should be accurate, complete and appropriate.

### Risk mitigation

3.20 [Deleted]

### Reinsurance exhaustion

3.21 The most common risk mitigation technique is the modelling of purchased reinsurance. Where firms model reinsurance, they should allow for the possibility of reinsurance exhaustion in order to ensure that the risks arising from the risk mitigation techniques are properly reflected, in line with Solvency Capital Requirement – Internal Models 11.8.

### Management actions

3.22 [Deleted]

### **Renewal of reinsurance**

3.23 Firms should treat the renewal of reinsurance in the model as a future management action unless it has been shown that the renewal will not rely on a decision made by the firm, in line with Solvency Capital Requirement – Internal Models 11.8.

### **Validation standards**

3.24 [Deleted]

### **Specific validation**

3.25 In order to review the ongoing appropriateness of the internal model, firms should perform validation that relates specifically to their own risk profile. For example, it is not satisfactory to review the appropriateness of a third party model purely on the basis of generic validation performed by the model vendor.

### **External models and data**

3.26 [Deleted]

### **Data from third party models**

3.27 Firms often use data output from a third party model. Where the assumptions and methods the third party uses to produce the data could have a material impact on the outputs of the firm's internal model, firms should demonstrate that the external model itself satisfies internal model requirements, and not the data alone, in line with Solvency Capital Requirement – Internal Models 16.1.

3.28 For example, where firms are provided with catastrophe risk event loss tables by a third party, internal model requirements should be applied to the model that produced the tables, and not to the tables alone.

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## Appendix - SS5/14 updates

This appendix details the changes that were made to this supervisory statement (SS) following its initial publication.

### February 2024

This SS was amended as a part of PS2/24.<sup>2</sup> The SS was amended by inserting new paragraphs 1.2A and 1.2B as a result of the proposals in CP12/23. Similarly, paragraphs 1.3, 1.4, 1.5, 1.6, 1.7, 3.1, 3.7, 3.8, 3.18, 3.20, 3.22, 3.24 and 3.26 have been deleted as a part of CP12/23. References to the CDR in articles 1.2, 2.1, 2.4, 2.8, 3.2, 3.4, 3.6, 3.9, 3.12, 3.13, 3.15, 3.16, 3.19, 3.21, 3.23, 3.27 and 3.28 have been updated to reference the relevant areas in the PRA's policy materials. Paragraph 1.1 has been updated to clarify the scope of this SS.

### April 2014

SS5/14 was originally published in April 2014.

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<sup>2</sup> [www.bankofengland.co.uk/prudential-regulation/publication/2024/february/review-of-solvency-ii-adapting-to-the-uk-insurance-market-policy-statement](http://www.bankofengland.co.uk/prudential-regulation/publication/2024/february/review-of-solvency-ii-adapting-to-the-uk-insurance-market-policy-statement)