Case Study:
Informing Reinsurance Decisions

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Reinsurance decision making influences

Capacity requirements

Risk Understanding

Risk Appetite

Theoretical solutions

Market Appetite

Decision

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Reinsurance decision making influences

| **Capacity requirements** |
| Risk Understanding |
| Risk Appetite |
| Theoretical solutions |
| Market Appetite |
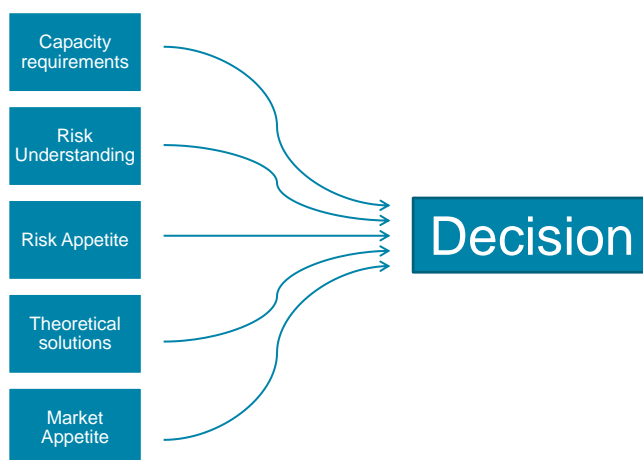
- Capacity requirements (line size) depend on business opportunities and strategy

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Reinsurance decision making influences

| Capacity requirements |
| **Risk Understanding** |
| Risk Appetite |
| Theoretical solutions |
| Market Appetite |

- Nature of risks assumed depends on risk appetite combined with ability to transfer unwanted or excess risk to reinsurers

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Reinsurance decision making influences

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Market Appetite

- Risk appetite is at the cornerstone of all opportunities and constraints

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Reinsurance decision making influences

Capacity requirements

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Risk Appetite

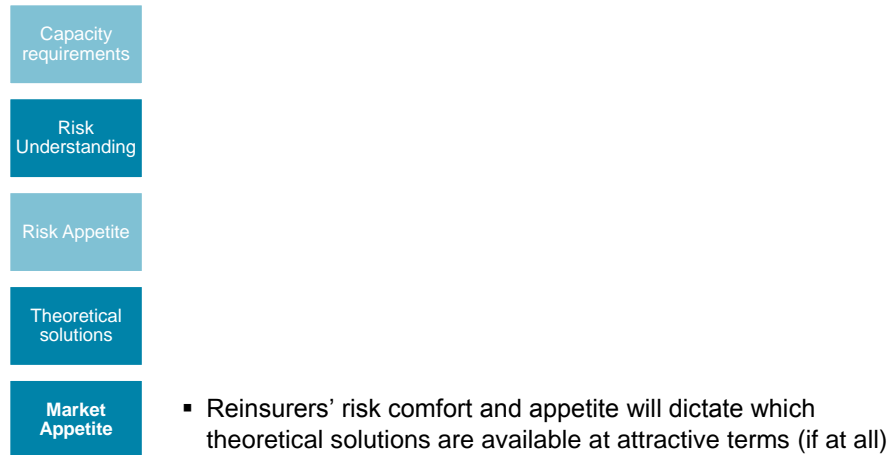**Theoretical solutions**

Market Appetite

- Gross risk understanding and net risk appetite give steer as to what solutions will be effective in theory

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Reinsurance decision making influences

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Risk Appetite

Theoretical solutions

Market Appetite

- Reinsurers' risk comfort and appetite will dictate which theoretical solutions are available at attractive terms (if at all)

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Role of models in reinsurance buying

Measuring risk

- Data sources?
- Key assumptions and results sensitivity
- Validation

Evaluating options in context of Risk Appetite

- Structure
- Pricing
- Metrics?

Explaining risks to facilitate transfer

- Evidence
- Thought process

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Risk Appetite and use of models

Risk Appetite drivers	Use of Internal Models
1. Capital	
Survivability	**High** (e.g. 1 in 200)
Sustainability	**Medium** (measurement?)
2. Earnings volatility	**Low** (scenario focus)
3. Market size	**Not applicable**
4. Risk confidence	**Not applicable**

Models cannot respond to all risk appetite drivers

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Tolerance v Appetite

- **Aversion** *n.* a feeling of intense dislike
- **Tolerance** *n.* the act or capacity of enduring
- **Resilience** *n.* the ability to recover from misfortune

- **Appetite** *n.* a desire or liking for something
- **Objective** *n.* something worked toward or striven for
- **Reward** *n.* a satisfying return or result

> **Tolerance**
> Undesirable risk that is tolerated
>
> **Appetite**
> Desirable risk, subject to the reward being adequate
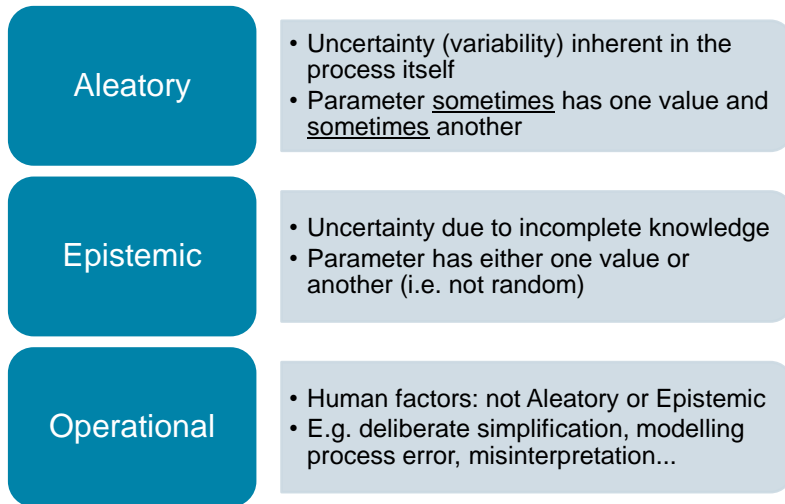
Illustration

- You are prepared to **Tolerate** a loss of 100
- Your preferred lowest retention is 50
  - Lower inappropriate from reputational perspective
  - Lower not available in reinsurance markets

- 50 xs 50 protection is available...
  1. Modelled 100% loss ratio
  2. Modelled 10% loss ratio
  3. Modelled 70% loss ratio

When would you buy? What is your Appetite?
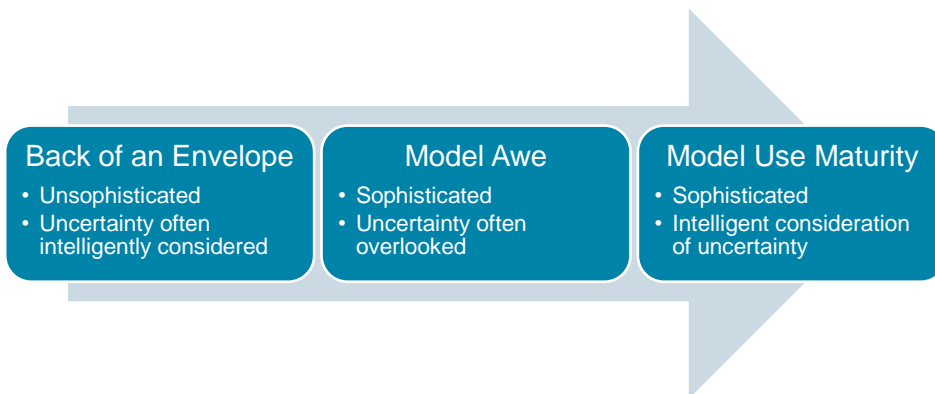
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Three types of uncertainty

Aleatory	• Uncertainty (variability) inherent in the process itself • Parameter <u>sometimes</u> has one value and <u>sometimes</u> another
Epistemic	• Uncertainty due to incomplete knowledge • Parameter has either one value or another (i.e. not random)
Operational	• Human factors: not Aleatory or Epistemic • E.g. deliberate simplification, modelling process error, misinterpretation...

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Progression of model use

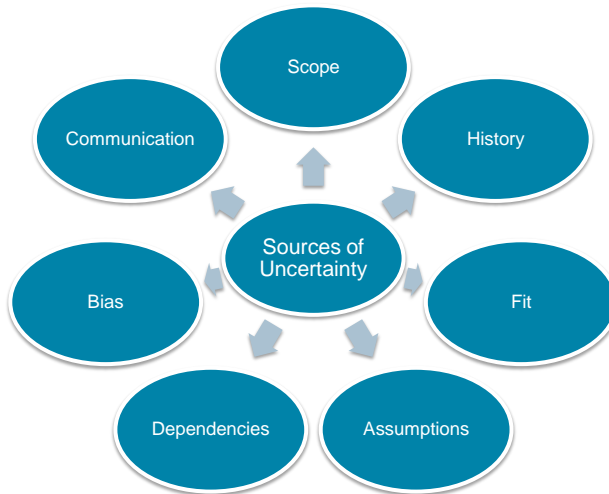| Back of an Envelope	Model Awe	Model Use Maturity
• Unsophisticated • Uncertainty often intelligently considered	• Sophisticated • Uncertainty often overlooked	• Sophisticated • Intelligent consideration of uncertainty

Uncertainty understanding key to intelligent model use

- How should non-aleatory uncertainty influence decision making?
- What are the implications for risk appetite – articulation and use?

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Key Sources of Uncertainty

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Decision making in practice - examples

Limit	Retention

■ Difficulties quantifying exposure
  – Clash potential
  – Cat model confidence
■ Buying more protection where greater uncertainty
	■ Value beyond direct capital benefits
	■ Increasing retention levels even where modelled loss ratio > 100%
	■ Aggregate covers: modelling and risk appetite guidance limitations

Pro rata v XL	Price

■ Capacity requirements and risk appetite constraints overriding issues
■ Reinsurer appetite has strong influence over terms
	■ Different perspectives of cedant and reinsurers
	  – View of risk
	  – Risk appetite

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Informing Reinsurance Decisions

Models have a key role in reinsurance decision making…

…but intelligent use requires intelligent engagement with broader issues:

- Risk understanding and confidence

- Risk appetite (and limitations in articulation)

- Market appetite – what do reinsurers want to provide?

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