

**The Actuarial Profession**  
making financial sense of the future

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Phill Beach, Nick Deakin and Ben Johnson



## Practical challenges of managing operational risk in Annuities

8 November 2010

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### Introduction

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- Who are we ?
- Why are we presenting ?
- What can you expect today ?

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## Introduction

### Agenda

1. Overview
2. Operational Risks in Annuities
3. Modelling Operational Risk
4. Practical challenges of managing Operational Risk
5. Concluding thoughts

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## Overview

### Operational Risk is

- The risk of loss resulting from inadequate or failed internal processes, people and systems or from external events (FSA and Basel Committee definition)
- An issue that ultimately affects the customer
- Operational risk can be broken down into categories



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## Overview

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### Evolution of operational risk for insurers

- Risk management was introduced under the Combined Code on corporate governance in 1998 and the Turnbull report in 1999 and recognised in Sarbanes-Oxley in 2002
- Insurers were required to identify, assess and manage operational risk by the Interim Prudential Sourcebook in 2003
- Insurers were required to quantify their assessment of capital for operational risk under the ICAS regime introduced in 2005 (Solvency I)
- European standards on capital requirements for operational risk will be introduced on 1<sup>st</sup> January 2013 under Solvency II

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## Operational Risk in Annuities

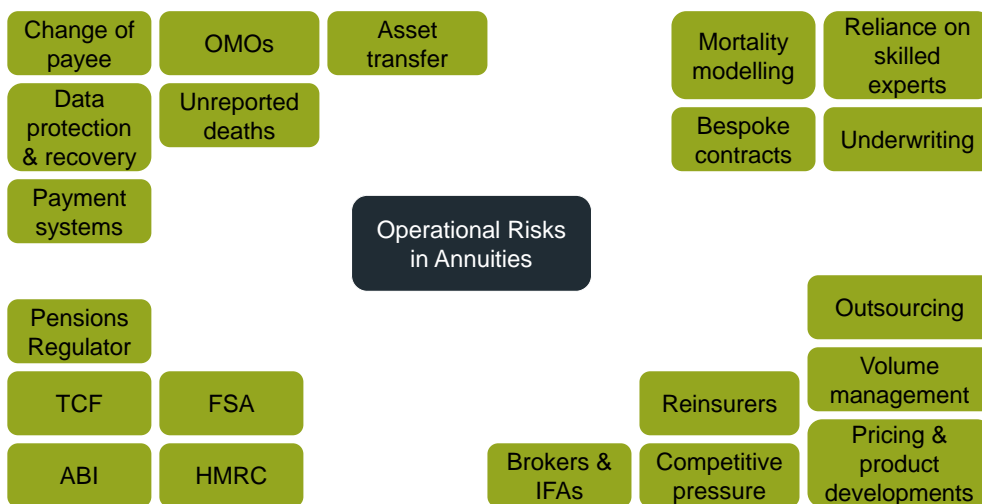
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- Like all business areas, Annuities is exposed to operational risks in 2 categories
  - General risks that impact all areas of an insurer (e.g. business disruption from fire or flood)
  - Risks specific to Annuities

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## Operational Risk in Annuities

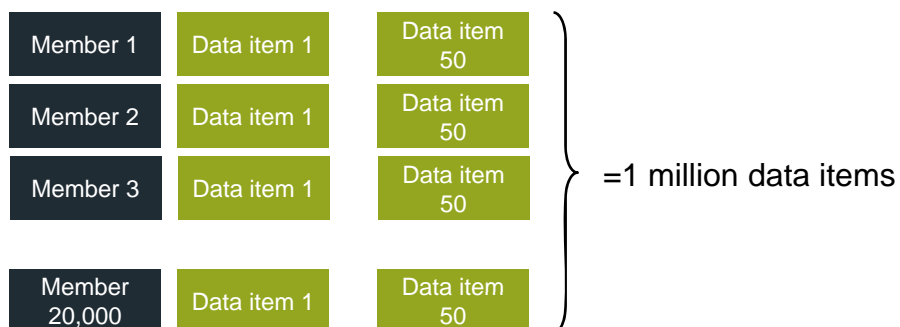


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## Operational Risk in Bulk Purchase Annuities

Size of data files used for pricing



- Large data files increase the risk of human error and systems failure
- Mitigated through check-sums and data confirmation

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## Operational Risk in Bulk Purchase Annuities

Pace of change

Old model	Current model
Buy-out on wind-up	Buy-out, Buy-in, Longevity swaps
Gilts and corporate bonds	Swaps, sale & leaseback, FX hedges
Completion in months	Completion in weeks
Few participants in market	Highly competitive market
Full transfer of administration	Phased transfer of some administration

- Exchange of insurance risks for operational risks
- Importance of good legal advice, and tailored contracts
- Regular training programmes
- Ensuring that risk controls evolve
- Systems development – legacy issues

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## Operational Risk in Individual Annuities

	Examples and risks
Volume management	Annuities are a price sensitive product and if volumes are not managed through price service standards may slip leading to reputation damage
Requesting funds from other insurers	Service is dependent on other direct insurers releasing funds, delays can damage reputation. The Options system has helped
Product developments	Fixed term annuities/Variable annuities – complex products with risks around customer understanding
Growth in the enhanced annuity market	- Increased risk of underwriting error - Potential for fraud in applying for enhanced annuities, (difficulties in proving smoker status)
Pricing Development	Increased rating factors eg postcode, occupation et etc

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## Operational Risk in Individual Annuities

	Examples and risks
Investments	Use of more sophisticated investments (Derivatives)
Reinsurance Market	-Growth in reinsurance market brings operational risk. -Reinsurers often underwrite enhanced annuities for the direct writer
Regulatory change	Linking of liabilities to CPI (potential mismatching risk, assets could be linked to RPI)
Maintaining Compliance	Large volume of requirements – ABI, HMRC, FSA
Market developments	Pension schemes de-risking through activities such as pension increase exchanges

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## Modelling Operational Risk Different approaches

### Insurance Companies

SI – formulaic for total capital  
(Annuities =4% reserves)

ICA – typically stress tests used for operational risk

### Solvency II

#### Standard Model

QIS 5 – approx 0.45% technical provision

#### Internal Model

The challenge is modelling the distribution of the risk and understanding the tail

### Banks

Basic Indicator approach – typically 15% of average gross income

Standardized approach  
12-18% of gross income by business line

Advanced measurement approach (Internal Model)

Basel II – 3 approaches

Basel III – focus on operational risk

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## Modelling Operational Risk

### A typical methodology for ICA

- Subdivide Operational Risk into risk categories
- Specify a theoretical risk curve for each risk category based on known characteristics
- Quantify the 50<sup>th</sup> percentile from historic frequent loss data and an assessment of the control environment
- Quantify significant losses for key risks by assessing the likelihood of success of key projects
- Define parameters for risk diversification and contagion
- Combine the loss curves for all risk categories and calibrate the overall loss curve using quantified extreme stress and scenario tests
- Using the loss curve, calculate the capital requirement over the run-off period of each product line

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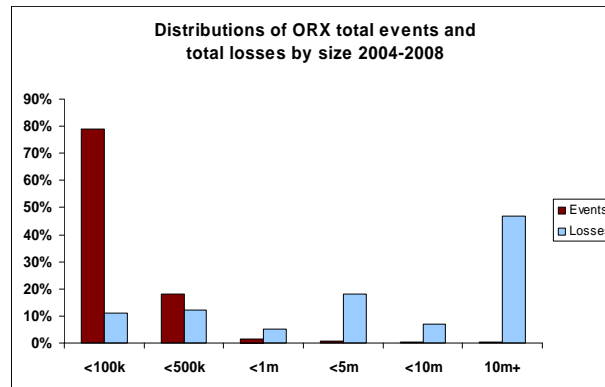
## Modelling Operational Risk

### Data issues

- The tail of the distribution is difficult to model due to lack of data
- Stress and scenario testing can help
- Behavioural Finance plays a part eg. Hindsight bias
- Possible Data sources for modelling losses
  - Internal company data (large improvements in the recording of operational risk but still developing)
  - ABI data
  - Consultancies providing data at an industry level
  - Publicly available studies

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## Modelling Operational Risk Banking Data



ORX = Operational Riskdata eXchange. Data collected from 53 global banks

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## Modelling Operational Risk

### Posting capital is only part of the answer

- The main purpose of identifying and understanding operational risk is to better manage operations through appropriate mitigation. This reduces risk to the firm and customer
- In addition Insurers have a regulatory requirement to maintain robust systems and controls to protect the customer
- The governance framework over operational risk management must ensure oversight of the risk management processes, accountabilities and capital assessment

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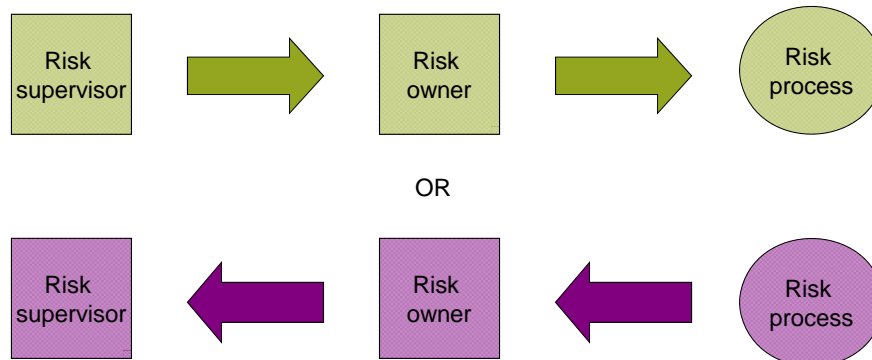
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## Practical challenges of managing Operational Risk

### Example:

Using clear risk vocabulary to deliver consistent understanding



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## Practical challenges of managing Operational Risk

### Example:

Managing risk in large, diverse departments

- Not unusual for a department to have >10 distinct functions
- Important to identify ownership for all risks
- Clarity of risk management and escalation process
- Particularly important where risks overlap several areas (e.g. handover of data between teams)
- Who is best placed to understand and control the risks of the end-to-end process?
- Are the controls still valid? Without regular review there is potential for inefficiency

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## Practical challenges of managing Operational Risk

### Example:

#### Using performance management to manage risk

- Operational risks can have a material impact on the profitability of an organisation
- FSA remuneration code requires that remuneration policies promote effective risk management
- Potential conflict between performance targets and an open risk reporting culture
- How else can effective risk management be incentivised?

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## Concluding thoughts

- Understanding and controlling the wide variety of operational risk;
- Improve understanding and management of extreme events;
- Evolving operational risk management to keep pace with changes impacting the Annuities business;
- Consistency of understanding and ownership of risk management across diverse disciplines
- How can you better manage your operational risk?

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