The Good, Bad and Ugly of Stress and Scenario Testing

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Agenda

- SST – In Theory
- SST – In Practice
- Results presentation
- Lesson learned
SST – In Theory
What is Stress and Scenario Testing? (in layman terms)

1. We make up some adverse scenarios in our heads (and write them down)
2. Then imagine (estimate) how various aspects of the company would be impacted and to what extent
3. Check if controls are in place to mitigate these risks
4. If not, discuss with management on how to manage them in the future and what actions are needed
Purpose of SST

- Test how resilient the firm is under adverse conditions
- Meet regulatory requirements
- Helps identify, analyse and manage risks
- Inform business planning and strategy development
- Help set risk appetite and tolerances
- Model validation
- Validate suitability and feasibility of management actions
- Backtesting
- Demonstrate use test
SST – In Practice
SST Process

Identification
Analysis
Results
Review & Challenge
Board

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SST Process

Identification
Analysis
Results
Review and Challenge
Board

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SST – Process

1. Get senior management buy-in
2. Engage key stakeholders early
3. Have a plan!
4. Fit SST into the company wide plan
Scenario classification – Snake and Ladder trigger framework

- Good
- Bad
- Ugly

Increasing severity

“normal”

Stress Test

RST/R&R

“business as usual”

Stress zone

Non viability

Risk appetite

Risk tolerance

TIPS!

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Scenario Analysis - Categorisation

Financial (Capital Mitigation)

- RI Failure
- Reserve Deterioration
- Market Recession

VS

Non-Financial (Non Capital Mitigation)

- Reputation Risk
- Downgrade
- Licence Revoke
Analysis - Financial scenarios

- Scenarios
  - Expert Opinion Impact
  - Internal Model Impact
    - Pass/Fail Criteria
      - Pass
      - Fail
        - Pass With Limitations
        - Feedback to Stakeholders
      - Model Improvement
      - Model Limitation
Analysis - Financial scenarios
Example on how to use Internal Model?

Here-to-Stay Scenarios

Questions:
• What is the expected P&L?
• What is the SCR if the scenario happens?

Actions:
• Rerun Internal Model with “Scenario” as mean.
• (new) Expected P&L
• (new) SCR (Change in SCR)

One-Off Scenarios

Questions:
• What is the expected P&L?
• Does the Internal Model capture these scenarios?

Actions:
• Filter through generated simulations
• What is the attached P&L?
• Above/ Below SCR?
Analysis - Non-Financial scenarios

- Expert Opinion Impact
  - ORSA
  - Risk Monitoring
  - Risk Policies

- Mitigation Methods

- Management Actions
  - Actions Points on various trigger points
# Results - Summary

<table>
<thead>
<tr>
<th>Sample content</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario title</td>
<td>Meaningful heading</td>
</tr>
<tr>
<td>Risk Category</td>
<td>e.g. market or underwriting</td>
</tr>
<tr>
<td>Related to which business risk</td>
<td>e.g. operation</td>
</tr>
<tr>
<td>Quantification method</td>
<td>e.g. internal model or expert judgement (or both)</td>
</tr>
<tr>
<td>Scenario description</td>
<td>Tell your story here</td>
</tr>
<tr>
<td>Impact summary</td>
<td>e.g. impact on capital, P&amp;L, Balance Sheet…etc</td>
</tr>
<tr>
<td>Assumptions</td>
<td>e.g. speed or duration of the scenario</td>
</tr>
<tr>
<td>Management Actions</td>
<td>e.g. actions already in place or future actions</td>
</tr>
</tbody>
</table>
Results – Visualisation for one scenario

sample radar diagram
Results – Visualisation for all scenarios

Sample figures

Accept this risk?

Available capital

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>P&amp;L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Scenario</td>
<td></td>
</tr>
<tr>
<td>S1 - U/W 1</td>
<td></td>
</tr>
<tr>
<td>S2 - U/W 2</td>
<td></td>
</tr>
<tr>
<td>S3 - U/W 3</td>
<td></td>
</tr>
<tr>
<td>S4 - Strategy 1</td>
<td></td>
</tr>
<tr>
<td>S5 - Strategy 2</td>
<td></td>
</tr>
<tr>
<td>S6 - Regulatory 1</td>
<td></td>
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<tr>
<td>S7 - Regulatory 2</td>
<td></td>
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<tr>
<td>S8 - Operational</td>
<td></td>
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<tr>
<td>S9 - Investment 1</td>
<td></td>
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<tr>
<td>S10 - Investment 2</td>
<td></td>
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</tbody>
</table>

Available capital
Results - Documentations

• Process
• Key decisions made/expert judgement
• Detailed report
• Summary report
• Evidence of review and challenges
• Board sign-off
• Addressing PRA feedback
Lesson Learned
## What we learned? - Company

<table>
<thead>
<tr>
<th>Good</th>
<th>Bad</th>
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</thead>
<tbody>
<tr>
<td>Better understanding of</td>
<td>Time and resource consuming process</td>
</tr>
<tr>
<td>• Business</td>
<td></td>
</tr>
<tr>
<td>• management of risks</td>
<td></td>
</tr>
<tr>
<td>• Internal model</td>
<td></td>
</tr>
<tr>
<td>Board gets exposure to internal model</td>
<td>Scenario assumptions may not be realistic</td>
</tr>
<tr>
<td>Early buy-in and co-operation from risk owners is the key</td>
<td>Results may not be ideal and subjective</td>
</tr>
<tr>
<td>Fit into wider risk management framework</td>
<td>Lots of documentation</td>
</tr>
</tbody>
</table>

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## What we learned? - Personally

<table>
<thead>
<tr>
<th>Good</th>
<th>Bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learn a lot about the business from personal perspective</td>
<td>Hard to get sufficient attention from the Board/risk committee</td>
</tr>
<tr>
<td>Build a network within the firm</td>
<td>Complex to include in Internal Model</td>
</tr>
<tr>
<td>Early buy-in and co-operation from risk owners is the key</td>
<td>Embedding process is tricky</td>
</tr>
<tr>
<td></td>
<td>Many moving parts in the plan</td>
</tr>
</tbody>
</table>
Summary

• Stress and Scenario testing is a **really** useful tool
• Particularly useful in testing business plan and model validation
• Integral part of ORSA
• Tips:
  – Good planning
  – Board support/ownership
  – Tell management a good story
  – Summarise results in tables and graphically
Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.