Undertaking Specific Parameters: Worth the hassle?
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Agenda

• Introduction
• Interpreting the guidance
• Collecting the data
• Adjusting the data
• Justifying and validating the results
• Managing the business while using Undertaking Specific Parameters (“USPs”)
Introduction

USPs can have a significant benefit if you can meet the requirements.

• Main regulatory and supervisory texts
  – Commission Implementing Regulation (EU) 2015/498 for implementing technical standards with regard to the supervisory approval procedure to use undertaking-specific parameters published by EC on 24 March 2015
  – PRA published USP checklist (SI Reg 47) for application
    https://www.bankofengland.co.uk/prudential-regulation/authorisations/solvency-ii-approvals

• Subject to approval by the supervisory authorities, the following Standard Formula parameters can be replaced:
  – The standard deviation for non-life premium risk – \( \sigma_{\text{prem,lob,U}} \)
  – The standard deviation for non-life gross premium risk – \( \sigma_{\text{prem,gross,lob,U}} \)
  – The adjustment factor for non-proportional reinsurance – \( NP_{\text{lob,U}} \)
  – The standard deviation for non-life net reserve risk – \( \sigma_{\text{res,lob,U}} \)

• Credibility based approach between market parameters and USPs

<table>
<thead>
<tr>
<th>Time Length</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<th>13</th>
<th>14</th>
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<td>Credibility Factor</td>
<td>34%</td>
<td>43%</td>
<td>51%</td>
<td>59%</td>
<td>67%</td>
<td>74%</td>
<td>81%</td>
<td>87%</td>
<td>92%</td>
<td>96%</td>
<td>100%</td>
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</tbody>
</table>
Introduction

USP approvals as at 30 October 2017 across the EU

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of USPs</th>
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<tbody>
<tr>
<td>Legal expenses</td>
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<td>Other motor</td>
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<tr>
<td>Assistance</td>
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<tr>
<td>Medical expenses</td>
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<tr>
<td>Motor vehicle lab</td>
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<tr>
<td>Miscellaneous</td>
<td>8</td>
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<tr>
<td>Fire and other</td>
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<tr>
<td>General Liability</td>
<td>4</td>
</tr>
<tr>
<td>Income protection</td>
<td>3</td>
</tr>
<tr>
<td>Marine, aviation, transport</td>
<td>2</td>
</tr>
<tr>
<td>Non-proportional reinsurance property</td>
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<td>Non-proportional reinsurance casualty</td>
<td>3</td>
</tr>
<tr>
<td>Non-proportional reinsurance MAT</td>
<td>3</td>
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<tr>
<td>Credit and suretyship</td>
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<tr>
<td>Financial claims</td>
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<tr>
<td>Medical expense</td>
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<tr>
<td>Motor vehicle liab</td>
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</tbody>
</table>

- Of which five are in the UK and Gibraltar
- NSAs have estimated that a further 15 undertakings will have their USPs approved in the near future across Europe.


Introduction

- Standard methods are prescribed. Therefore, the challenge is data.
- Data Quality
  - Complete
  - Accurate
  - Appropriate
- Fit for purpose
  - Pass required statistical tests
- Documentation
Interpreting the guidance

• Reference: Delegated Act – Annex XVII:
  – Payments made and **best estimates** of the provision for claims outstanding in segment “s” after the first development year of the accident year of those claims (aggregated losses)
  – The data are **representative for the premium risk** that the (re)insurance undertaking is **exposed to during the following 12 months**
  – The aggregated losses are adjusted for **catastrophe claims**
  – The aggregated losses include the **expenses incurred in servicing insurance obligations**
  – The data are adjusted for amounts recoverable from reinsurance contracts and special purpose vehicles which are consistent with the **reinsurance contracts and special purpose vehicles that are in place to provide cover for the following twelve months**

Collecting the data

• Data Quality
  – Already addressed as part of Technical Provisions requirements
  – If not → Data Policy, Data Directory, Data Workflow, etc.

• Possible significant challenges:
  – Premium Risk: Collating historical best estimate after 1 year
  – Reserve Risk: Getting triangulated data net of reinsurance
  – Gathering historical expense information
Adjusting the data

- Inflation – LoB with volatile historical inflation
- Rate changes and the underlying underwriting cycle
- Reinsurance – as-if adjustments
- Catastrophe – weather events, economic crisis?
- Portfolio changes
  - Exclude legacy portfolio or portfolio in run-off
  - Account for change in mix of business (e.g. within Miscellaneous)
    - Rescaling approach
    - HRGs – credibility theory
- Adjustments likely to be challenged – documented

Justifying the use (or not) of USPs

- No cherry-picking
- Risk profile different (e.g. Miscellaneous never a good fit)
- SCR with USPs give results closer to your own economic capital assessment
- Materiality of LoB or risk
- Reserve risk, one method is more accurate than the other
- Data not fit for purpose
- Standard formula appropriateness report shared with the regulator
Validating the Results

- Length of historical data
- Testing the method assumptions (as set out in Annex XVII of Commission Delegated Regulation)

\[ y = 0.879x \]

Aggregated Losses ('000)

Earned Premium ('000)

Linearity study

\[ R^2 = 99.0\% \]

QQ-plot of Residuals

Standard Normal Distribution

Shapiro Wilk’s Test

p-value = 20.69\%

R^2 = 99.0\%

Validating the Results

- Global optimum
Validating the Results

• Consistency of data used with requirements (materiality of limitations or deviations from requirements)
• USP calculation policy
• Sensitivity analysis:
  – With/without adjustments
  – Addition of one year (from business plan or an extreme scenario)
• Back-test actual observations against results implied by the prescribed methods

Validating the Results

Sensitivity analysis with respect to years of data used

![Graph showing USP by Number of Years of Data](graph.png)

- USP before Credibility Adjustment
- USP

- Adverse Scenario
- Business Plan
Known challenges from Regulators

• Demonstrate that one Reserve Risk method is more accurate than the other using the definition (if not able to demonstrate it, take the maximum result of the two methods)

• Adjustments to data, e.g. for catastrophe related claims. There are some inconsistencies between regulators about the definition of what can be considered as catastrophe claims

• Exhaustive documentation and evidence that data quality requirements have been met

• Documentation about expert judgements used

• Governance and story telling regarding the application

Managing the business while using USPs

• Acquiring/writing new business
  – External data
  – Possibly obtain historical data when buying renewal rights

• Discontinuing/Divesting portfolios

• Brexit (can possibly be overcome with internal QS reinsurance)

• USPs are not fixed year-on-year so volume effect is not the only driver for change in SCR for premium and reserve risk – should be tested as part of the ORSA
Case study: Offsetting segments

![Graph showing Earned Premiums and Ultimate Loss Ratio](image)

**Conclusion**

- Application less burdensome than for IMAP
- Challenges from Regulators are “manageable” although sometimes inconsistencies in their approach
- Extra level of consideration in taking business decisions, relative to the Standard Formula
- Second wave of applications observed after companies have settled down with Solvency II – now try to reduce SCR

USPs can have a significant benefit if you can meet the requirements.
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