The Actuarial Profession
making financial sense of the future

ORSA – Bigger Picture Thinking
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Building more than a Trojan ORSA

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Agenda

- Background, requirements and considerations
- Practitioner's perspective

What modelling is required for ORSA?

1. Capital assessment & reconciliation to Pillar 1
2. Continuous solvency monitoring
3. Forward looking assessment and capital planning
4. Stress testing

1. Capital assessment / reconciliation to Pillar 1

•Article 45.1 (a & c) & 45.3 / Informal L3 guidelines 7, 8, 13, 14 & 15

•"… **express the overall solvency needs in quantitative terms** ……… If ..the undertaking's risk profile deviates materially from the assumptions underlying the SCR calculation the undertaking should **quantify the significance of the deviation**."

- Approach taken for Pillar 1? (SF or IM)
- Risk appetite / economic capital
- If IM, ORSA model developments may be less onerous
- If SF, may need some effort to justify okay for ORSA
- Or develop IM for Pillar 2, without formal IMAP?

2. Continuous solvency monitoring

- Article 45.1 (b) / Informal L3 guideline 11
- "The ORSA should include procedures that enable the undertaking to **reliably monitor its compliance with regulatory capital requirements**"

- Frequency & accuracy driven by proportionality
- General approach is to use "Lite" or "proxy" models
- Importance of links and context – risk appetite and capital management plan

Complexity / Accuracy

1	2	3	4	5	6
Key risk Indicators	Sensitivities	Curve fitting	Surface fitting	Replicating portfolios	Partial model run

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3. Forward looking assessment

- Article 45.2 / Informal L3 guideline 10/11
- "…**solvency assessment should be forward-looking** and cover the **capital needs** the undertaking faces over each year taking into account its **business plans** and …….taking into account potential future **changes in the risk profile** and **considering stressed situations**"

- Practical use and understanding are key
- Links to business planning, capital planning and risk appetite

Complexity / Accuracy

1	2	3	4	5	6
Deterministic role forward of solvency position	Project capital using risk drivers	Deterministic projection of proxy balance sheet	Stochastic projections of proxy balance sheet	Deterministic scenario projection of stochastic balance sheet	Full nested stochastic projection

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4. Scenario testing

- Article 45.1 (a) / Informal L3 guideline 9 & 11
- “quantify risks for a **sufficiently wide range of outcomes**”
- “taking into account potential future changes in the risk profile and **considering stressed situations**”

- **Wider considerations** than just capital shocks
- Include **reverse stress testing** results
- Consider **significant changes in operating environment** (i.e. high inflation, depression, change in legislation or competitive environment)
- Inform **risk strategy and risk appetite**
- Engagement with senior management – **thinking through how to respond**
- Possible workshop or role-play approach – **test the system**

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What should your ORSA models deliver?

1. a business plan that takes account of risk and capital;
2. ability to illustrate the range and impact of potential future scenarios;
3. information to monitor delivery of the plan and to manage the risks should they materialise;
4. capability to monitor compliance with capital requirements whilst taking into account potential future changes in the risk profile.

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- **Practitioner's perspective**
  - Business plan that takes account of risk and capital
  - Range of potential future scenarios
  - Monitoring delivery of plan and managing risks
  - Monitoring capital requirements and changing risk profile
  - Summary

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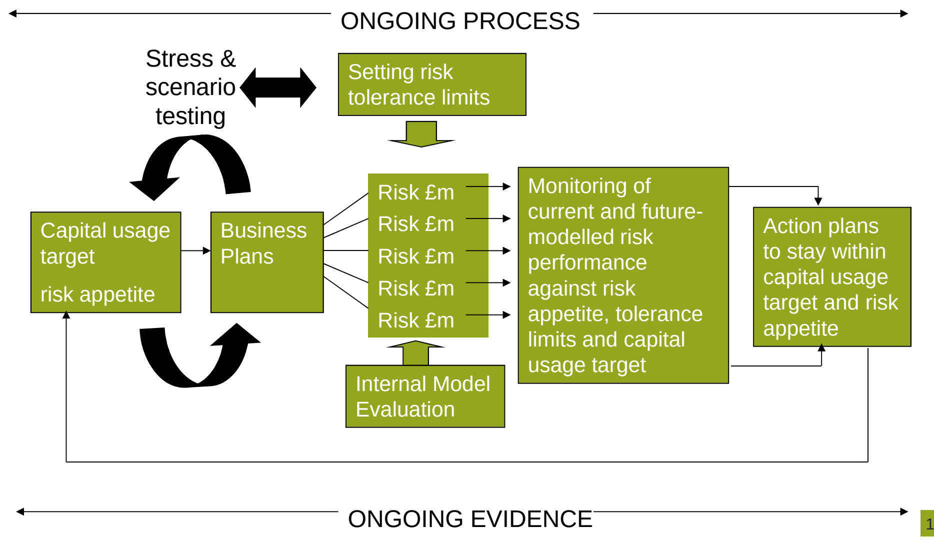
Links between risk, capital and business planning



Some key considerations

- **What risk and capital information** is key for business planning?
- How can you **leverage existing modelling** capability for ORSA?
- **How sophisticated** does the modelling need to be?
- How can you **maximise stakeholder understanding and usage?**

What are you monitoring/projecting?

- **Which balance sheets?**
  - IFRS results (profit/earnings volatility)
  - Solvency 2 balance sheet (regulatory solvency)
  - Economic capital (business planning)
  - Enterprise value (performance management and strategic investments)
  - Rating agency capital model (rating stability)
- **At least three aspects to strategic planning projections**
  - Product and distribution (penetration, volume, mix, margin)
  - Risk capital diversification (return vs. risk)
  - Capital structure (equity, debt, cash flow)

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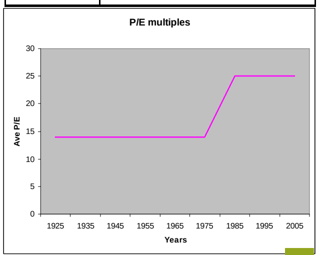
Some key considerations

- **What information do you need** to generate a sufficient range of future scenarios (both internal and external information)?
- **Is historical information still relevant?**
- Can we **leverage stress testing techniques** across insurance (life and GI) and banking?
- How can you **maximise stakeholder understanding and usage** of the stress testing process and output?

Developing the stress and scenario tests

- Have we experienced a regime switch from a high return environment to a low return environment?
  - Is the prospective equity risk premium lower?
  - Low interest rate environment
    - Historical data relates to high interest rate environments
  - Data from other countries more relevant to consider?
  - How reliable is historic data?
- For a composite, have the GI Cat and counterparty default risk models got wider uses in the organisation?

Decade	Annualised equity market return
1930s	4.30%
1940s	3.80%
1950s	12.90%
1960s	4.40%
1970s	-2.30%
1980s	15.60%
1990s	10.70%
2000s	-1.20%



Stress and scenario testing

- Key sensitivities to delivery of the plan
  - E.g. investment income on GI profit and loss accounts
- What may cause the business plan to be constrained or require a reassessment of the dimensions
  - i.e. product/distribution, return on risk capital used, capital strategy
- What sort of real events would have caused the RAG indicators to change colour?
  - Does that feel too early/too late?
- Other areas of use include product pricing and contingency planning

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Some key considerations

- Need for speed – **industrialisation and the use of 'proxy' tools?**
- **Monitoring and managing** the delivery of the plan
- Recalculation triggers - balancing **accuracy v action**

Need for speed - What does a 5-day close feel like?

- Actuarial model produces BEL and one-years new business information
- 'proxy tool' produces risk margin, SCR, MCR and aggregation
- Automated linkage between "assumption papers" and model
- Agreed analysis of change process to automate population of run structures
- Automated checks with materiality acceptance criteria
  - calculations built back into models and not in EUCs
- "Need for Speed?" - automated data feeds are key
  - Policy data day 1
  - Asset data day 2
- Pre-agreed approach to dealing with issues (automate manual adjustments)
  - "producing the as-is" not "resolving on the hoof"
- "Reasonable and out, driving behaviours" vs. "precise and still in production"

Monitoring

Monitoring and managing the delivery of the plan

- Automated proxy tool to deliver a daily risk and capital dashboard
  - Automate data feeds for proxy recalculations overnight
- Balance sheet recalculation triggers
  - RAG early warning indicators/limits and triggers for monitoring actions
  - E.g. intra-day ‘proxy’ recalculations based on agreed levels of market movement.
  - E.g. volume, mix and margin triggers for re-assessing assumptions in 5-year plan.
- Interactive GUI interface for senior staff as usable as e-mail (e.g. based on intranet, internet, iphone app)

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Monitoring

Recalculation triggers - balancing accuracy v action

When do you undertake a full model re-run?

- Accuracy v action
  - If the ship is sinking, first stop it sinking
  - What is the best use of resource in a crisis?
  - Back test once in safe harbour?

When and where do we use ‘proxy’ tools?

- Different methods for different circumstances
  - Solvency monitoring
    - Curve fitting for simple liabilities; replicating portfolios for more complex liabilities
  - ALM work
    - Replicating portfolios
    - $(A - L) = (A - A_b) + (A_b - L_b) + (L_b - L)$
  - Balance sheet projections
    - Assess the behaviours of the different parts of the balance sheet
    - Find closed form or other solution – replicating portfolios are a subset of closed form solutions

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Summary

- Is industrialisation moving the business operating model back to the 1970's?
- Management want hard-close more frequently
  - need to strike the "right" balance between accuracy and timeliness
- A dynamic process needs to adapt to the particular circumstances
  - avoid information overkill when not required and provide fast and useful information when it is needed
- Key aim of stress and scenario testing is to illustrate what could really happen
  - need to challenge the data used and not just blindly apply historical data
- Technological challenge to continuous monitor the complexities of multiple balance sheets and various dimensions of a strategy

Questions or comments?