IFoA Managing Uncertainty Working Party

- Decisions made in Boards are often dependent on expert advice
- Expert advice often comes with caveats especially over uncertainty
- Boards and their advisors do not always face up to uncertainty

Aim of MWUP: better decision making in the face of uncertainty

Some things are unknown and cannot be modelled

A modelling challenge

Unquantifiable
Quantifiable

An uncertainty challenge

Unquantifiable
Quantifiable
Managing Uncertainty Paper

- Section 1: six principles for improved decision making
- Section 2: three case studies

We presented this paper to:
- GIRO (Sep 2018)
- IFoA sessional (Feb 2019)
- WCI iNED forum (Apr 2019)

Six principles for improved decision making in the face of uncertainty

1. Face up to uncertainty
2. Deconstruct the problem
3. Don’t be fooled (un/intentional biases)
4. Models can be helpful, but also dangerous
5. Think about adaptability and resilience
6. Bring people with you
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Why don’t people face up to uncertainty?

• Our brains are pattern recognition machines. Our natural instinct is to apply memories and experience to predict what happens next

• Short term reward and/or personal risk are often not aligned to effective uncertainty management

• Uncertainty is messy and difficult: we don’t know what to do → Uncertainty Principles
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2. Deconstruct the problem
The decision making process

- Context / framing of the question
- Supporting analysis & modelling
- Results communication & interpretation
- Who are the different people involved with, or impacted by, the decision
- What is their power/influence vs stake in the decision
- Consider implicit and explicit assumptions
- Uncertainty is a broadly defined term.
- Different types require appropriate responses
A reserving actuary has seen a spike in claims in a particular quarter. How do they convey to the Reserve Committee that it is a trend, not a blip?

- Current financial pressures may colour management’s views and perspectives
- Ideally the uncertainty in reserve estimates should have been addressed in times of stability, not just times of turbulence
- If this is the first time the Committee is exposed to the issue, and possible responses, it is too late …

**Example Blip or trend?**

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3. Don’t be fooled
Two way communication: playing the game

- Biases become powerful where there is uncertainty
- Real life negotiations are often characterised by:
  - Different information and perspectives
  - Complex payoffs or incentives
- It might not be optimal for either party immediately to disclose all facts to the other

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Example
What do different models forecast for impact on GDP, of leaving the EU, over the long-term?

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Build in preparedness and adaptability to deal with consequences if things don’t turn out as hoped

Example

Catastrophically wrong (case study A)
Cyber Risk - “NotPetya” (2017)
Disaster Response Boston Marathon (2013)

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Trust and Communication

What part of
\[
\begin{align*}
\delta f^{(1)} &= -\frac{\frac{1}{2} \delta v_{1}^{(1)} - \frac{1}{2} s_{1}^{(1)}}{\frac{1}{2} (s_{1}^{(1)} - v_{1})^{2}} - \frac{\delta s_{1}^{(1)}}{\frac{1}{2} (s_{1}^{(1)} - v_{1})^{2}}, \\
\delta f^{(1)} &= \dot{v}_{1} - (1 - 3s_{1}^{(1)})(v_{1}^{(1)} - v_{1}) - \frac{\delta s_{1}^{(1)}}{\frac{1}{2} (s_{1}^{(1)} - v_{1})^{2}},
\end{align*}
\]
don't you understand?


- Girinker Aggarwal
- Christian Bird (co-chair)
  - Andrew Cox
  - Tom Durkin
- Paul Kaye (co-chair)
  - Alex Marcuson
  - Henry Johnson
  - James Turner
- Terry Masters
- Natasha Regan
- Santiago Restrepo
- Nylesh Shah
- Andrew Smith (co-chair)
  - Richard Stock
  - Neil Hilary
  - Simon Margetts
- Melinda Strudwick (co-chair)
- James Toller
- Martin White (co-chair)
  - Stuart White
  - Robin Wilkinson
  - Joseph Lo
  - Tony Jordan
  - Richard Winter