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Solvency II introduction

Casualty Loss Reserving Seminar 2009

Gerry Kirschner
Actuarial, Risk & Analytics
Deloitte Consulting LLP
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Agenda

- ☒ Overview
- ☒ Internal Models
  - Why?
  - Models?
  - What is a real internal model?
  - What is a good internal model?
- ☒ What has been learned in the UK?

Brief overview

Brief overview

Solvency II

- Proposed unified, prudential reserving & regulatory framework for European Union insurers & reinsurers
- Long-term & short-term solvency
- Policyholder protection, fair & stable markets
- 2012 target

Solvency I versus Solvency II?

What was Solvency I?

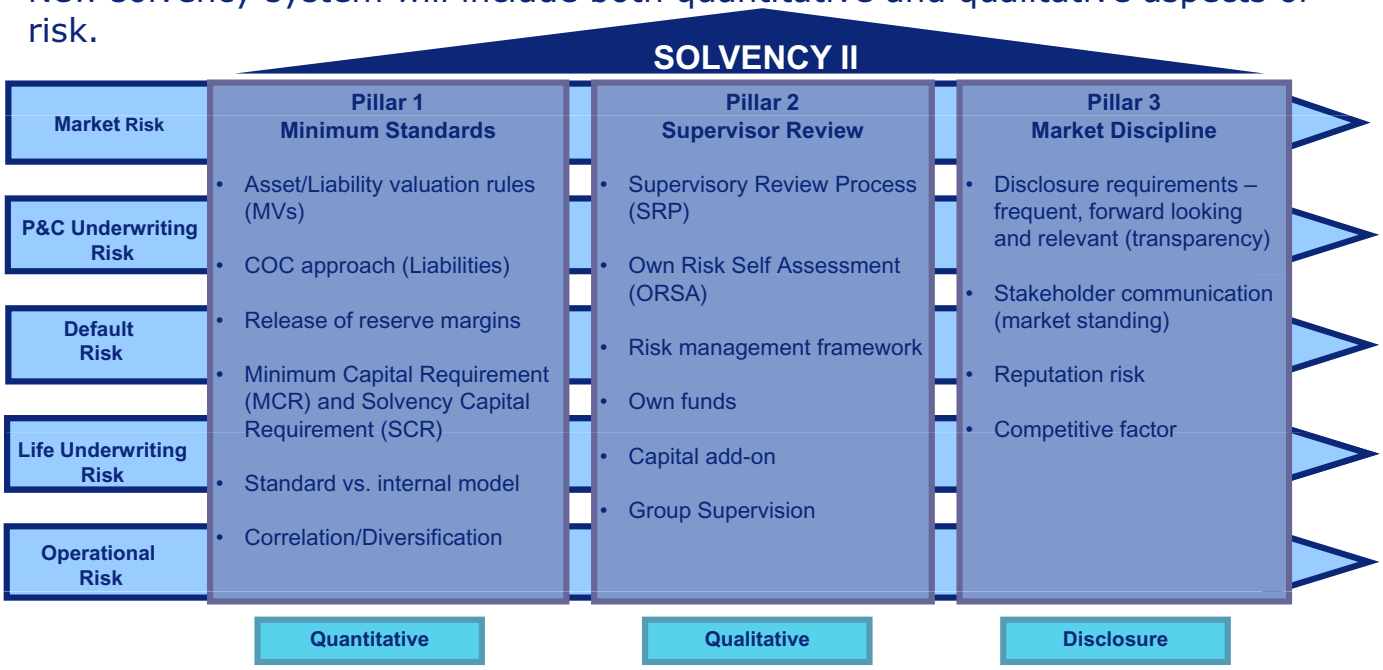
- Limited scope methodology to determining how much capital an insurer needs to hold
  - Defined how an insurance company should calculate its liabilities
  - Determined capital requirement by adding an industry-standard solvency margin on top of the calculated liability amount

Solvency II = future European solvency regime for the insurance industry based on the following principles:

- Basel II three-pillar structure adapted for the insurance sector
- move away from one approach fits all to an approach geared to the risks which companies are exposed to ⇨ it encourages companies to measure and manage risk
- takes into account the risks associated with the company's organization and management approach
- providing sufficient capital in order to **reduce the risk of ruin to an acceptably low level** and hence increase the level of protection to policyholders
- make allowance for subsequent adaptation to international prudential and accounting developments ⇨ intended to avoid a proliferation of reporting systems and potential regulatory arbitrage.

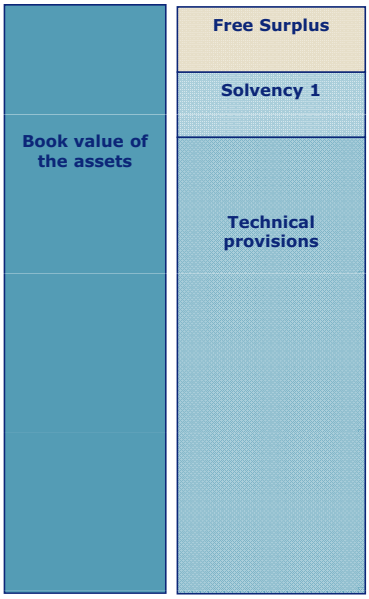
Solvency II – the three pillar regime

- Three pillar structure from Basel II is to be adopted for the insurance industry.
- The new system is intended to offer insurance companies incentives to measure and better manage their risk situation.
- New solvency system will include both quantitative and qualitative aspects of risk.

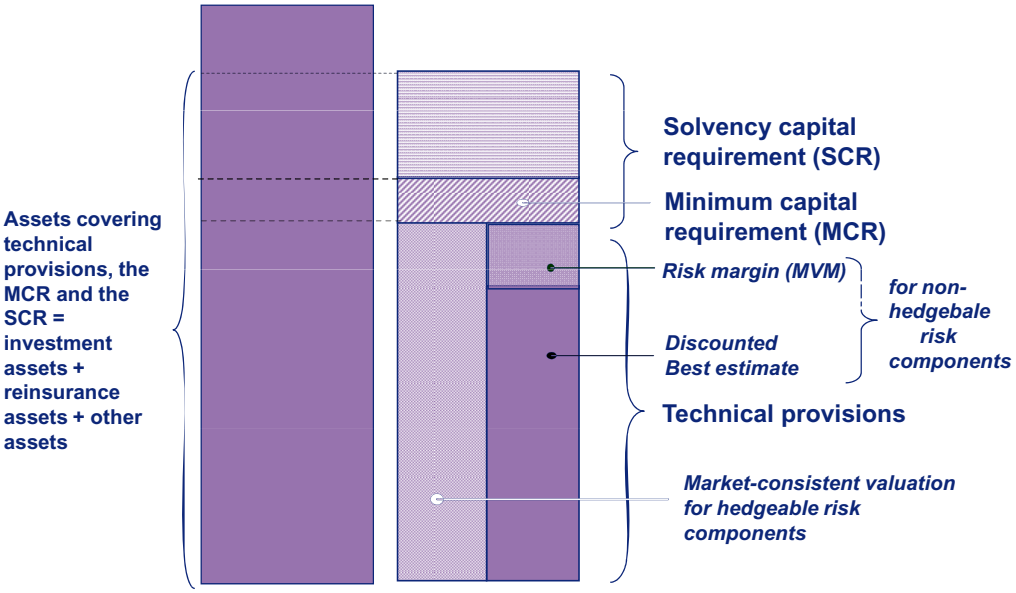


Pillar 1 - Comparison of Solvency I and Solvency II

Solvency I



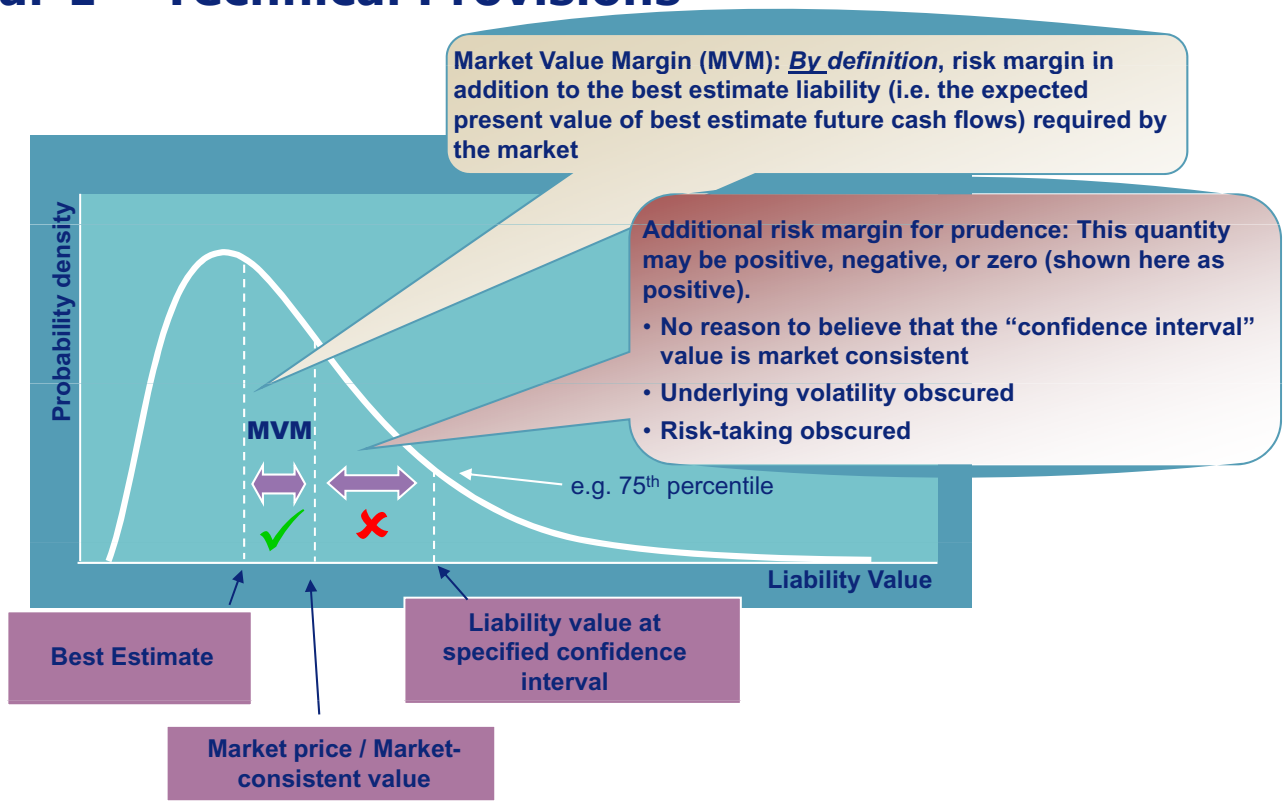
Solvency II



Solvency II valuation rules

- Both assets and liabilities are to be fair-valued (market value of assets and liabilities).
- For non-hedgebale risks, an explicit risk margin (MVM = market value margin) is to be added to the fair value of the liabilities to give the technical provisions.
- This risk margin should be calculated using a cost of capital method

Pillar 1 – Technical Provisions



Solvency II valuation rules	• An explicit MVM is not applicable for hedgeable liabilities, which are always valued at market price. • The MVM is already included in the market price and no further adjustment is necessary. • An explicit MVM is only applicable for non-hedgeable non-financial risks and (possibly) non-hedgeable financial risks

Pillar 1 – Risk Quantification Comments

- Solvency II requires market consistent **valuation of liabilities** using a cost of capital method rather than a percentile method
- Solvency II will give options to insurers to use both a standard formula (SCR formula) or internal model or partial model.
- In Solvency II standard formula is "prescriptive" in the sense that most of the fundamental risk parameters (e.g. volatility, correlation matrices, yield, credit defaults) are already specified by the regulator and calibrated to industry experience although some credit is given to own experience via credibility factors.
- The Solvency II standard formula is expected to provide an incentive to use an internal model – 'average' Quantitative Impact Study (QIS) 3 result was 150% of internal model

Pillar 2

- Pillar 2 is a qualitative review of Pillar 1's quantitative results
- From Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS), the overall aim of Pillar 2 is "evaluating on an ongoing basis the risk profile, adequacy of financial resources and prudent conduct of insurance undertakings "
- Two components to Pillar 2:
  - Company's Own Risk and Solvency Assessment (ORSA)
  - Supervisor's Review Procedures (SRP)

Pillar 2 – ORSA

- Expectation is that a company will have determined its risk appetite for each material risk and will have both quantitative and qualitative processes in place to measure each risk identified
- ORSA should be forward looking and based on suitable stress tests that assess if the regulatory solvency requirements are met on an ongoing basis
- Company will be expected to share the results of it ORSA analysis and review with supervisory authorities

Pillar 2 – SRP

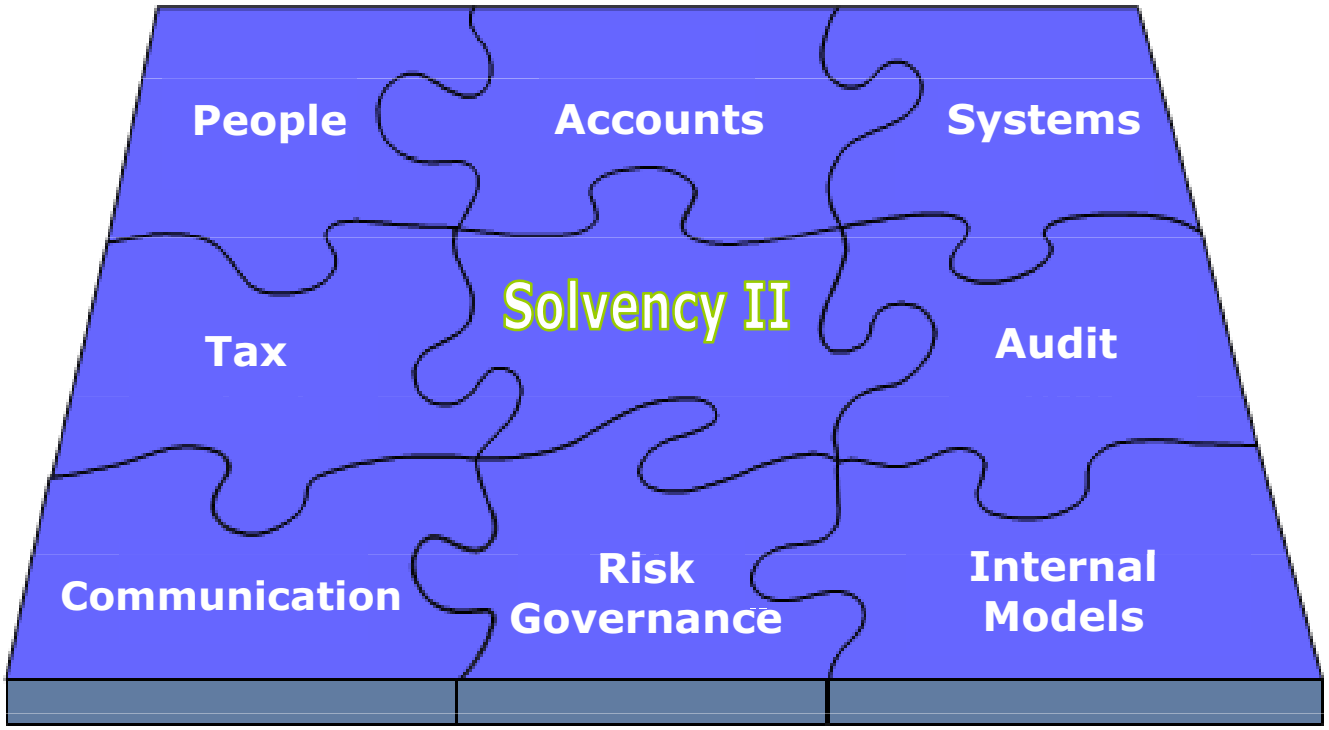
- Regulatory review of ORSA and company's calculation of its SCR
- SRP will assess:
  - Company's consideration of its risks to validate inclusion of all material risks in it's ORSA
  - Company's risk management, internal controls and risk oversight systems and functions
  - Company's risk mitigation policies
- If the SRP identifies deficiencies, regulatory authorities can require one of the following actions by the company:
  - Capital add-on
  - Corrections to the deficiencies identified
  - Reduction in company's risk profile
  - Partial model for a specific risk
  - Full internal model

Pillar 3 – Principles for Disclosure

- Qualitative and quantitative information should be disclosed if it is needed to perform the Pillar 1 solvency assessment or the SRP.
- Public disclosure is required if needed to support market transparency and market discipline
- Information must be provided in a timely and readily understandable way
- Company must have a formal policy to comply with the Pillar 3 requirements
- Where relevant, information should be provided on both group and stand-alone company levels
- Public disclosure should be made on an annual basis

Putting things into perspective

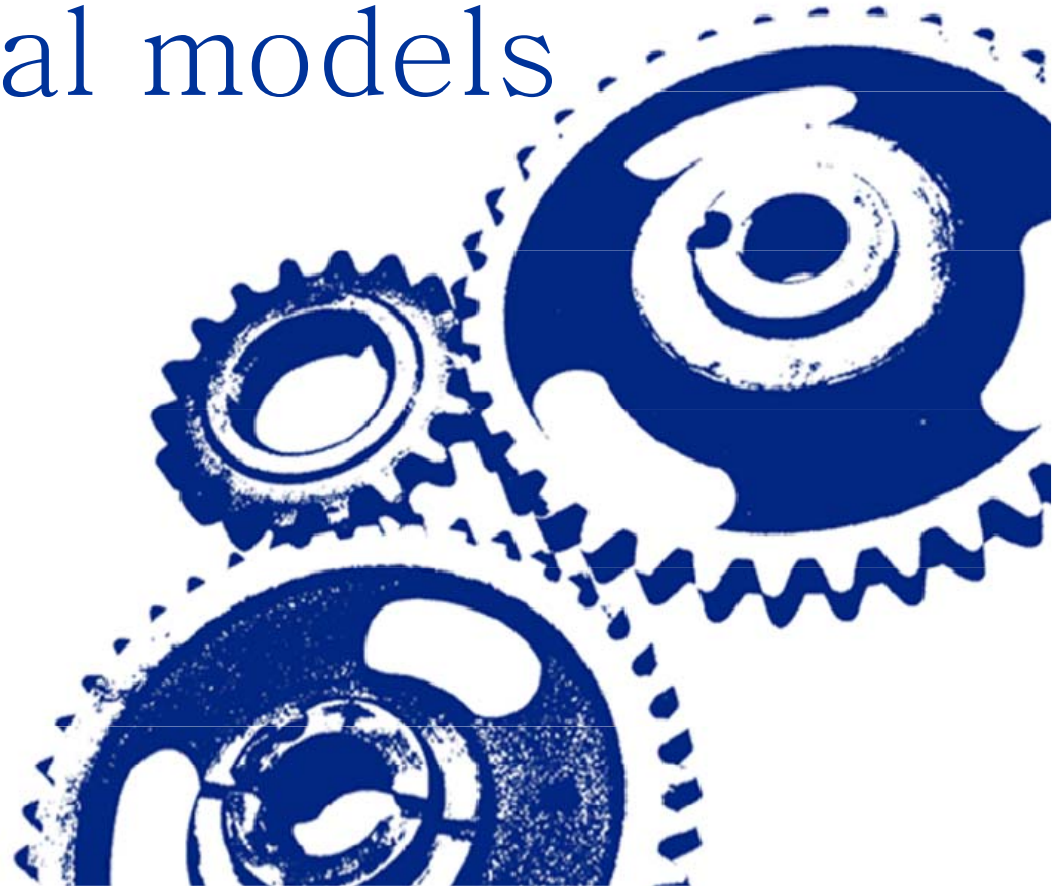
Solvency II – impacts many areas



As actuaries, where does this leave us?

- For many companies we expect there to be a **material** financial incentive to have an approved Internal Model
- Technical flaws in the standard model suggest that even a partial model could result in significant financial gains
- Timescales, the approval process and the need for evidencing the **'use test'** mean that established Internal Models need to be in place at the earliest opportunity
- The 'hurdle' to achieve Internal Model approval is expected to be significant
- So what is an Internal Model?

Internal models

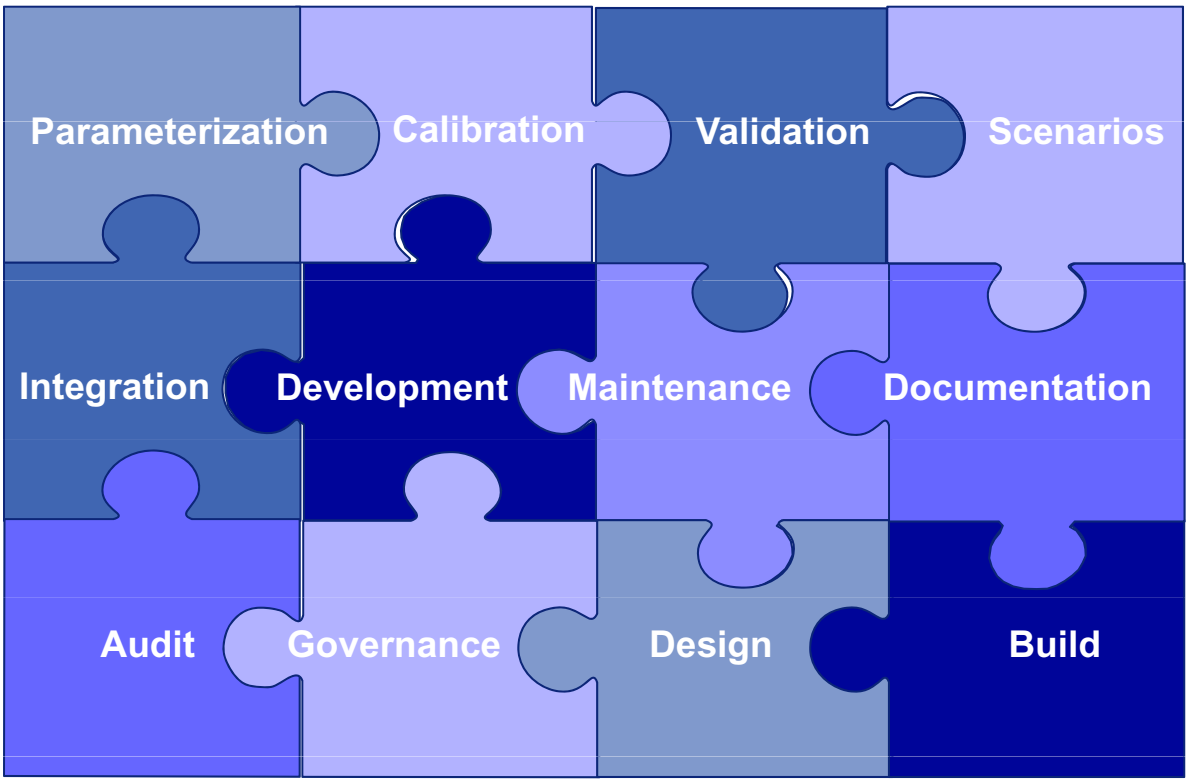


Internal models
What is a *real* internal model?

"…All capital models give the wrong answer. Better to have a simple model that you understand – and gives the wrong answer – than a complicated model you do not understand – and still gives the wrong answer…"

Internal models

Actually: It's not just about the Model



Internal models
What is a *real* internal model?

- The International Association of Insurance Supervisors (IAIS) definition of an internal model is more than a mathematical model:

  Internal model refers to

  > *"..a risk management system developed by an insurer to analyse the overall risk position, to quantify risks and to determine the economic capital required to meet those risks"*

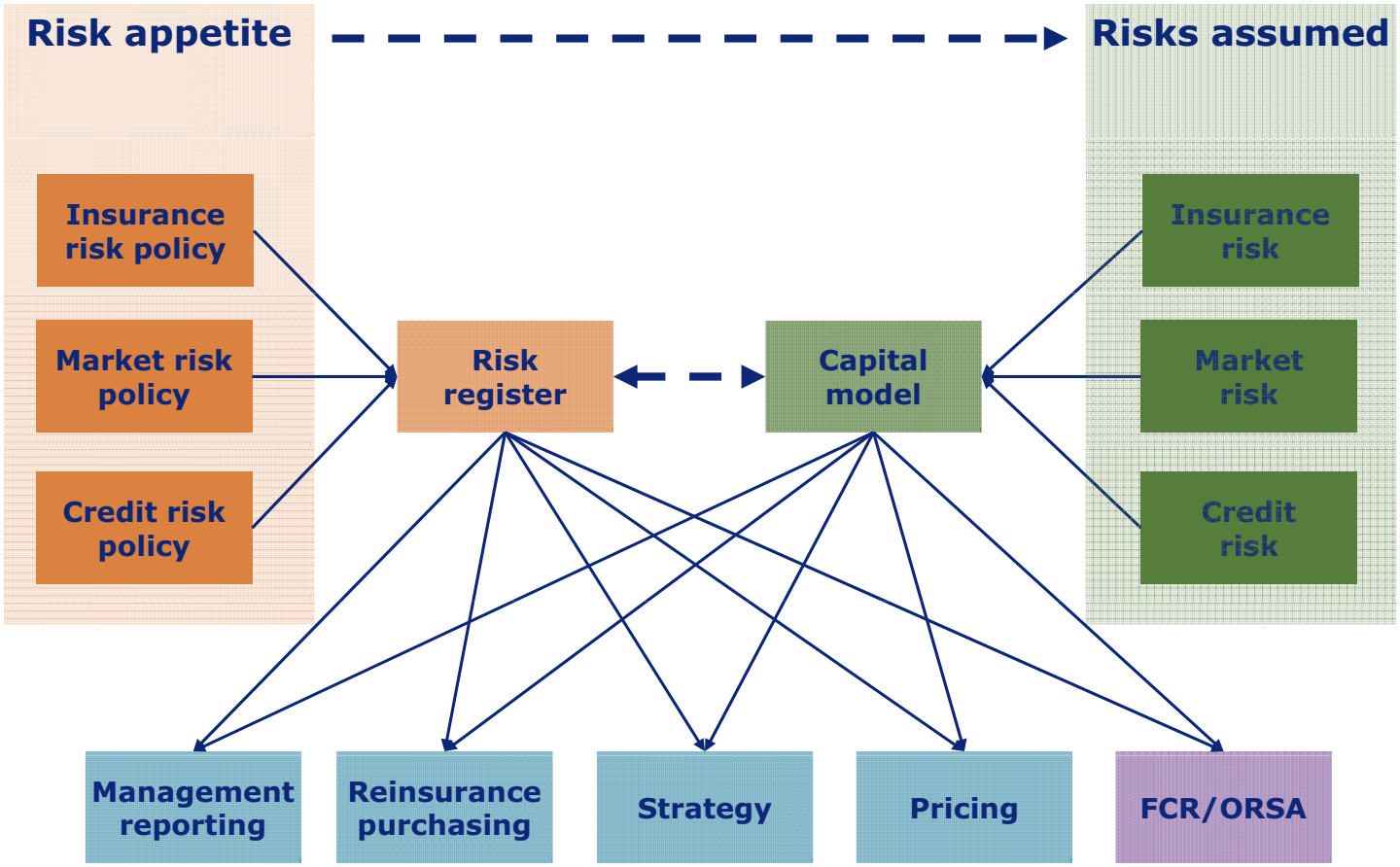
  > *"..where an internal model is used by an insurer for the purposes of determining economic capital, it should fully integrate the processes of risk and capital management in the context of the enterprise risk management (ERM) framework established by the insurer and its ORSA undertaken as part of that framework."*

Internal models
What is a *real* internal model?

If a firm has an internal model, it will form a key part of the ORSA. This will require appropriate investment in:

- Developing a risk management framework, including a risk appetite
- Developing a capital model linked to the risk management framework
- Implementing the output from the internal model into decision making
- Embedding a culture in the firm that understands the risk framework and uses it in day-to-day decision making

Internal models
What is a *real* internal model?



Internal models
What is a *real* internal model?

Aspects of an internal model

- Management information
- Reserving
- Pricing
- Reinsurance
- Credit / counterparty risk
- Market risk
- Operational risk
- Liquidity risk
- Underwriting risk
- Governance
- ALM
- Stress and scenario testing
- Strategy/ business planning
- Documentation
- Cashflow modelling
- Management actions
- Reporting
- Economic scenario generator (ESG)
- Systems and controls
- Solvency requirements
- ERM
- Senior management performance/ reward
- Capital allocation

Internal models
What is a *good* internal model?

Risk Coverage	Insurance, Market, Credit and Operational risks will all be included Will project annual cashflows over multiple years, enabling construction of all relevant accounting templates (GAAP, Economic, Solvency II, IFRS) Integrated – risks not in silos and able to interact
Data and parameters	Automated – parameters and data captured as part of routine business, extending scope of current process if necessary, eg reserving process Include full Cat model output, e.g., RMS, AIR etc Clear ownership – parameters reviewed and signed off by owners, e.g., claims parameters signed off by underwriters
Method, design, detail	Model looks like a stochastic insurance company business plan Intuitive and easy to understand, using appropriate software Owned by the business (risk function), not an individual Generates and retains data that is relevant to how the business is run

Internal models
What are the *regulators* looking for?

Design, build and method	Well documented Familiar methods – no surprises please Evidence of testing, review and independent sign-off Control framework – changes designed and agreed in advance, evidence
Data and parameters	Statistically relevant and justified, alternatives considered Sensitivity tested, owned, regularly reviewed, signed-off, validated and calibrated Well understood and communicated
Evidence of use	Understood by senior management Capital allocation, risk based performance monitoring, aligned to performance Impact of strategic options evaluated and considered before decisions are made

Internal models
Integrated capital modeling

Evolution	Wide range in where companies have got to – typically a two to five year process Requires mandate from the Board Seen as an evolving process
Examples	ROC targets, across cycle, by line of business Results and trends reported to the Board – by line of business Claims parameters reviewed, signed-off or modified and owned by underwriters Reserving process expanded to include estimate of full range of possible outcomes, including estimate of rate of emergence of uncertainty Compensation aligned to ROC targets Exposures tracked and managed – limits and model aligned Strategic opportunities evaluated and compared

What has been learned in the UK?

Objectives and Focus

- Which risks really matter in this model?
  - The 1 in 200 risk or the 1 in 4
- Pragmatism
  - Just because we can model it…
  - Technically we should…
  - There is never enough data
  - Margins on margins…
  - Integrated models, individual risk models and stress testing
- Understanding the true purpose of what we are doing?

Transparency and Simplicity

- Important you can explain what your model does?
  - With a level of detail appropriate for the audience
  - In clear language
- The dangers of a 'black box' owned by the actuaries
  - Understanding
  - Resources
  - Key person dependencies
  - Design
- Lots of models out there
  - Understand key model differences

Communication

- In building the model, and once it's built, communication is key
  - Target the audience (external or internal)
  - Often overlooked
  - Plain language

- External
  - Regulator
  - Ratings agencies
  - Auditors?

- Internal
  - The board
  - Underwriters

Efficiency and links

- Re-using (embedding) existing knowledge and data
  - Reserving
  - Pricing / underwriting
  - Reinsurance purchase
  - Catastrophe modelling
  - Investments and credit risk

- Consistency
  - Methods
  - Prudence
  - Purpose
  - Embedded-ness

Flexibility

- Rapidly moving goalposts require that models can be easily adapted to satisfy evolving requirements
  - Regulatory driven
  - Internally driven
  - Linked to embedded-ness
- Models must have the ability to answer more than one question
  - 1 year time horizons, business planning horizon, to ultimate
  - Regulatory risk measure, internal risk measure, other
  - Strategic
- Models must be easy to use, and (relatively) quick to run

Ownership

- Important the model is owned by the company…
  - Risk management function
  - Risk committee
- … and not just by individuals
  - Actuaries
  - Underwriters
- Model control
  - Can the model be audited
  - Can the model be changed
  - Can you tell if the model has been changed
  - Independent review of model design, build, parameterisation, results
  - Validation and calibration

Questions?

Gerry Kirschner

Actuarial, Risk & Analytics

Deloitte Consulting LLP

(617) 437 – 2337

gkirschner@deloitte.com

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