

Operational Risk in Life Insurers

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Operational Risk – similarities with General Insurance ?

- Multiple perils – from faulty documentation to a terrorist strike
- Potential for catastrophic events (e.g. Barings)...
- ...but with high frequency low impact claims arising as well
- Latent claims / IBNR issues (e.g. mortgage endowment sales in the late 1980s)
- Data issues

Operational Risk – unique features

- The degree to which the office can limit its exposure through its own controls.
- Capital is not always the answer!
- Soft impacts e.g. reputation damage
- Sensitivity of assessments – operational issues arising are frequently subject to legal privilege...
- ...or just plain embarrassing !!

Operational Risk – Content

- Types of Operational Risk
- Operational Risk Data
- Assessing and modelling exposure
- Allowing for control effectiveness
- Operational Risk in ICA
- Correlations and Diversification benefits
- Some food for thought

Types of Operational Risk

- Internal Fraud including rogue trading
- External Fraud
- Theft including theft of customer data
- Damage to Physical Assets (e.g.9/11)
- IT systems failure e.g.crashes, hacking
- Employee relations including strikes, breach of H&S and anti-discrimination law

Types of Operational Risk

- Misselling
 - including latent exposure e.g.mortgage endowments sales in the late '80s/early '90s
 - need to stress-test products for customers?
- Mis-pricing including
 - flaws in pricing models
 - unsound (method for deriving) assumptions
- Poor change management leading to product not being built as designed

Types of Operational Risk

- Documentation – includes flaws in:
 - Reinsurance Treaties
 - Investment Mandates with Asset Manager
 - Asset documentation e.g.bond covenants
 - Marketing Literature
 - Documentation required to set up a policy not received
 - Policy Provisions & Schedules
 - Record keeping

Types of Operational Risk

- Transaction errors including:
 - failure to follow correct underwriting process
 - mis-keying/setting up policy incorrectly
 - premium billing errors
 - unit price errors
 - failing to apply correct charges, bonuses etc.
 - incorrect policy payouts
 - errors in reinsurance premiums & recoveries
 - asset management: dealing errors

Types of Operational Risk

- Poor customer service e.g.failing to act on switch instructions, process delays
- Outsourcing & 3rd party failure
- Compliance with general legislation incl.:
 - Company Acts and the requirement to prepare accounts in line with IAS, SarBox etc.
 - Tax legislation
 - Anti-money laundering
 - Other including H&S

Types of Operational Risk

- Other Legal & Regulatory
 - Challenges under TCF and/or UTCCR
 - Compliance with Stakeholder regulations
 - PSB compliance including SYSC and COB (with its Disclosure requirements)
 - Also includes need to submit accurate returns (and the risk of stochastic model error)
- Actuarial calculations e.g. bonus rates, internal investigations
- This list of is not exhaustive!

Operational Risk – Internal Data

- Most life offices will have only recently started to collect OR data...
- ...though accounting information may hold valuable historic information on ex-gratia and other recurring operational losses.
- Generally speaking, life offices are now starting to identify operational risks faced by each part of the business...
- ...and assessing controls mitigating these.

Operational Risk – Internal Data

- As operational risk identification, control assessment and loss reporting are new, teething problems are to be expected
- Possible problem area may be risk categorisation – are business areas clear on what falls into which OR category ?
- Danger of inconsistent reporting and heterogenous data.

Operation Risk – Internal Data

- Are guidelines on operational loss reporting clear ?
- For instance, do they capture all impacts such as overtime, section 166 reports and other costs ? what about VIF impacts ?
- Do they recognise where provision is already implicit e.g. dead annuitants ?
- Quantifying underwriting losses (eg. failure to follow correct procedures) is tricky.

Operational Risk – External Data

- Sources of External Data
 - Fitch
 - SAS
 - BBA GOLD
 - ABI ORIC
- Generally these will give details of operational loss events and costs in the same way as a list of natural catastrophe costs in General Insurance

Operational Risk – External Data Issues

- However there is a question of exposure - just as General Insurance loss data is incomplete without knowing the aggregate exposure (e.g.sum insured) giving rise to the losses, so there is a need to understand the exposure (e.g.size of company) giving rise to OR losses in order to relate it to our own companies

Operational Risk – External Data Issues

- Question: how should we measure OR exposure ?
- Issue: external data may only have limited information on exposure e.g. number and size of companies which could potentially contribute to the loss data
- Related exposure issue is scalability - a small office with £100m in assets is not going to suffer a £1bn loss like Barings

Operational Risk – External Data Issues

- Another issue is that the classification of operational risks may not match our own, or be less granular
- Loss data may be inaccurate and/or incomplete, particularly if its just based on publicly available information
- Finally there is a question of relevance - could such a type of loss conceivably occur in our own company ?

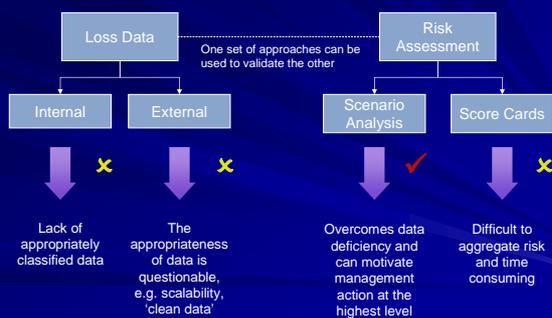
Operational Risk Data – A prospective view

- Loss data relates to past events.
- Need a prospective view of OR exposure.
- Indications of this can be gained from considering risk control framework data.
- Typically such data will be summarised in Scorecards, along with Key Risk Indicators such as staff turnover, error rates etc.
- The other key prospective view is provided by Scenario Analysis

Operational Risk - Scenario Analysis

- Scenario Analysis
 - Delphi workshops
 - 1-2-1 interviews
- Pitfalls
 - bias to recent experience, failure to think “outside the box” ;
 - losses that may be covered elsewhere;
 - or should be excluded from ICA;
- Business experts and Actuaries needed

Operational Risk Data Summary



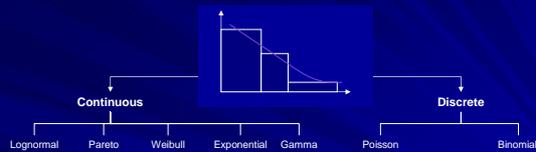
Assessing & Modelling Operational Risk

- We have data – what now?
- Need frequency and severity distributions for each OR type
- Frequency: Poisson, Negative Binomial
- Severity: Lognormal, Pareto, Weibull
- Tail can be too approximate

The methodology : Loss distribution



'Fitting' the distribution to the results



- Frequency and severity data are fed into the model and matched against various statistical distributions.
- Current 'fitting' techniques that the engine uses are:
 - Error minimisation algorithms
 - Maximum likelihood estimation
 - Goodness of fit statistics
- The inputs for Monte Carlo simulation can then be randomly generated from these probability distributions to simulate the process of sampling from an actual population.

Distribution of loss amounts

- **Uniform** - Simple, but not realistic for real-life losses
- **Triangular** - Simple, more realistic than Uniform distribution, but ignores the potential for very high positive losses
- **Normal** - for symmetrical distributions with limited positive loss potential
- **Lognormal Models** - positive values only, skewed positively, and allows for very high losses
- **Pareto** - positive tail more pronounced than Lognormal – more conservative, and could be used for modelling the tail ends
- **Weibull** - more flexible than Lognormal, making use of three parameters rather than two

Scenario Analysis: Key strengths and weaknesses

Strengths	Weaknesses
Identification of the largest risk exposures	Firms have to prove either through data or research that unexpected losses have been modelled and stressed
Potential integration of insurance, market and credit risks for enterprise-wide solutions	As the prioritisation of Critical Operational Risk Drivers ("CORDs") is a 'top down' approach, the analysis will inevitably focus on the high impact, low frequency events that usually manifest themselves at a corporate level rather than at a process level
Links controls to risk adjusted performance measurement and links operational risk to shareholder value	Results will vary according to the participants and the comprehensiveness of the expert challenge
Easier to embed into management decisions	Firms should assess the impact of deviations from the mean when accounting for correlation assumptions

Modelling: Key strengths and weaknesses

Strengths	Weaknesses
Can give a more detailed analysis of risks	Lack of reliable data.
Gives more strength to the calculated operational loss	Harder to understand – black box
Can easily find various percentiles to suit the purpose	Obtaining 2 other estimates at different probabilities dependent on a rough single frequency value may be spurious and takes a lot of effort

Assessing & Modelling Operational Risk considerations

- Why are we assessing and modelling Operational Risk ?
- Operational Risk capital allowance in ICA
- Allowance for op risk in EEV RDR
 - Consistent with ICA op risk?
- Identifying Operational Risk events in experience variations?
- Solvency II ?

Assessing & Modelling Operational Risk considerations

- Any assessment and model of Operational Risk should link in with the wider Operational Risk framework
- In particular OR figures should reflect the control environment

Allowing for control effectiveness

- Improvement in controls = reduction in capital
- Gross vs net
- Weighted average control score

Allowing for control effectiveness

Weighted average control score:

- Step 1: costing of gross and net loss
- Step 2: identify controls that take gross to net
- Step 3: measure effectiveness of controls
- Step 4: calculate weighted average
- Step 5: calculate scenario loss

ICA Operational Risk

- Operational Risk is a key component of Risk Based Capital (RBC) for life offices
- The FSA recognises this, and it is a key source of their challenge of ICAs
- FSA expectations
 - “bottom-up” approach, starting with risks faced and building up to a capital figure...
 - ...as opposed to “top down” (e.g. %age assets)
 - well defined process for arriving at OR capital figure, with robust challenge throughout

ICA Operational Risk Possible Components



ICA Operational Risk Possible Components

- “Known knows” - high frequency, low impact losses that can reasonably be expected
- “Known unknowns” - current issues that have either crystallised with an unknown impact, or are likely to crystallise in the near future
- “Unknown unknowns” - potential future operational events that may arise

ICA Operational Risk Possible Components

- Expected value of high frequency, low impact losses - the “known knowns”.
- “Known unknowns” - stress testing of existing misselling provisions...
- ...plus specific allowances for other current issues faced (aggregated in some way)
- Allowances for potential OR events that may arise in the future from modelling &/or scenario analysis - “unknown unknowns”

ICA Operational Risk – Issues

- Expected losses - allowance in base liabilities or in capital ? beyond 1-year ?
- Capital not required ? – improve controls
- New Business and goodwill impacts
- (Implicit) allowances in non-OR capital
- Diversification allowances for current issues and potential future events

ICA Correlations and Diversification

- FSA focus on justification for correlations used and any diversification benefits taken
- While different types of operational risk may appear independent, this may change in extreme events
- Could use scenarios (e.g.flu pandemic) to identify such change of dependency

ICA Correlations and Diversification

- First principles approach to identifying correlations – examples:
- Surge in process volumes may increase both transaction errors and compensation payments for poor customer service
- Poor accounting controls may lead to both internal and external fraud, as well as flawed reporting

Food for thought

- Exposure to IFA misselling
- Latent claims
- Maintenance expenses

“As an IFA office we have minimal exposure to misselling claims”

- FSA are reviewing how the FSCS is funded which may increase life office exposure to IFA misselling losses falling on the FSCS
- Recent FSA DP could alter the relative responsibilities of IFAs and life insurers:
 - requirement to stress test customer impact
 - need to ensure IFAs have all information they require to make an informed recommendation

“As an IFA office we have minimal exposure to misselling claims”

- Seymour vs.Ockwell - IFA successfully sued Zurich regarding flawed information it provided to the IFA relating to an offshore fund, which in turn led to a mis-sale.
- IFAs increasingly reliant on life office support in the sales process
 - Portfolio Planning tools
 - Technical Support (e.g.on tax legislation)
 - Marketing literature

“Our OR exposure is minimal as we have extensive controls in place”

- Maybe true at present – but what about the past ?
- Latent issues that may arise in the future:
 - Legacy misselling e.g.FSA initiates a review of contracting-out pension sales
 - Flawed policy provisions
 - Errors in systems (e.g.slight rounding error leading to systematic overcharging)
- Events beyond our control (e.g.9/11 ?)

“Our maintenance expense reserve implicitly covers operational risks”

- Are you sure ? while operational losses may come through in maintenance expenses, they could be treated as one-off
- Any operational losses included in maintenance expenses likely to be low-impact recurring losses – need to allow for low frequency high-impact events as well
- Still it is useful to consider what implicit OR allowances there are in maintenance expense assumptions

Operational Risk – Conclusion

- The similarities with General Insurance lead us to believe that we can successfully apply Actuarial techniques to model OR
- However there are many obstacles to overcome along the way, particularly data
- Life Operational Risk Working Party has published a paper which sets out both the issues and the tools and techniques you may wish to use to model Operational Risk
