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The business case for economic capital modelling for life insurers

Matthew Brinckmann

matthew.brinckmann@za.ey.com

Agenda

1. **Introduction**
2. Real benefits
3. What to get right
4. New solutions for a new world
5. A European detour
6. Conclusions

A business case

- Business case = cost benefit analysis
- This presentation will explore the business case for economic capital (EC) modelling for life insurers:
  - **Benefits?**
  - **Costs and complexities?**
  - **How do you achieve the right balance?**
- Based on practical experience with economic capital models over a number of years.

What happens if you get this wrong?

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Firm	Stated 1 year VaR (YE 2007)	Frequency	Loss during 2008	Extrapolated frequency (Normal)
AIG	\$14.5bn-\$19.5bn	1 in 2,000 years	**\$99.3bn**	1 in 4 x 10^{62} years
Fortis	€17.6bn	1 in 3,333 years	**€28bn**	1 in 40,000,000 years

Source: Difficult risks and Capital Models paper

What happens if you get this wrong?

- Exceptionally bad luck?
- The big issues were:
  - **Too much breadth**
  - **Insufficient depth**

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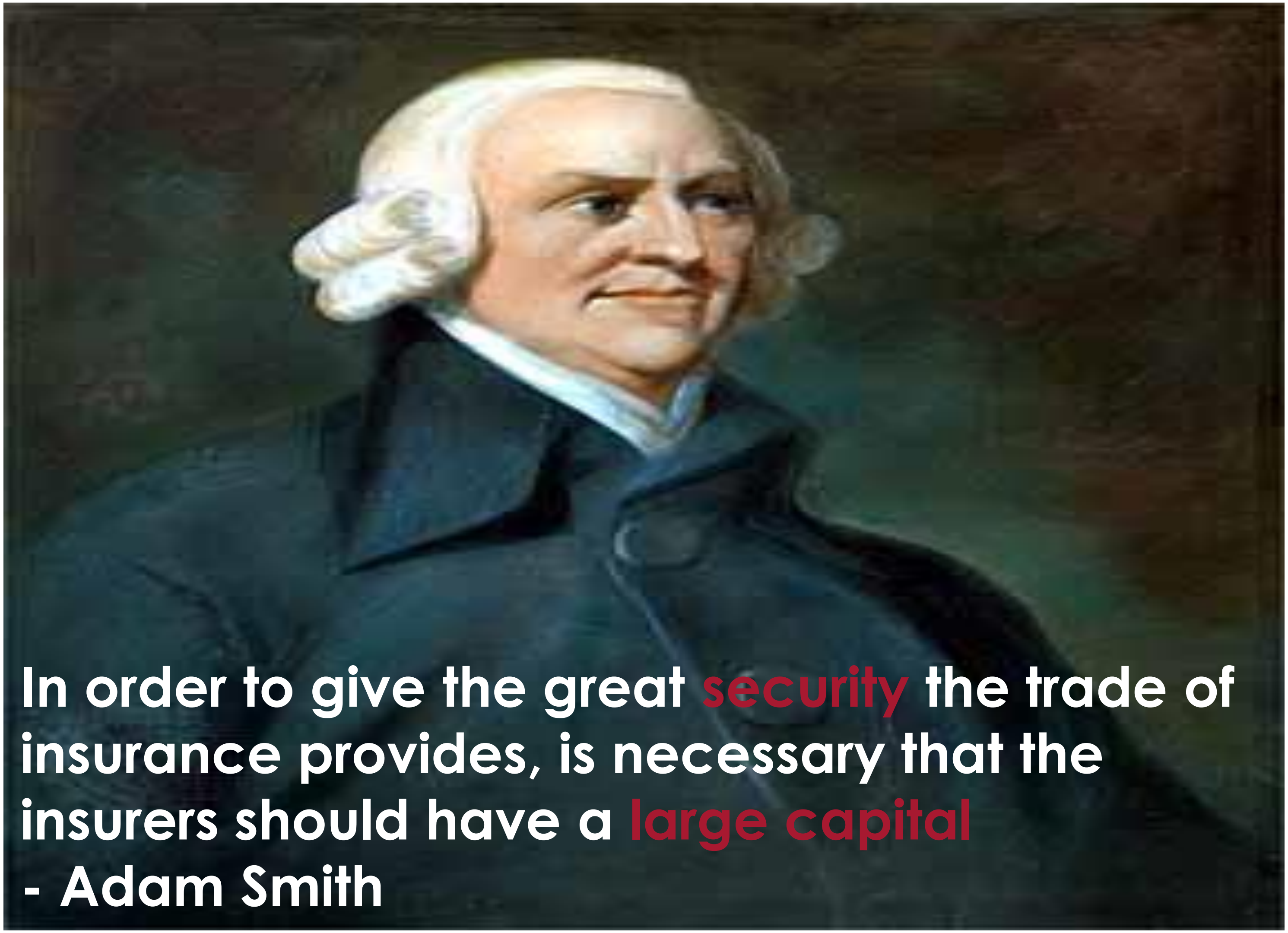
Why do insurers calculate EC?



Real business benefits

What companies have to say…

"With the continuing development of the group's economic capital modelling capability, the economic capital requirement is increasingly being used in the group's risk and capital management processes."

Liberty Life annual report 2012

"Use of EC models helps inform strategy and support decision making to maximise return on shareholder capital while protecting policyholders"

Aviva EC presentation 2011

"How to optimise value creation?

3 levers to monitor and improve value creation:
- Maximize absolute value
- Optimize capital requirement constraints
- Manage volatility over time

Our principal internal tool to act on these three dimensions:
- Return on economic capital"

Axa investor day, November 2010

Real business benefits

What companies have to say…

"Economic capital – why?:

- Enables the development of consistent risk metrics across financial services conglomerates which include banking, life and non-life insurance and asset management.
- Provides a transparent view of risks across an organisation and allows for correlations between and across risks.
- Enables effective testing of business initiatives from a risk management perspective.
- Needs to feed into incentive arrangements so that risk based decisions are promoted. "

Old Mutual, analyst roundtable – EC and other metrics, June 2013

"SCOR strengthens its solvency governance by creating a sophisticated dynamic solvency target based on a gradual escalation process:

- The solvency target for the new strategic plan complements the existing threshold capital with an escalation process depending on the level of available capital
- The optimal capital range enables the Group to achieve maximum profitability and satisfy the level of solvency which SCOR targets to offer its clients

Optimal Dynamics reflects SCOR's search for the sweet spot between solvency, profitability and growth, given its risk appetite"

Scor optimal dynamics presentation, September 2013

Own risk and solvency assessment

Even if you haven't had an EC model for internal purposes, the ORSA probably now requires you to have one.

ORSA

- Consider all material current and foreseeable risks
- Other risks relating to insurance groups
- Assess the adequacy and quality of EC over a longer time horizon than used to determine regulatory capital
- Other risks not considered adequately covered by SF
- The results of the ORSA should be used to inform and improve business decisions, business strategy and the ERM framework
- Adequacy of current and future internal (economic) capital resources given its risk appetite and tolerance levels

It is therefore likely that most insurers will use internal models to calculate economic capital for ORSA purposes.

Source: FSB position paper 34 (v7) extracts

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Keep it simple

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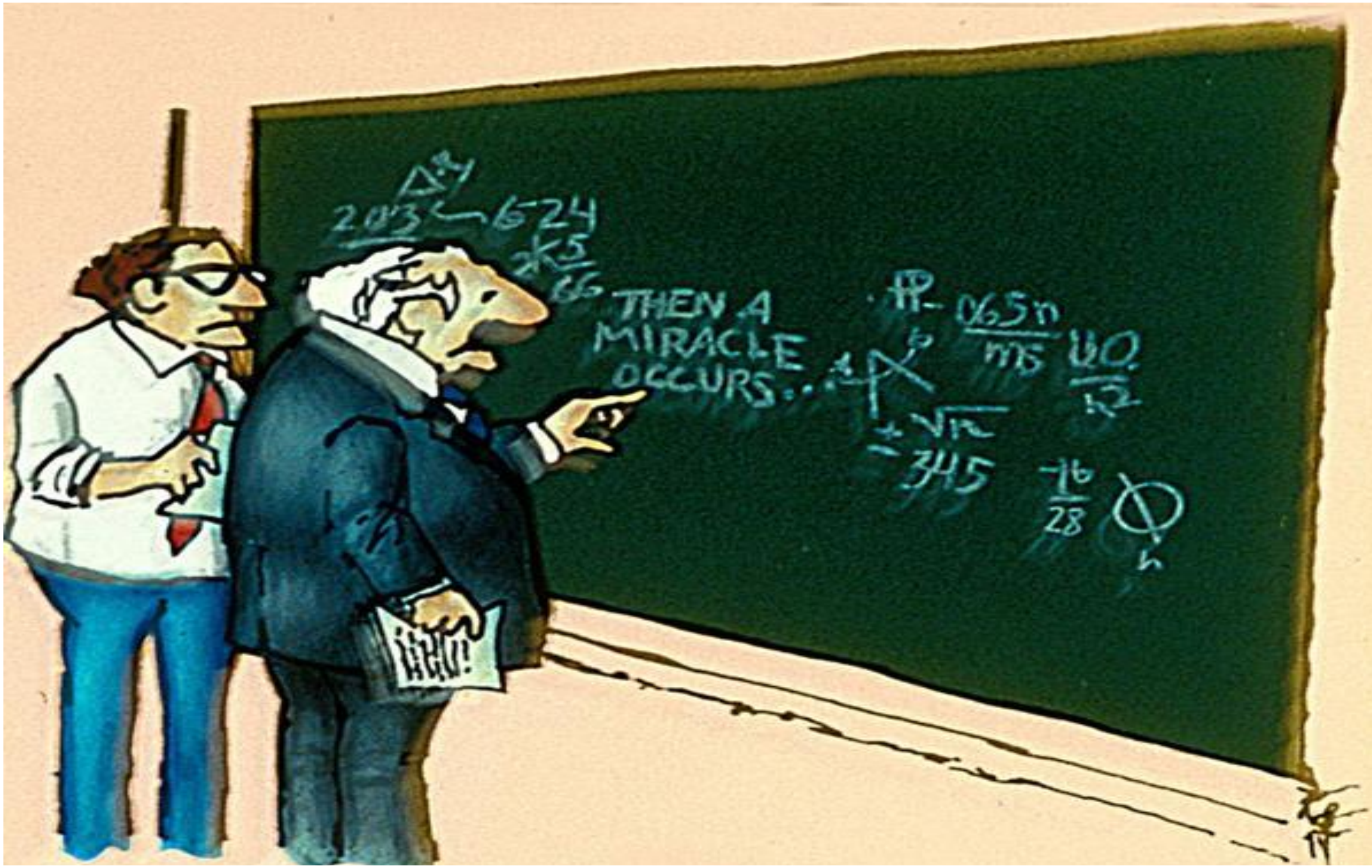
Keep it simple



"I think you should be more explicit here in step two"

Some things to get right

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George Box: All models are wrong, but some are useful

Focus on the key risks

Understand the influence of expert judgement

Manage the model risk

Model must be used

Some things to get right

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A process with key decisions required

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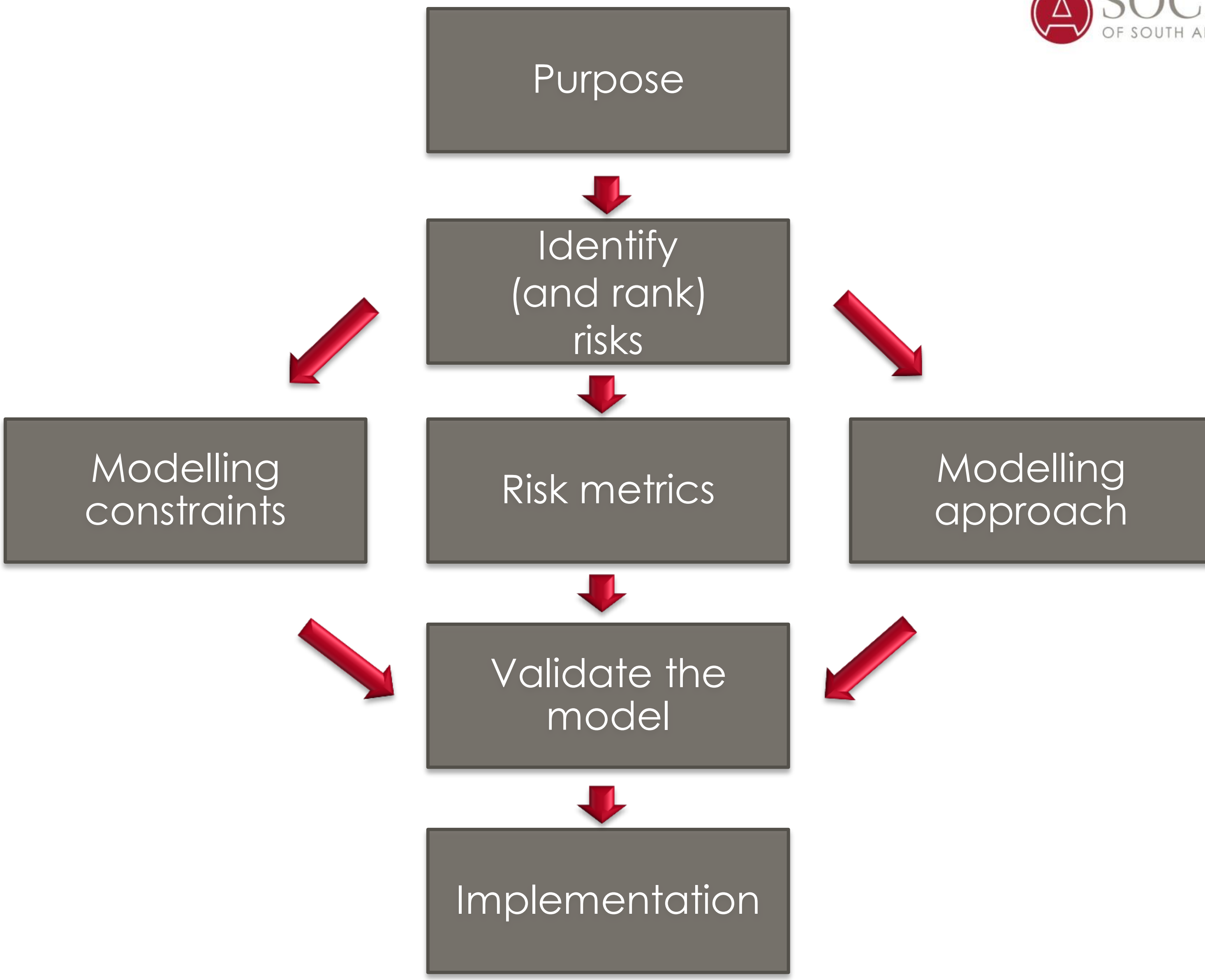
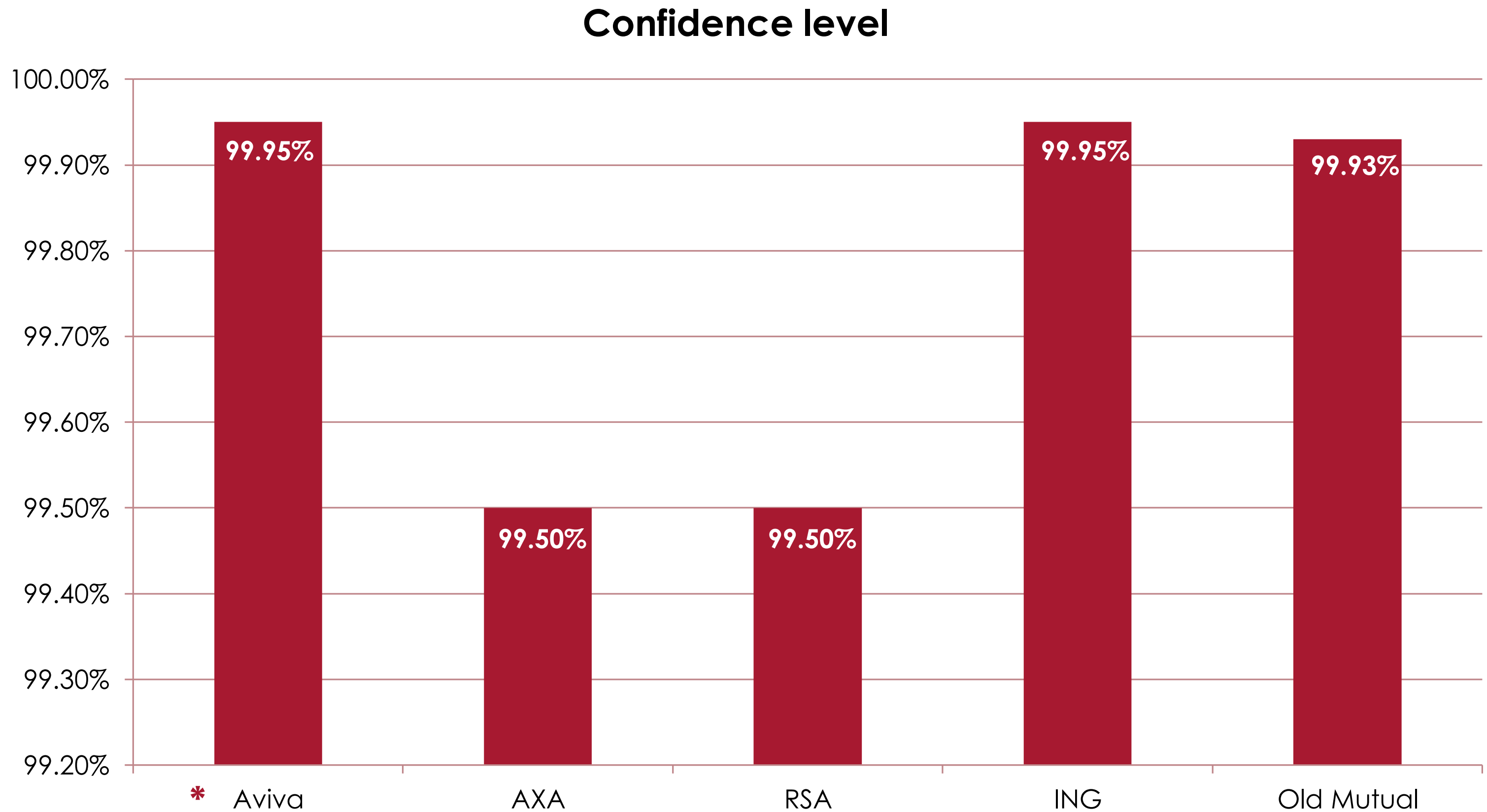


Typical Economic Capital definition

Paradigm is often 1 year value at risk



* Aviva aim to cover policyholder liabilities following a 1 in 200 event, followed by a further 1 in 10 event

Why not just use a regulatory or ratings agency model?

- Different purposes
- Non-economic elements
- Don’t allow for all risks
- What if you operate across regulatory regimes?
- Until you calculate EC, you cannot tell if it will be more or less onerous than regulatory capital.

Why not just follow the standard formula approach?

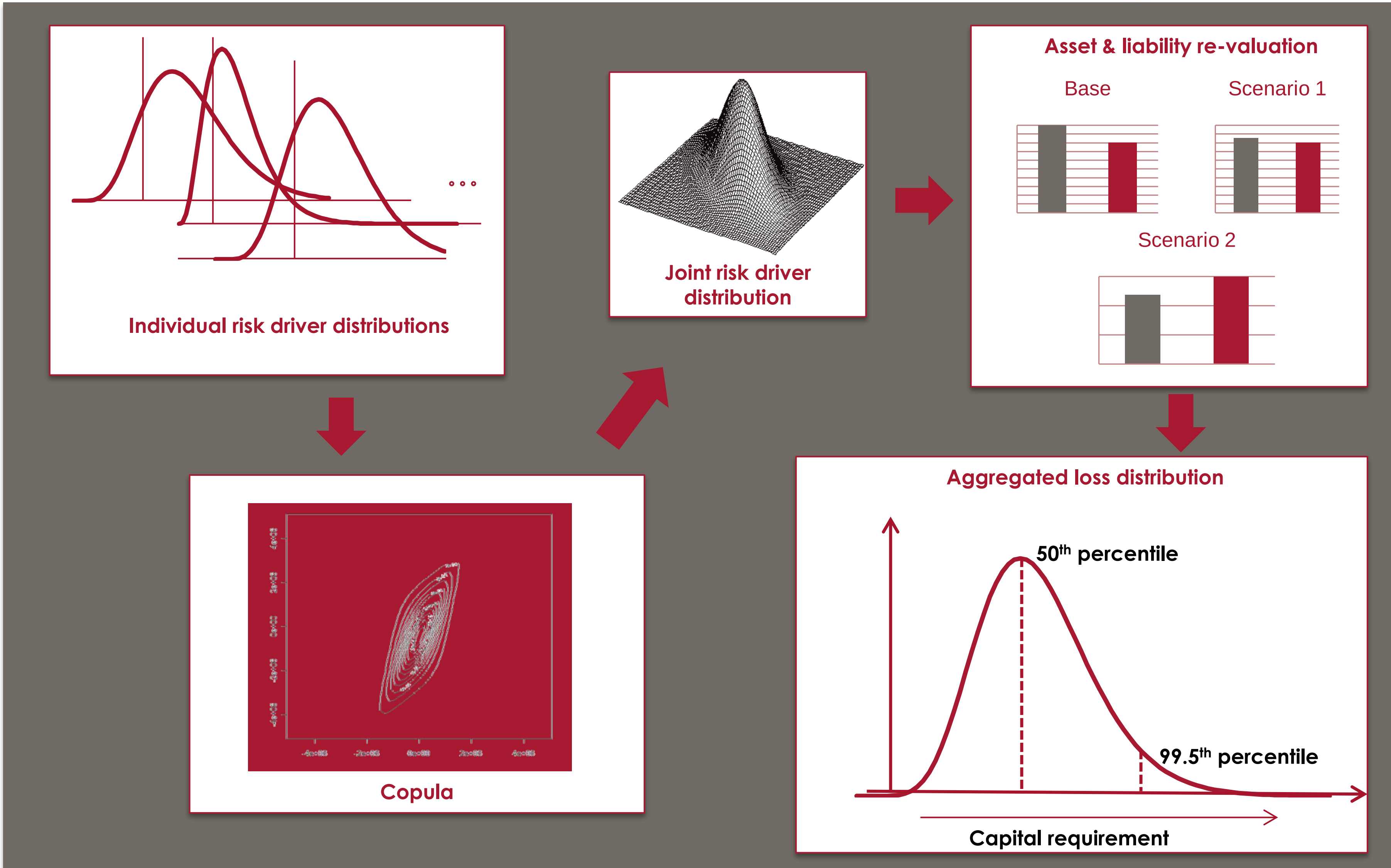
- Adjust standard formula stresses and correlations?
- Established and widespread approach
- Simple to apply
- Sensible starting point
- Makes a number of strong assumptions, so:
  - Potentially material weaknesses, so:
    - be careful of misleading risk management information.

Improving the approach

- Adjust the correlation matrix results using scenario testing
- Full multivariate simulation
- Multivariate simulation using balance sheet proxies

- What additional risk management information does a more sophisticated model provide?

A simple concept



New (and not so new) solutions exist

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There are a number of technical challenges	Tried and tested solutions and approaches exist, for example around distribution fitting, dependency structures, capital attribution approaches etc
The key remaining challenge is really a practical one around asset and liability re-valuation	Possible solutions are around proxy methods, e.g. formula fitting, replicating portfolios

Actuaries in animation?

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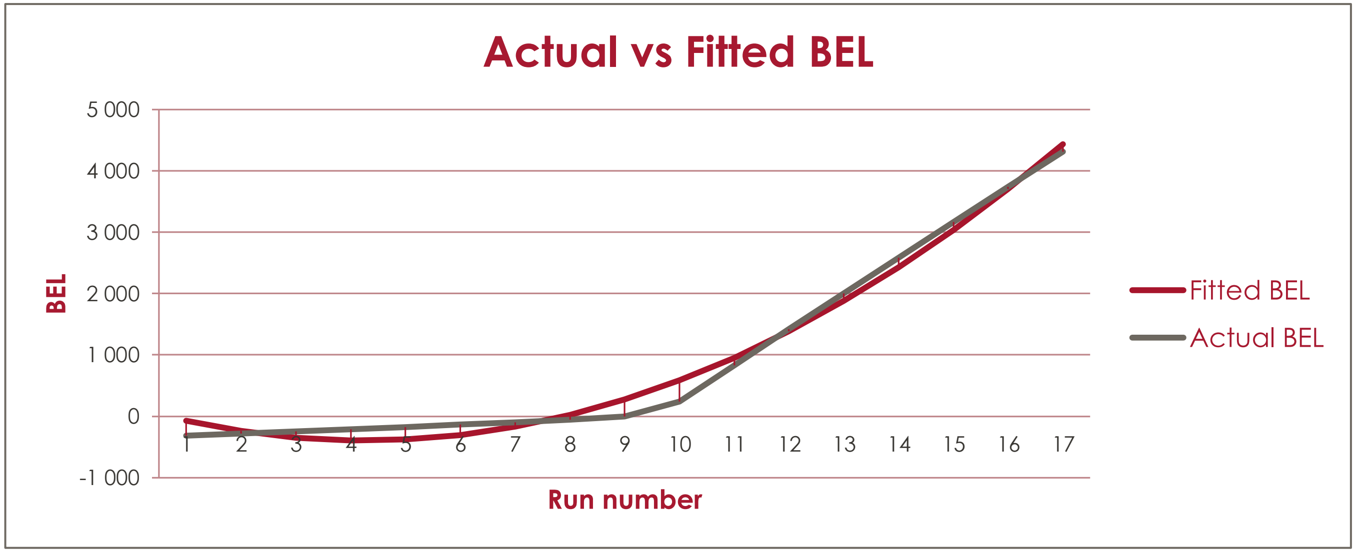
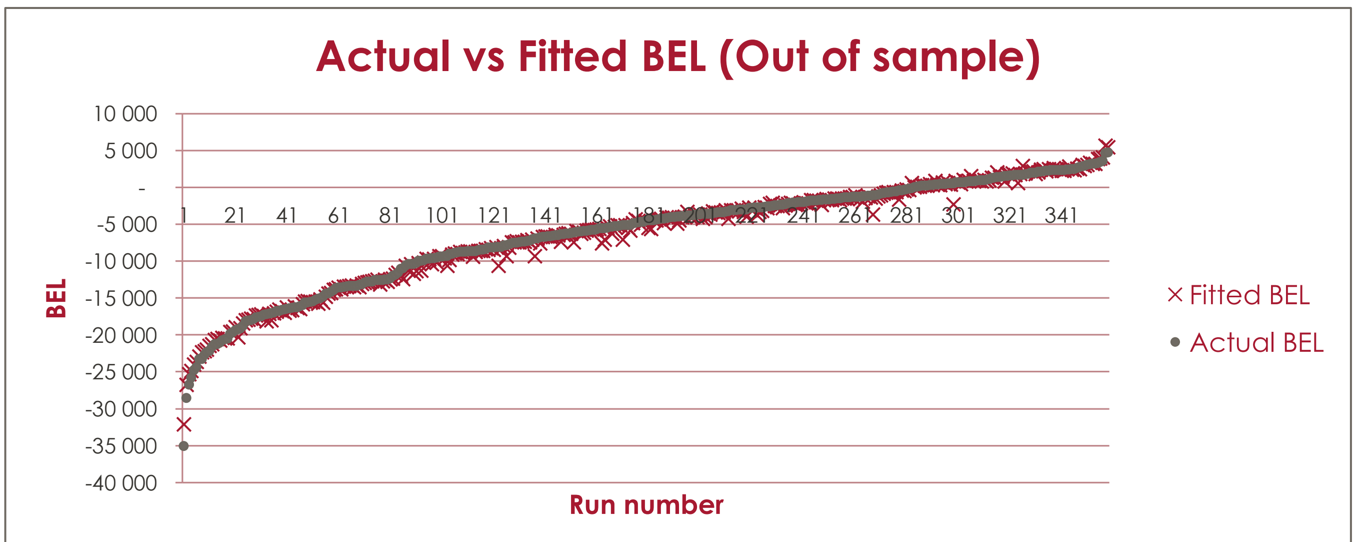
Formula fitting





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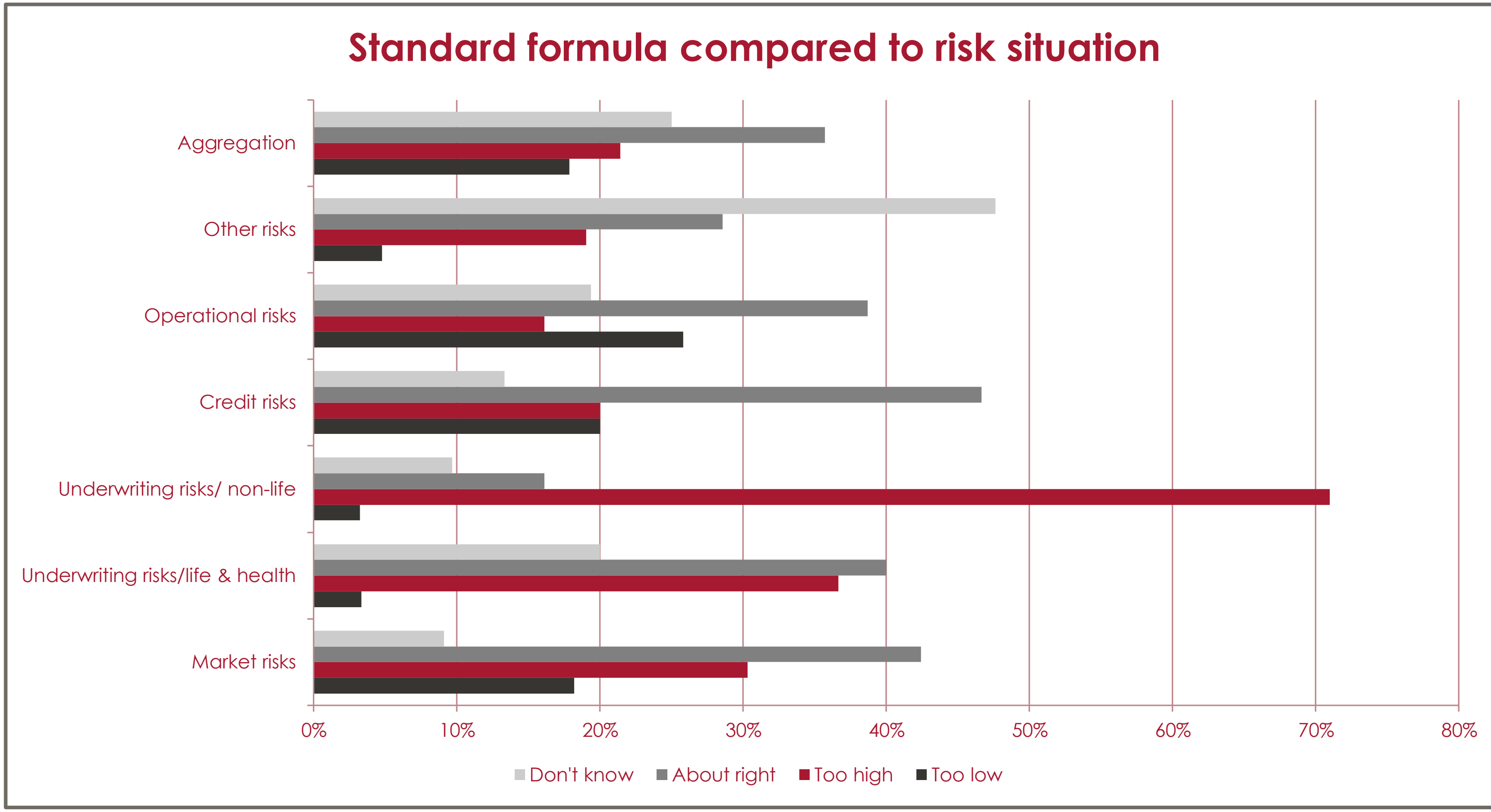
Internal models
European contrast

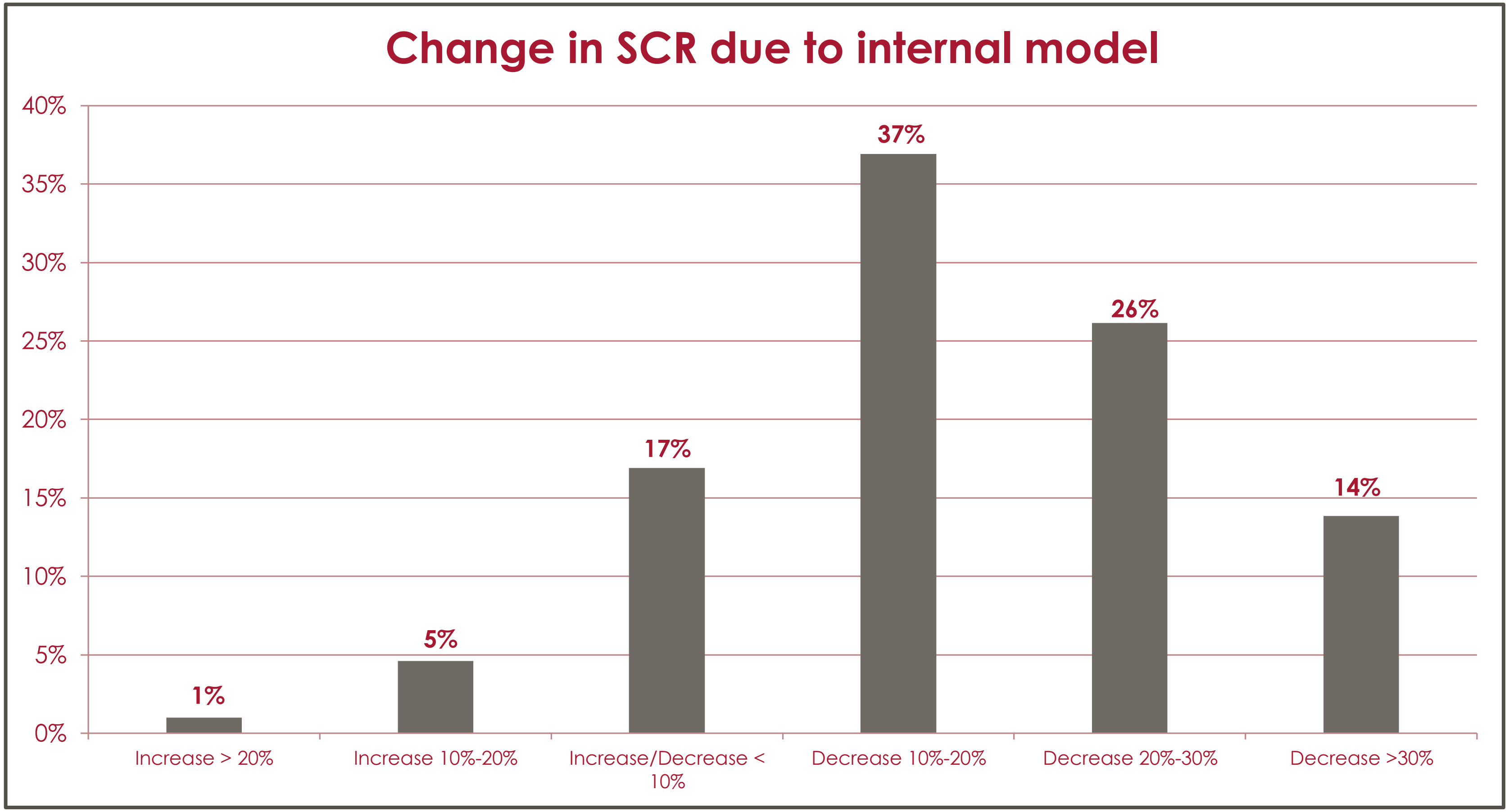
- Life insurers in South Africa typically currently not seeking regulatory approved internal models
- 2012 EY European survey suggested half of respondents are developing internal models
- Significant focus on regulatory compliance in Europe, although costly Solvency II programmes have been trimmed
- Survey suggests that insurers with value-based management expect increase in return on economic capital.

Internal models
European contrast



Source: EY survey

Internal models
European contrast



Source: EY survey

Solvency II and S&P –
the first kiss may be some time…

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Convergence of capital frameworks is badly needed

Source: Scor presentation 'Scor focuses on optimising capital'

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Conclusions

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- A business case is usually argued in terms of a cost benefit analysis

"Capital Modelling Has Become Even More Critical"
S&P May 2012

- It is not good enough to just have an EC model
- You need to know what to get right to ensure it can be used effectively.