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Solvency II and UK internal capital assessments

Casualty Loss Reserving Seminar 2008

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Agenda

- Brief overview
  - Solvency II
  - ICAS
- Internal Models
  - Why?
  - Models?
  - What is a **real** internal model?
  - What is a **good** internal model?
- What have we learnt in the UK?

Brief overview

Brief overview

ICAS

- Individual Capital Adequacy Standards: an FSA RBC regime
- Pre-empt introduction of European framework
- Tried to anticipate the design & nature of Solvency II
- 2005 onwards

Solvency II

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

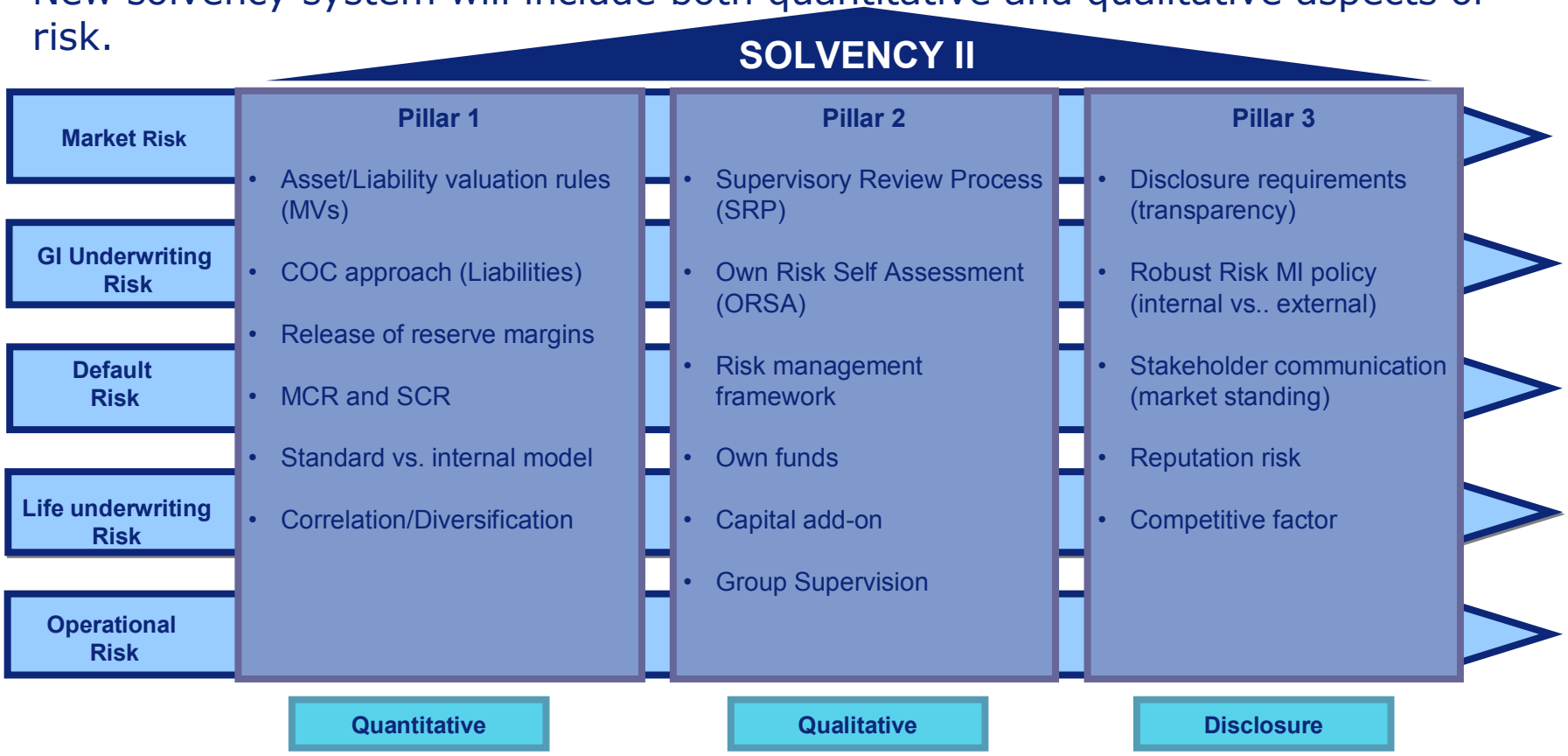
What is Solvency II?

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 organisation 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 and be designed to avoid a proliferation of reporting systems and regulatory arbitrage.

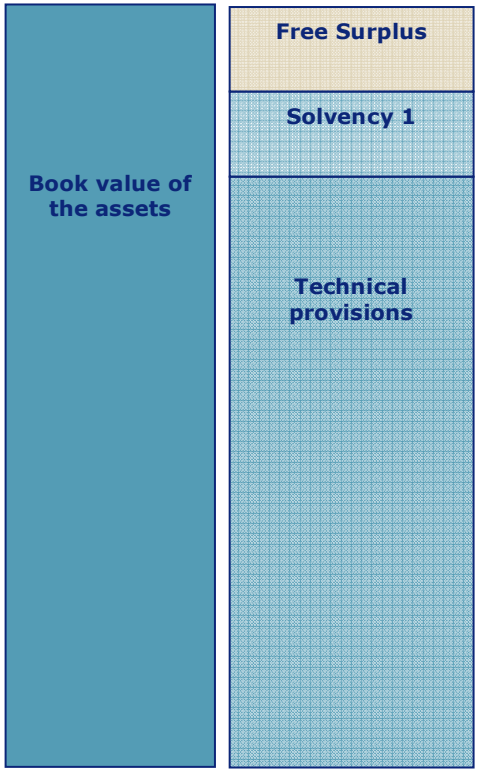
Solvency II – the three pillar regime

- 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.

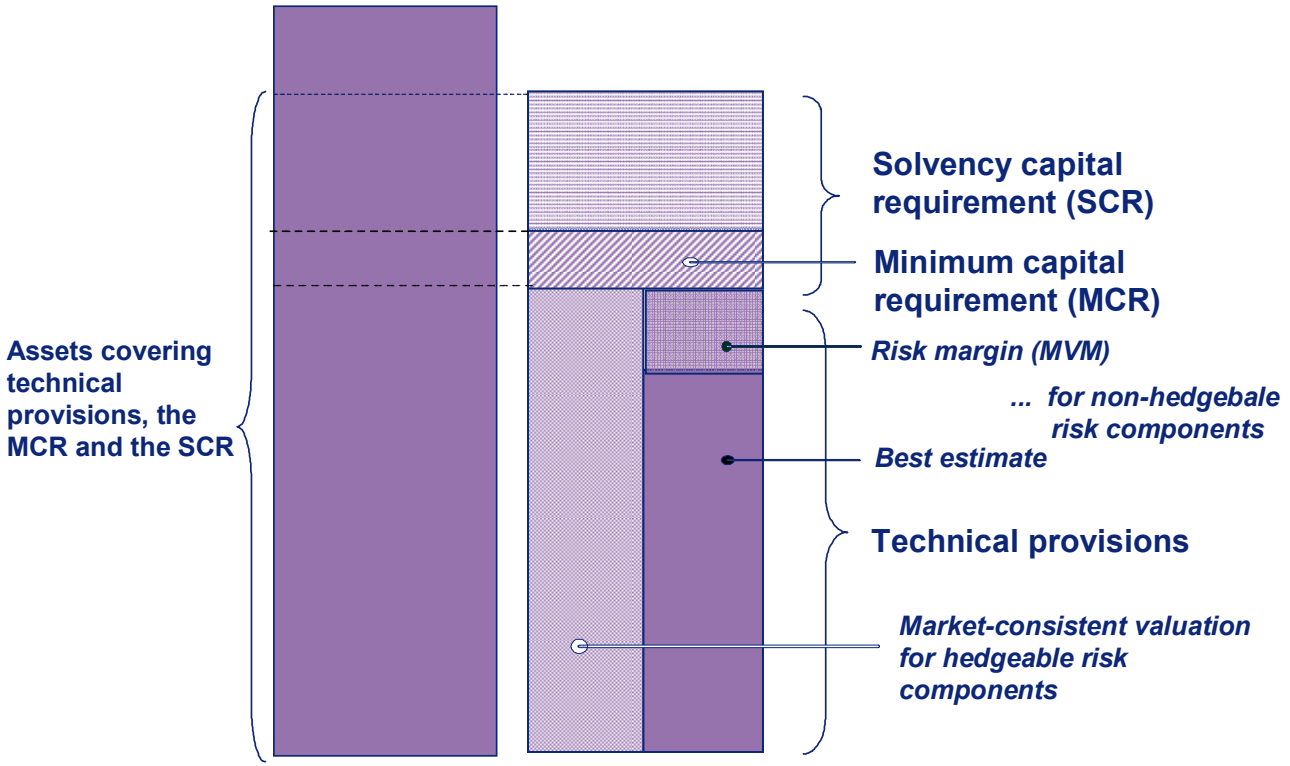


Pillar 1 - Comparison of Solvency I and Solvency II

Solvency I



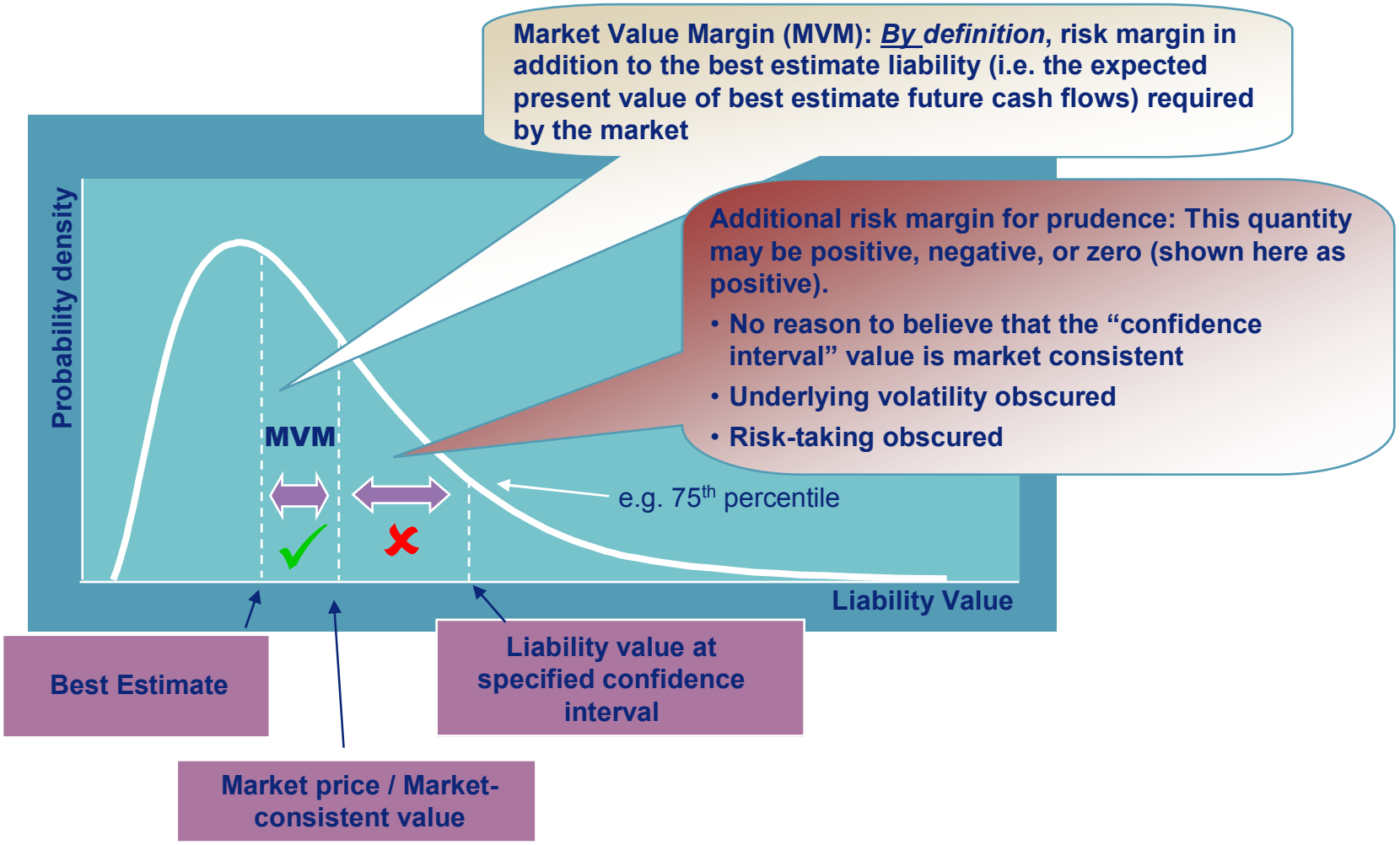
Solvency II



Solvency II valuation rules

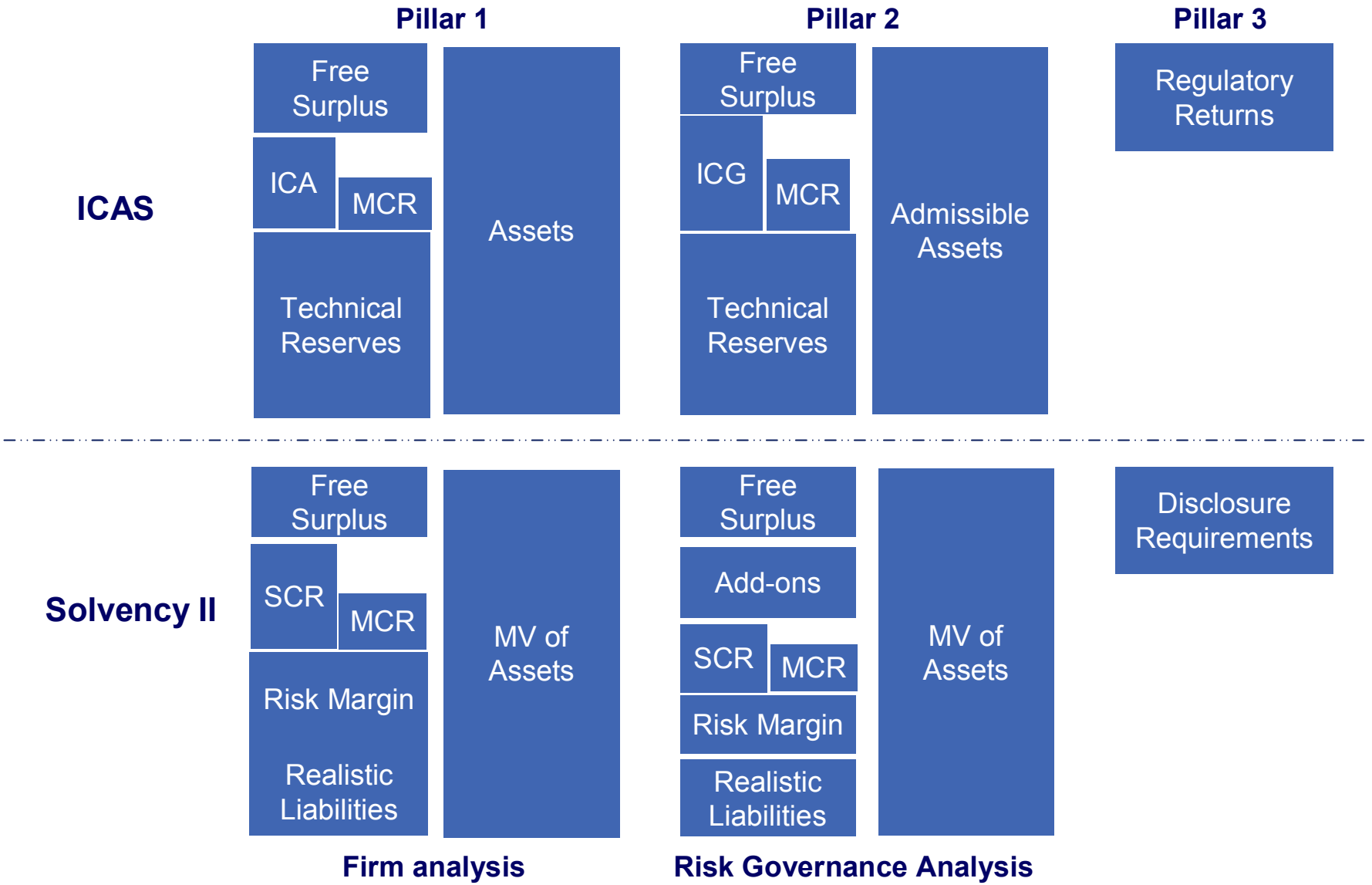
- Both assets and liabilities are to be fair-valued (market value of assets and liabilities).
- An explicit risk margin (market value margin) is to be added to the fair value of the liabilities to give the technical provisions.
- This risk margin should be calculated using a cost of capital method

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

ICAS vs Solvency II: Structure



Solvency II vs.. ICA : Pillar 1 – Risk Quantification

Differences:

- Solvency II requires market consistent **valuation of liabilities** using cost of capital method rather percentile method

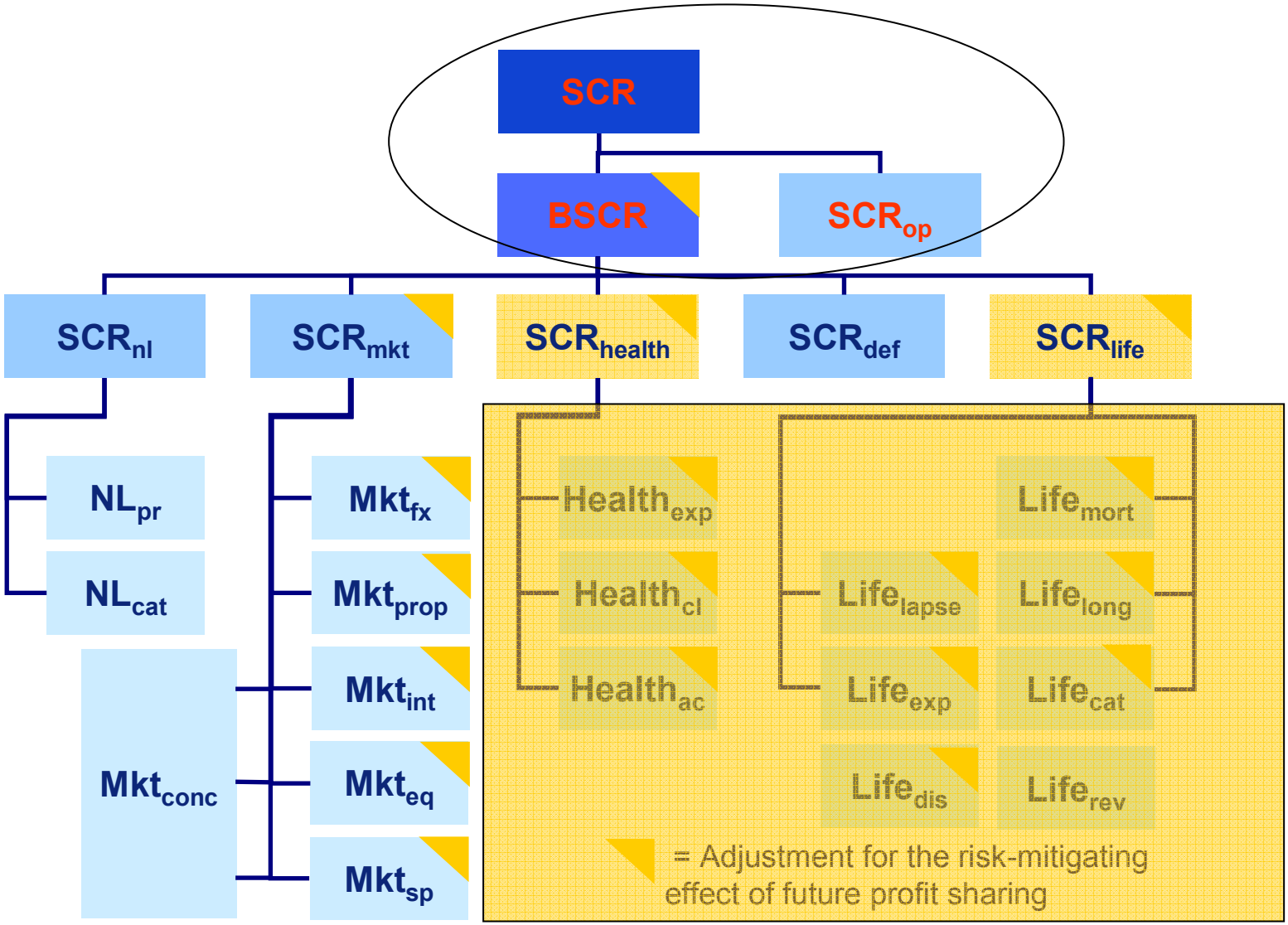
- Solvency II will give options to insurers to use both a standard formula (SCR formula) or internal model or partial model. ICA is an internal risk based capital model and there is no standard or set formula but the FSA do specify broad rules and guidelines.

- 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' QIS 3 result was 150% of internal model

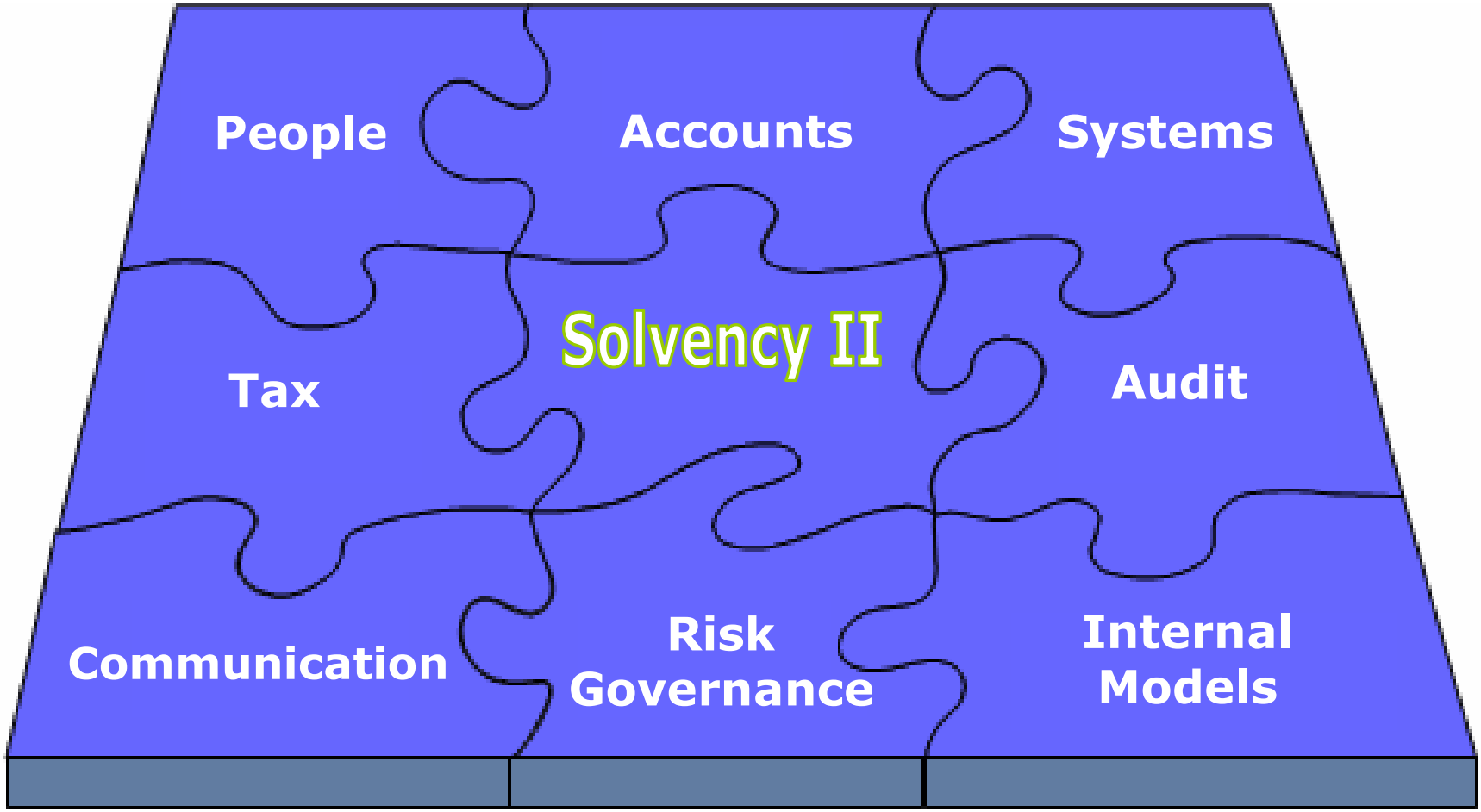
- Asset localisation rules apply under Solvency II: assets in relation to EU insurance technical reserves must be held in the EU

The Solvency Capital Requirement (SCR) – proposed structure



Putting things into perspective

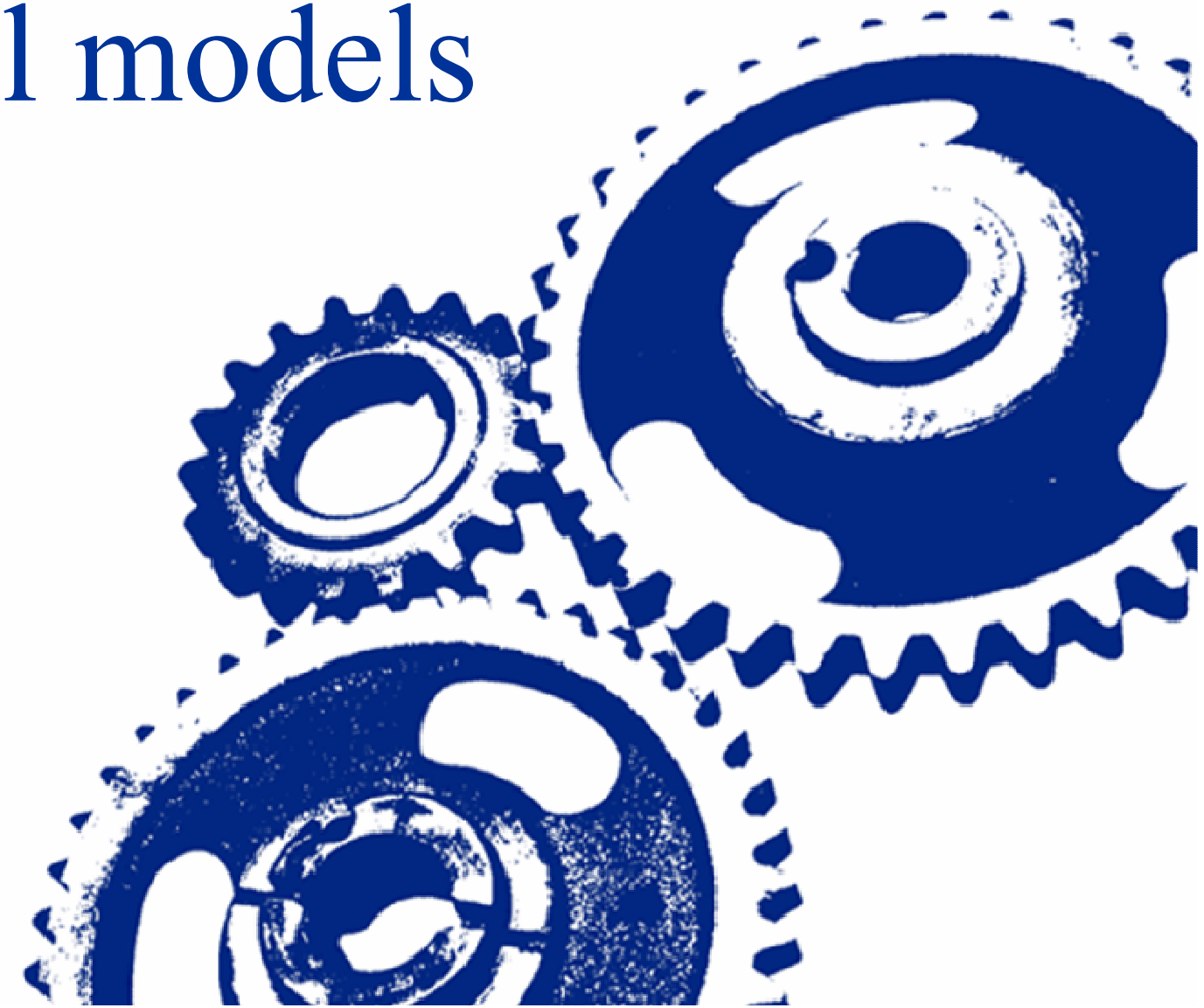
Solvency II – impacts many areas



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

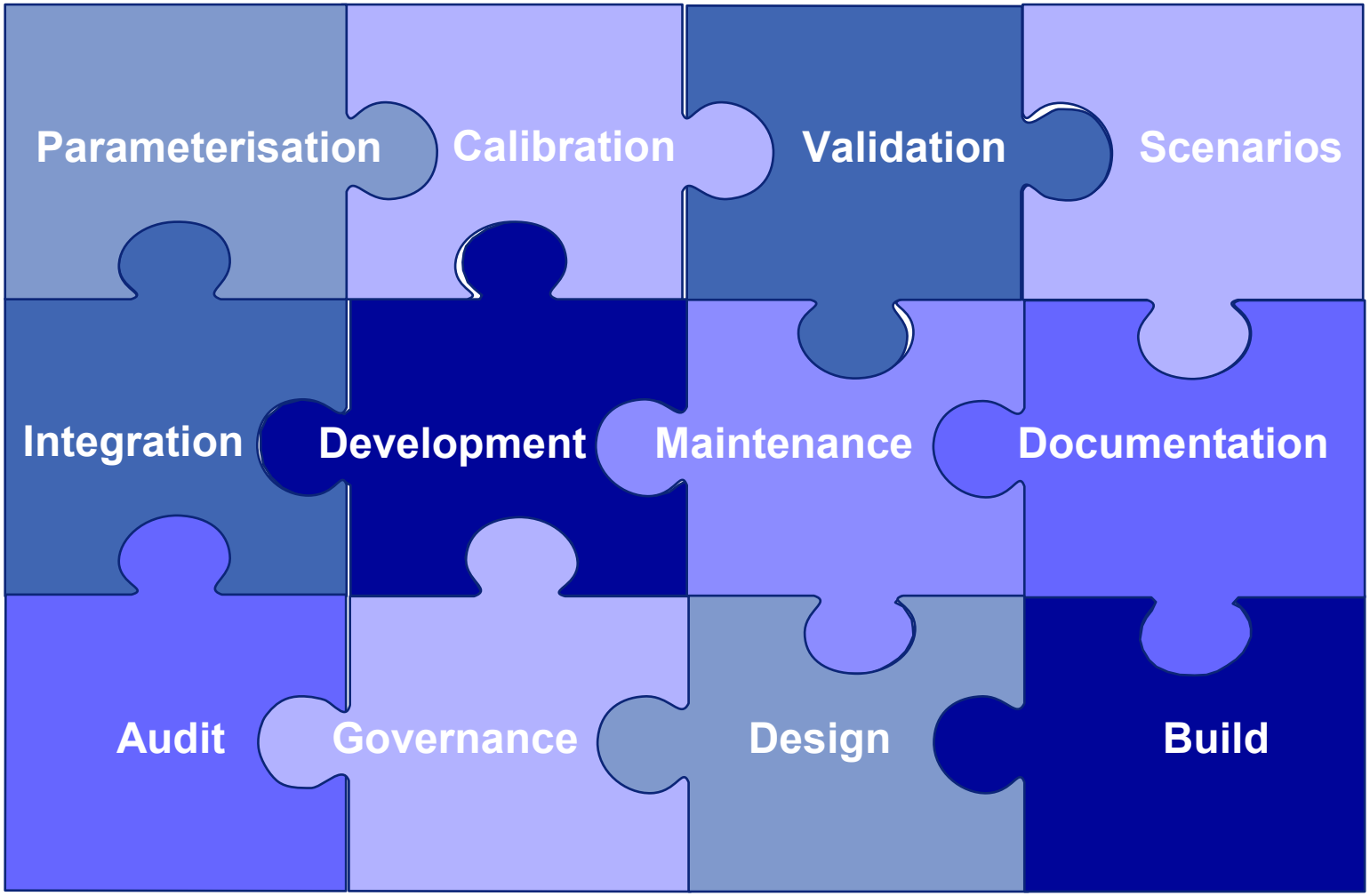


Internal models
What is a *real* internal model?

"…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 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."

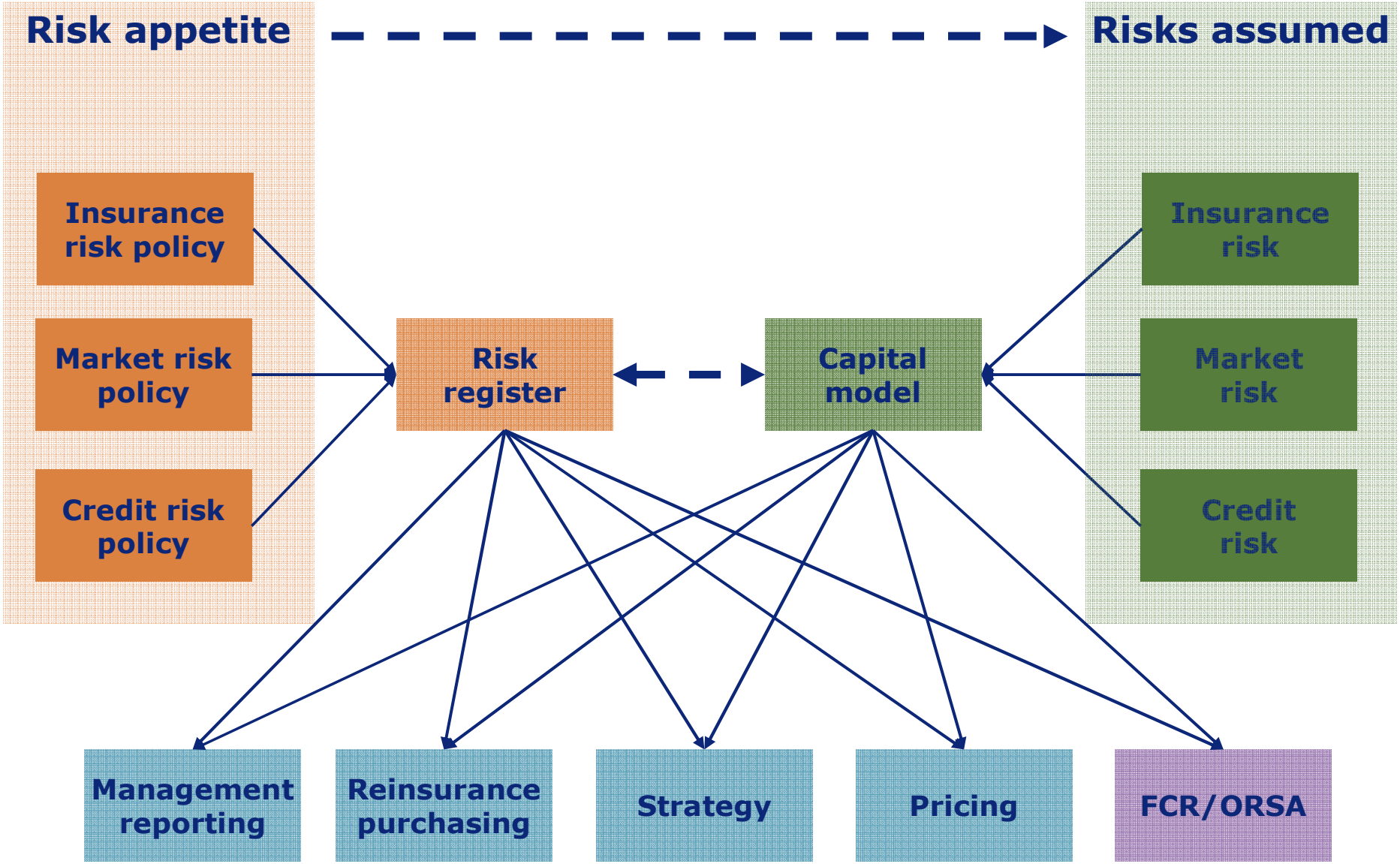
Internal models
What is a *real* internal model?

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 in 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, SST) 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 eg RMS, AIR etc Clear ownership – parameters reviewed and signed off by owners, eg 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 *regulators* looking for?

Design, build and method	Well documented – 'dead team test', 500% ICA workload 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 remuneration Impact of strategic options evaluated and considered before decisions are made

Internal models
Integrated capital modelling

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 Remuneration aligned to ROC targets Exposures tracked and managed – limits and model aligned Strategic opportunities evaluated and compared

What have we learnt in the UK?

What have we learnt 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?

What have we learnt in the UK?

Transparency & 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
  - Key model differences
  - Our recommended approach

What have we learnt in the UK?

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

What have we learnt in the UK?

Efficiency & 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

What have we learnt in the UK?

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

What have we learnt in the UK?

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?

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