Good Actuarial (Function) Report
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AFR GAR Contributors

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Goals of Today’s Session

We hope that you will:

• Have greater confidence in how to approach and structure your Actuarial Function Report.

• That you will better understand the gift of Actuarial Science.
Sub-Topics

I. AFR Refresher
II. Report Writing - Actuarial Science to the Rescue
III. Approaching the Actuarial Function Report
IV. The AFR Bar – What’s your challenge?
A. AFR: Stakeholders and Goals

Stakeholders:

- Board, Audit Committee, Risk Committees, Senior Management; Finance; Risk Management
- Plus: Pricing, UW, Internal Audit, Claims, Reinsurance, IT, Etc.

Goals:

- “...at least annually ... document all tasks that have been undertaken by the actuarial function and their results, ...
- clearly identify ... deficiencies and give recommendations as to how such deficiencies should be remedied.” (Commission delegated regulation (unnumbered), 2014, article 272, paragraph 8)
A. AFR: Stakeholders and Goals

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B. Actuarial Function Tasks

- Direct Actuarial Ownership: Reserving, (Pricing Models), Risk Modelling, ORSA and Other ERM duties.
- Soundness check (from actuarial point of view) of: Underwriting, Reinsurance, IT, ?claims, etc.
- Understand the business and organizational changes
- Assess compliance with SII and other requirements
- Reliability assessments for the Board
- Governance
- Etc.
C. Terms of Reference Lead the AFR

- Tasks and delivery plan
- Report timelines and content
- AF composition and qualifications
- Delegation and outsourcing
- Governance
- Interactions
- Etc.
D. The AFR Itself

• Documentation
• Assurance
• Opinions
• Recommendations
Part II: Report Writing - Actuarial Science to the Rescue.

- Heuristics
- Actuarial BAU and Heuristics
- Heuristics in Reports
Heuristics

- What is Heuristics?

  “A heuristic technique … is any approach to problem solving, learning, or discovery that employs a practical method not guaranteed to be optimal or perfect, but sufficient for the immediate goals. “

  Where finding an optimal solution is impossible or impractical, heuristic methods can be used to speed up the process of finding a satisfactory solution.”

Actuarial BAU and Heuristics

Actuarial Science is a Heuristic discipline. Actuaries rely on heuristics which broadly mirror their understanding of the underlying processes.

When statistical techniques alone are insufficient due to data and complexity issues. Good actuarial method, however, uses statistical validation, back testing and iterative improvement as much as practicable.

(Gerd Gigerenzer terms these heuristics with ecological rationality)
Actuarial Heuristic Examples

- Chain-ladder
- BF Method
- Correlation matrices
- Gamma as Mixture of Exponential Distributions for tail factors
- Averaging averages
- On Level adjustments
- Mack Method
# Report Heuristic Examples

<table>
<thead>
<tr>
<th>Task</th>
<th>Heuristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>Complexity Heuristic</td>
</tr>
<tr>
<td>Report Structure</td>
<td>Nature Reserve Map Analogy</td>
</tr>
<tr>
<td>Explanation</td>
<td>Analogy</td>
</tr>
<tr>
<td>Clarification</td>
<td>Metaphor</td>
</tr>
<tr>
<td>Relationships</td>
<td>Storytelling</td>
</tr>
<tr>
<td>Logic</td>
<td>Logic</td>
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<tr>
<td>Meeting Standards</td>
<td>Lever Balance that is Witnessed</td>
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<tr>
<td>Satisfaction of Readers</td>
<td>Value + Trust By All Ecosystem</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>Investigative Journalism</td>
</tr>
<tr>
<td>Useful conclusions</td>
<td>Silver Tray Delivery Of Cure</td>
</tr>
<tr>
<td>Complex subject</td>
<td>Stories From Different Angles</td>
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</table>
A. Many Stakeholders, Ambiguous Goals and Limitations

Noby Noby Boy: What’s the goal? -Limitations are everywhere.
Data to the AFR is the underlying work and its documentation:

- Direct Actuarial Work
- Opinions on UW, Reins, ...
- Reliance’s Reviews: IT, ...
- Challenge and Audit
- Governance

None of it truly standalone

All interconnected directly or via underlying assumptions
C. Many, Many Choices and Effects

- Different ways of structuring the AF + AFR
- Underlying analyses have many assumption and method options
- Links and interactions:
  \[
  \text{Risk} \Rightarrow \text{Pricing} \\
  \Downarrow \quad \Rightarrow \quad \Leftarrow \\
  \text{Reserving}
  \]
- External consistency too
D. Understanding Gap

- Actuaries think very analytically as professionals
- Users think from their life experience and responsibilities
E. The Use Hurdle

- Users don’t just need to understand the report
- It needs to help them achieve their goals gracefully
Complexity Heuristic

- Stakeholders, Goals and Limitations: Number, Interaction and Ambiguity
- Data: Number, Interaction and Ambiguity
- Process & Approach
  - Number of deliberate action choices
  - Amount of memory or feedback reactions
  - Number & degree of external effects
  - Ambiguity of results
- Communication
  - Understanding gap between writer and audience
  - Type & degree of use of results
<table>
<thead>
<tr>
<th>Straightforward</th>
<th>Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVE Waterfall</td>
<td>Demonstrate Compliance</td>
</tr>
<tr>
<td>Historic Reins Outcomes</td>
<td>Explain TP Analysis Uncertainty</td>
</tr>
<tr>
<td>Fit to Risk Appetite</td>
<td>Discuss Appropriateness</td>
</tr>
<tr>
<td>List Things</td>
<td>Discuss Reliability</td>
</tr>
<tr>
<td>Process Description</td>
<td>Explain Alternatives</td>
</tr>
<tr>
<td>Exception lists</td>
<td>Potential Conflicts of Interest</td>
</tr>
<tr>
<td></td>
<td>Outcome Distributions</td>
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</tbody>
</table>
# AFR Cross-Over Elements

<table>
<thead>
<tr>
<th>Primary Area</th>
<th>Description</th>
<th>TP</th>
<th>UW</th>
<th>REI</th>
<th>ERM</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP</td>
<td>TP Uncertainty</td>
<td>X</td>
<td>(X)</td>
<td>(X)</td>
<td>X</td>
</tr>
<tr>
<td>TP</td>
<td>Data Limitations (SII Standard)</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>TP</td>
<td>TP Adequacy Concerns</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>UW</td>
<td>Premium Sufficiency</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>UW</td>
<td>Pricing Improvements</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>UW/REI</td>
<td>Fit to Risk Appetite</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>RI</td>
<td>Reins Gross/Net Profit Dist’n</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>RI</td>
<td>Reinsurance Limitations</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>RI</td>
<td>Reins Credit Assessment</td>
<td>(X)</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>RI</td>
<td>Reinsurance Scenario Tests</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>ERM</td>
<td>Risk Modelling</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ALL</td>
<td>IT, Data, Common Assumptions</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ALL</td>
<td>(External Inputs &amp; Challenge)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
All visitors should be able to easily choose all the highlights that necessity, time and interests allow.
Satisfying Users While Meeting Standards

Good Compromises need to:

Balance the Goals of Standards

- Clear Meanings
- Depth + Quality of Work
- Meeting Users’ Needs
- Risk Management
- Protecting the Public Interest

Also With the Constraints of

- Data: Scope and Quality
- Analyst Capacity
- Complexity
- Understandability
- Realistic Budget

Compromise Levers

<table>
<thead>
<tr>
<th>Good Dialogue</th>
<th>Set Scope + Materiality</th>
<th>Share Ownership</th>
<th>Explain Trade-Offs Well</th>
</tr>
</thead>
</table>

Wisdom Levers

<table>
<thead>
<tr>
<th>Consider If Any “Losers”</th>
<th>Just Putting It Off again?</th>
<th>How Much Depends on It</th>
<th>Impact On Relationships</th>
</tr>
</thead>
</table>
Storytelling Heuristic

• Charts and Graphs should tell a simple story on their own. The “action” through comparison should beg for interpretation.

• Gripping story: -start with a topical personal failure, then add more context. Having set the hook, start reeling them in. They want to know how success was found.

• As complexity increases, the variety of voices should too.
Part IV: The AFR Bar
What’s your challenge?