

Financial Condition Reporting

GIRO / CAS Convention 2001

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Thursday 4 October 2001

Financial Condition Reporting

- The FSA's & EU Supervisors view
- The FCR Paper
- Areas for further research
- Methods of modeling risk
- Modeling operational risk
- Bringing it all together including tail dependency
- Relevance of risk measures
- Overlaying hard to quantify risks with a DFA model
- Use of insurance to reduce capital requirements

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FSA view

- Adequate resources
- What are adequate resources?
- Test resources (as part of business plan)
- Document process
- How will FSA monitor?
- Guidance

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Adequate resources

- Meet customer liabilities even if things go wrong
- Resources include: capital, reinsurance, procedures, guarantees (if enforceable), contingent capital, qualified staff
- Firm (insurers, banks, etc) must (as part of business plan) test ability to cope with reasonable adverse scenarios
- Well-run firms doing this anyway
- Process documented - so available to FSA (Prin 11)

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FSA monitoring

- Yet to be determined how FSA will monitor
- Consultation (March 2002?)
- Directors' certificate?
- Brief description of tests?
- Vulnerability?
- Public / private?
- Information useful to company itself

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Guidance

- Stress and scenario testing
- Guidance on all things that can affect companies - reinsurance, disasters etc
- Operational risk
- Combination of events
- Common causes

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Institute of Actuaries paper on FCA

■ Provides a framework for evaluating a company's financial position in relation to the risk it covers both from a solvency & a shareholder perspective

■ Concentrates on non-life insurance but covers the principles for all companies.

■ It covers both readily quantifiable risks and those not so readily quantifiable e.g. management succession

■ The Profession's response to the FSA proposal.

■ Corley Report also calls for FCR reports for Life Co's

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Risk Management Circle

Identify

Control

Finance

Administer

Effective control requires quantification

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Methods of Modelling Risk

Financial Risk - investment models

Financial Liabilities - actuarial models

In many cases other disciplines will be required

Some consultancy firms specialize in people risk

Can the firm survive adverse scenarios?

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Consultant's Name

05 November 2001

Operational Risk

■ ASSESSMENT OF OPERATIONAL RISK

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Management and Business Risk

- Some can be modelled using econometric or causal modelling techniques
- Some are really risks for shareholders rather than capital issues
- Stress testing can be a useful quantification technique
- Insurance often cannot be used for this type of risk

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Quantification of Operational Risk

- It is more complex than pricing conventional insurance risk
- The risks are more under control of the institution than many insured perils
- Changes in practice can have a material impact
- Organisations do not like to admit to Operational Risk losses
- Some are not readily amenable to statistical analysis e.g. management succession risk

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Scenarios

- Distributions may not be the best approach to evaluating certain types of operational risk
- Test the survival of the organisation to adverse scenarios
- Especially suitable for “people risks” e.g. succession planning

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Quantification of Operational Risk

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graph TD; OR([Operational Risk]) --> DT[Delphi Techniques]; OR --> CD[Collect Data]; DT --> PM[Produce a Model]; CD --> I[Industry]; CD --> S[Specific]; PM --> QR[Quantify Risk]; I --> M[Model]; S --> M; M --> Q[Quantify]; QR --> CR[Corroborate Results]; Q --> CR
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Development of loss curves

The graph shows two curves: a solid line labeled 'Based on data' and a dotted line labeled 'Including interviews'. The solid line starts at the origin, rises to a peak, and then falls. The dotted line follows the solid line initially but then levels off at a higher probability for larger amounts of loss. A vertical line marks the 'Budgeted Loss' on the x-axis, and a point on the dotted curve is labeled 'Expected Level of Loss'.

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Questions

- The difficulty is the need to estimate the right tail in a skew distribution
- How good is the left of the curve at predicting the right tail
- Use of Bayesian statistics or credibility theory
- What distributions fit the data
- What techniques are best at supplementing the data for "missing large claims"

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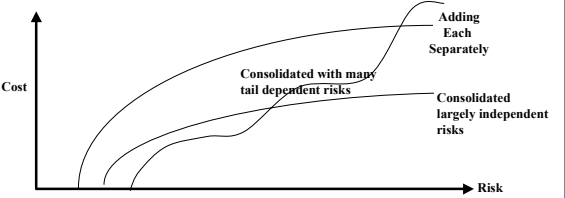
What are the other methods?

- Delphi techniques
- Decision trees and causal modelling
- ? Fuzzy Logic
- ? Others
- ? Use data bases for left side and other techniques for right side

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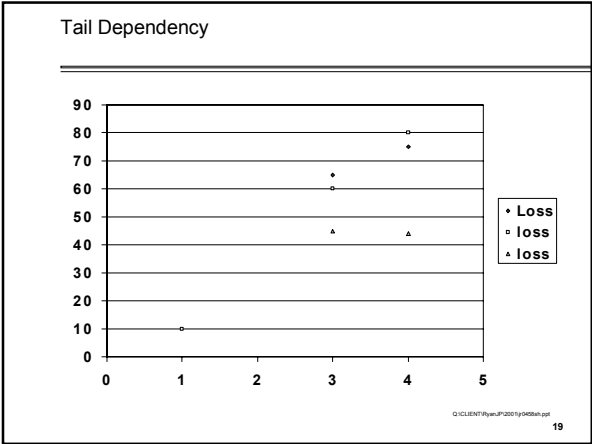
Bringing it altogether



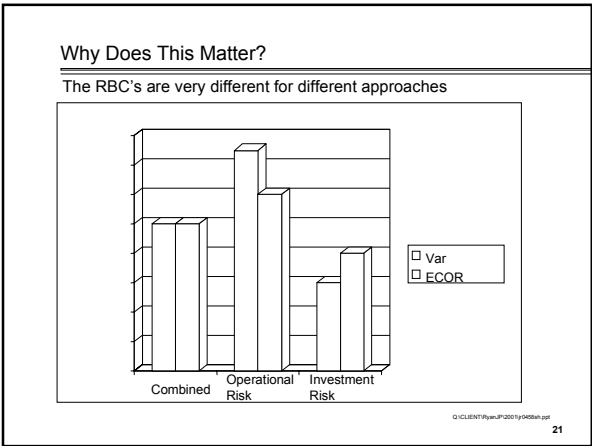
- Adding the efficient frontiers will overstate the costs for a given risk as no adjustment is made for diversification credits
- Tail dependency is key to getting this right & is a key actuarial competitive advantage.

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- ### Risk Measures
- Var works well for symmetrical risks
 - ECOR is better for skew risks such as most insurance risks
 - A coherent measure needs to be used across the group as a whole
 - Beware of tail dependency
 - Other constraints are also needed such as a requirement to maintain a credit rating
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Coherent Risk Measures

To be coherent a risk measure (p) must satisfy four conditions:

- (i) Translation Invariance $p(x + \alpha .r) = p(x) - \alpha$
 - (ii) Sub additivity $p(x_1 + x_2) \leq p(x_1) + p(x_2)$
 - (iii) Positive homogeneity for $\lambda \geq 0$ $p(\lambda x) = \lambda . p(x)$
 - (iv) Monotonicity If $x \leq y$ $p(Y) \leq p(x)$
- Var fails the sub additivity property

Developing adverse scenarios for soft risks

- Not readily quantifiable
- Develop control processes & assess impact on whole organization under different DFA scenarios
- It is the Board's responsibility to assess risk. The report provides a regular & systematic framework
- It adds value to the company in reducing & controlling risk
- In many cases holding capital is not necessarily the best approach
- Can we develop some case studies?

Insurance to cover Operational Risk

- This is a non-trivial subject.
- Basel has many doubts.

Coverage Gaps

- If complete cover is not available then capital will need to be held against remaining risk
- Insurance should mitigate operational risk cost and so should be allowable
- Operational Risk models would need to be run with and without insurance
- Contracts with material exclusions may not mitigate overall capital requirements much
- All Risks Cover is preferable
- Much operational risk violates an underwriting rule that the insured should not be able to manipulate his loss experience
- Some risks may not be insurable e.g. management succession risk

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Claims Disputes

- Some financial impact as a dispute creates coverage gap
- Change insurance practice of conducting investigations at point of claim to investigating at point of sale
- Financial Enhancement Ratings (FER)
- Different in conditions (DIC) coverage

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