TOWERS PERRIN
TILLINGHAST

Solvency in Europe: Solvency II

14th East Asia Actuarial Conference

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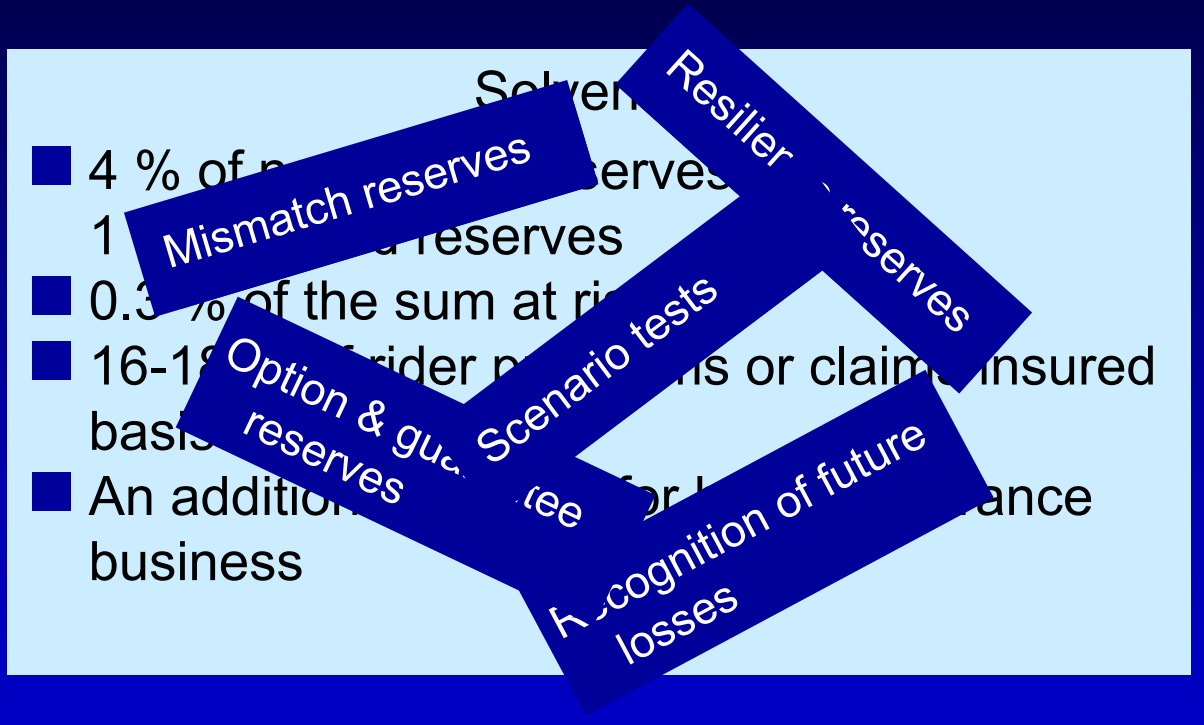
- Solvency I and historical developments
- Economic Capital
- Solvency II
- Business Implications

Following Solvency I, individual countries added requirements to address specific deficiencies



Despite the growing sophistication, serious problems remained

- Each change added a layer of conservatism
- Capital requirements did not allow for:
  - Strength of primary reserves
  - Premium rate profitability
  - Risk mitigation tools (matching, hedging)
  - Diversification
- Rating agencies have developed their own models

European multinationals started to develop economic capital systems for internal financial management

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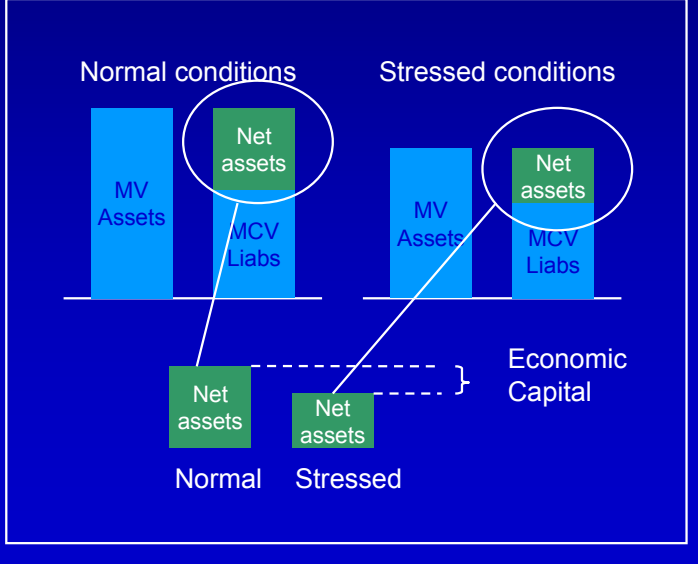
Definitions of capital: A market-consistent balance sheet approach

Economic capital is

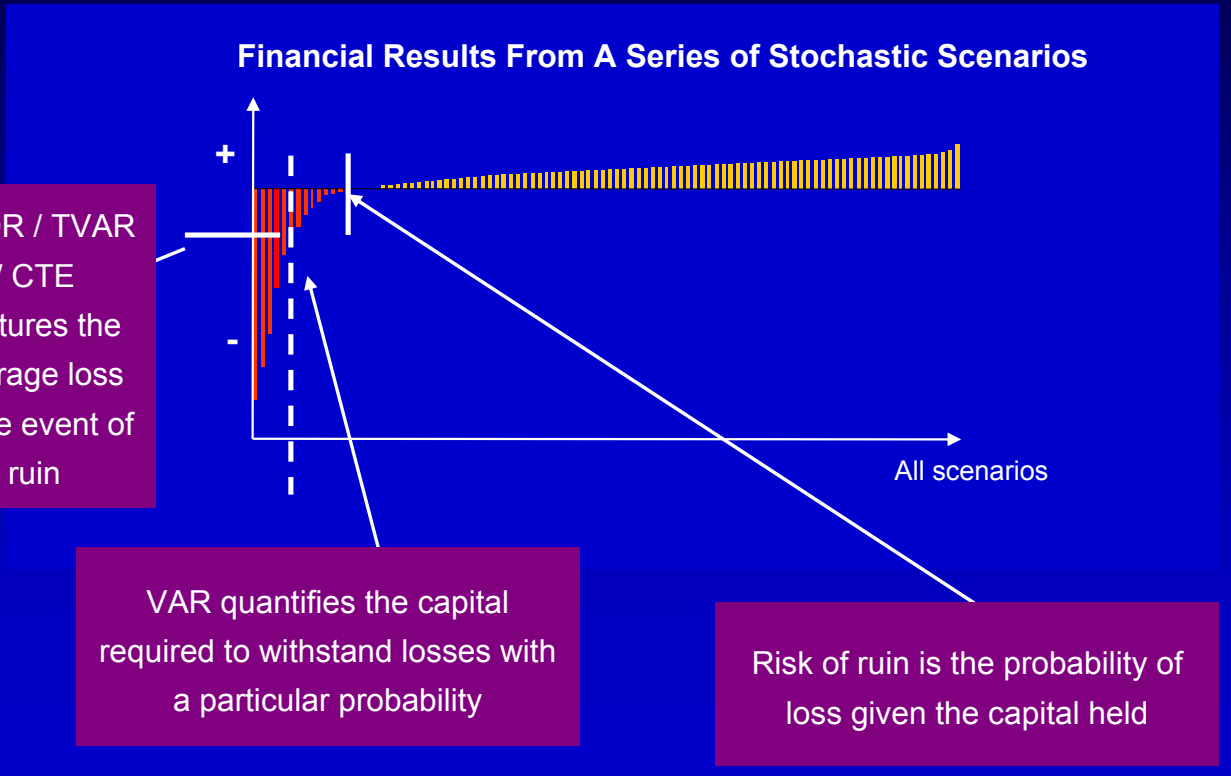
- The difference in "market consistent net assets" between normal conditions and stressed conditions
  - Example: Stress tests are calibrated to a probability of 7 in 10,000 over a 1 year time horizon corresponding to a AA rating

- Separate stresses are applied to cover a variety of market, credit and insurance risks
- Results are aggregated using a correlation matrix



Three alternative approaches can be used to measure risk: risk of ruin, VAR and ECOR

Definitions of measures of risk



Economic capital has several uses for optimising business performance

- Managers understand the relative importance of risks and how to manage them
- Accurate pricing or measurement of return on capital requires it
- Risk mitigation and transfer strategies optimise value creation
  - Business mix optimises use of diversification credits
  - Capital directed to profitable risk types
- Investors/rating agency trust => lower cost of capital

European regulators have started to introduce economic capital models in advance of Solvency II

Solvency I	Additional Requirements	Full M2M Approach
■ 4 % of non-linked reserves and 1 % of linked reserves ■ 0.3 % of the sum at risk ■ 16-18 % of rider premiums or claims insured basis if higher ■ An additional amount for health insurance business	■ Liabilities at deterministic M2M, excluding value of embedded derivatives (Denmark and Sweden) ■ Informal RBC model (Finland) ■ Stress testing (France and Germany)	■ Liabilities at M2M, including value of embedded derivatives ■ Assets at M2M ■ Stress testing
■ Belgium ■ Norway ■ Portugal ■ Spain	■ Denmark ■ Finland ■ France ■ Germany ■ Sweden ■ Italy	■ Switzerland ■ UK ■ Netherlands

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The Solvency II project has a number of aims

- Solvency standards match risk and encourage proper risk control
- Harmonise standards across the EU:
  - avoid need for Member States to set higher standards
- Assets and liabilities on a “fair value” basis consistent with IASB valuation
- Capital standards permit timely intervention
- Similar to Basel II for banks, with same “3 Pillar” approach – although definitions of Pillars not identical
- Not be too onerous for smaller companies.

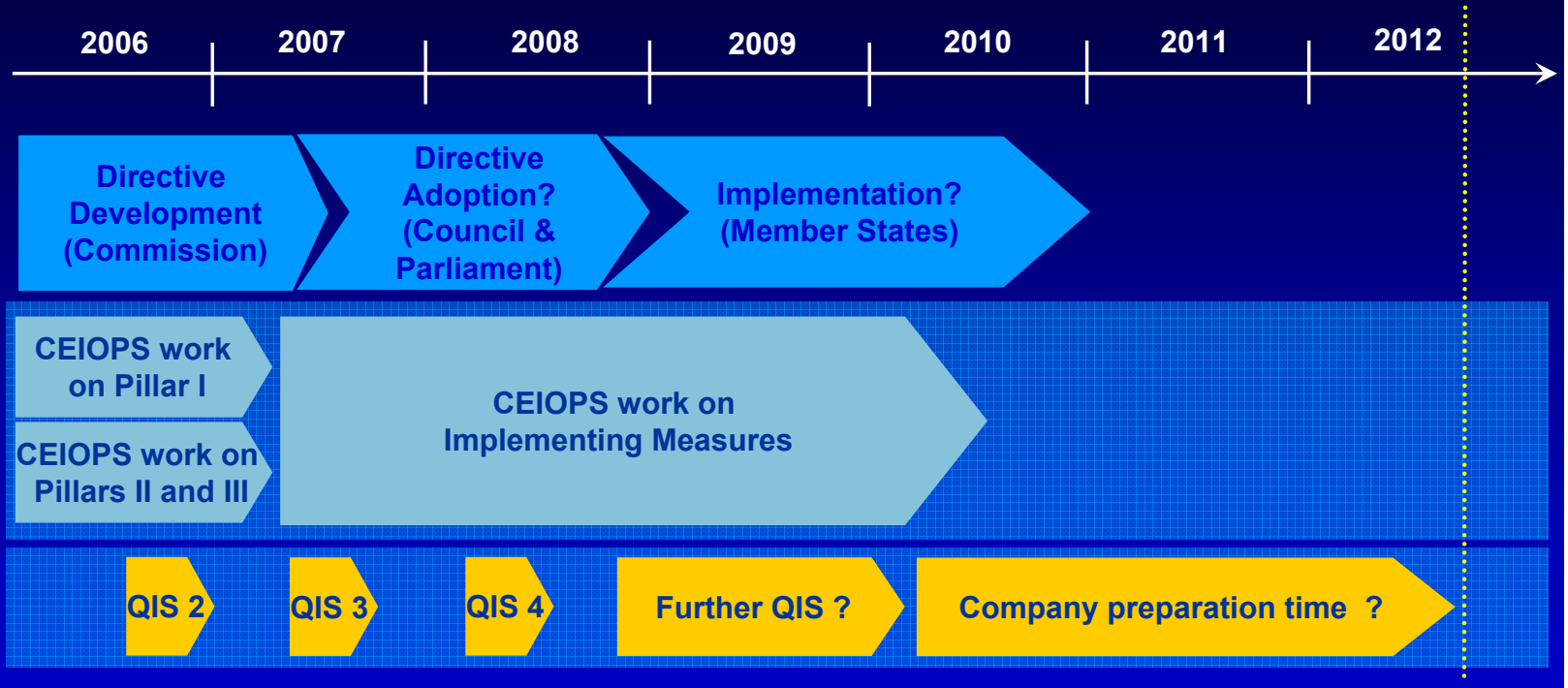
Regulation is divided into three “pillars”

Measurement of Assets, Liabilities and Capital	Supervisory Review Process	Disclosure Requirements
■ Eligible capital ■ Technical provisions ■ Capital requirements ■ Asset valuation ■ Risks to be included ■ Risk measures and assumptions ■ Risk dependencies ■ Calculation formula ■ Internal model approach	■ Internal controls ■ Risk management ■ Corporate governance ■ Stress testing ■ Continuity testing	■ IFRS Phase 2 ■ Unifying Risk and Financial Reporting ■ Public disclosure ■ Private disclosure to the regulator

Several basic principles have been agreed

- Pillar I Solvency Capital Requirement ("SCR") based on a market-consistent, total balance sheet approach
  - No prudence in excess of the market value of liabilities
- Two tier approach with an absolute minimum (MCR), a target (SCR) and a ladder of intervention in between
- Diversification recognised at both solo and group level
- Risk mitigation recognised
- SCR determined by a "Standard Approach" or by an approved internal model

Implementation is planned for the end of 2012



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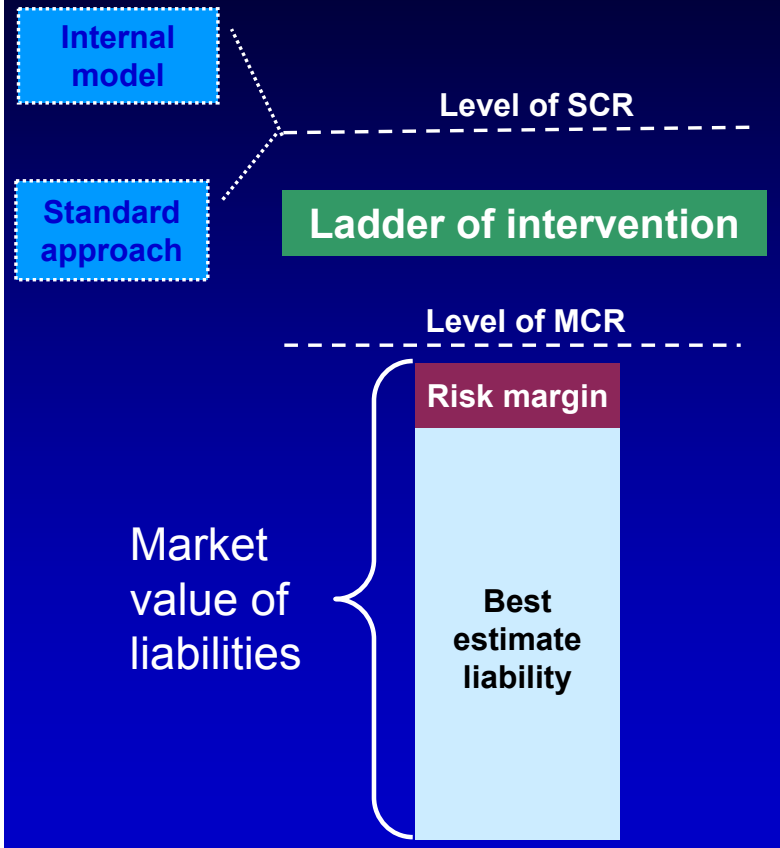
The main components of Pillar 1



- Technical Provisions – market value of liabilities
- Solvency Capital Requirement (SCR) – target capital level
- Minimum Capital Requirement (MCR) – below this ultimate supervisory action is triggered
- Ladder of intervention between SCR and MCR

Technical provisions

An Economic Approach

- For life assurance, start with discounted value of the best estimate cashflows
- Add risk margin:
  - Hedgeable risks: use market-consistent techniques
  - Non-hedgeable risks: use cost of capital approach to derive market value margin
- Discount general insurance claims provisions
- No arbitrary floors:
  - Surrender value
  - Unearned premiums limitations

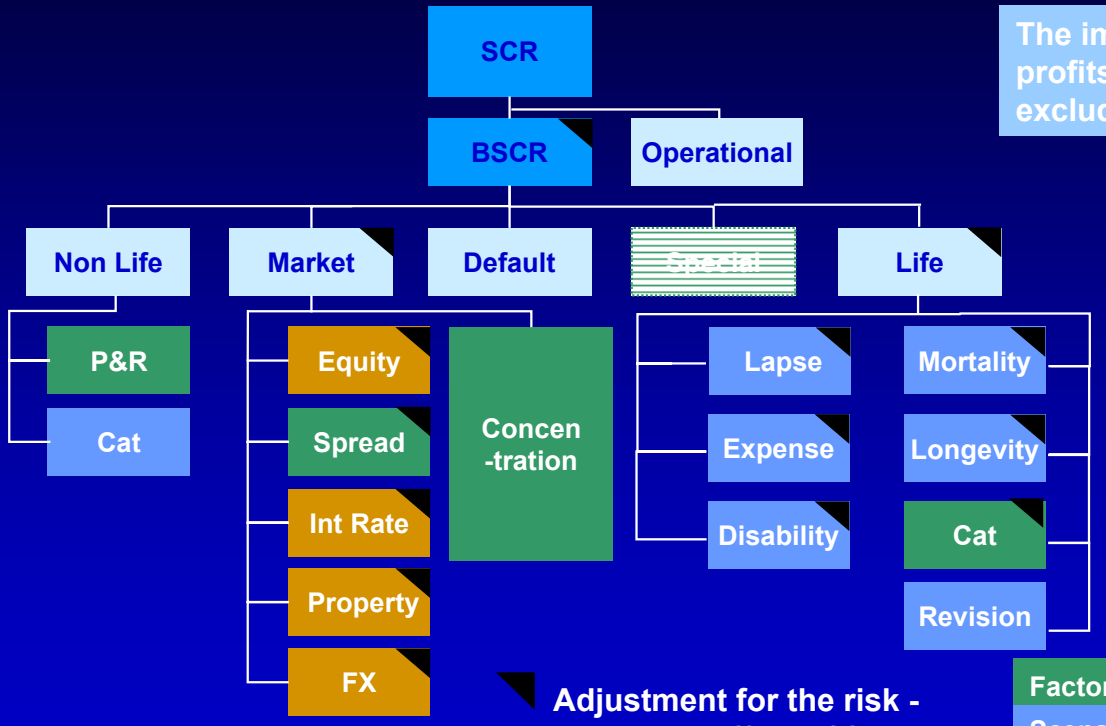
The cost of capital approach

■ Applies to	■ Amount for non-hedgeable risks only
	  ■ Exclude market risk
	  ■ Allowance for diversifiable risk

■ Length of time for which capital is required	■ Various options
	  ■ Liability Run-off
	  ■ Run-off of underlying risk drivers
	  ■ Run-off from internal model

■ Cost	■ Current proposal is 6% pa

QIS 3 sets out a structure to calculate the SCR



The impact of expected profits/losses in non-life is excluded

Factors

Scenarios with simplified alternative

Scenarios

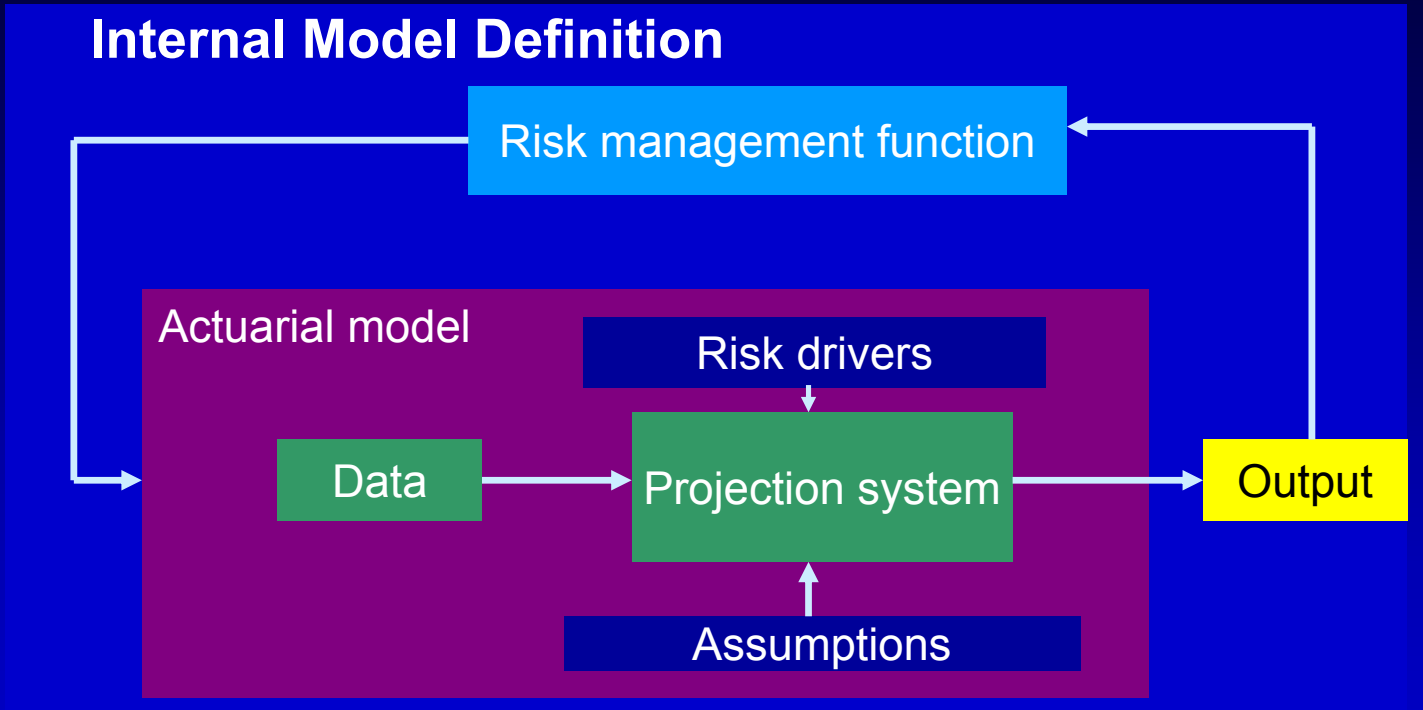
Eligible elements of capital

- CEIOPS suggest tiering of capital with limits based on criteria such as:
  - The better the loss absorbency of an element, the higher the tier it is classified into
  - Non-cumulative elements are treated more favourably than cumulative elements
  - Perpetual elements are treated more favourably than fixed-term elements
- Industry is arguing against arbitrary limits

Debate continues over calibration

- Concerns expressed over the calibration of QIS 3
- Concerns included:
  - Exclusion of Non Life expected profits and losses
  - Excessive market volatility parameters for Non Life premium and reserve risk
  - Relationship between MCR and SCR unsatisfactory
  - Allowance for operational risk unsatisfactory

Many companies are developing internal models



Under the system a wide range of approaches are possible but justification is required as to why it is superior to the standard approach

There are incentives to use internal models

Lower Capital Requirements

- Margins of conservatism in the Standard Approach
- Standard Approach will not allow for group diversification effects
- Standard approach does not reflect company specific data and underwriting
- More precise allowance for correlations of risks

Competitive advantage

- Reflects natural hedges
- Reflects own risk profile including hedging and reinsurance
  Encourages good risk management
- Provides information about distribution of outcomes
- Can be integrated in financial management framework

Internal model approval may be stricter than expected

Statistical Quality test

- Model is sufficiently accurate and stable
- Sound actuarial techniques
- Should capture material risks
- Data is accurate and consistent
- “Back-testing” should be carried out
- Sensitivity testing
- Proper documentation

Calibration test

- Model SCR at the appropriate level
  - Consistent with Standard approach
- Comparable across undertakings

Use test

- Model used in risk management
- Board of directors involved
- Main risks identified and managed using model
- Requirements are regularly audited

Multinationals are lobbying hard on Group issues

- Supervision should be based on a consolidated approach so that there is one binding SCR for groups
  - The solo MCR and the valuation of liabilities (in a consistent manner across the EU) remains local
- Group diversification effects exist and are material
- There should be a clear allocation of responsibilities between 'group lead' and 'solo' supervisors
- CEIOPS members are split on this issue
- Proposed Framework Directive goes further than CEIOPS proposed and much closer to industry stance

Threats to the project

Developing a standard approach that is both risk sensitive and appropriate for small companies

Group supervision that meets the needs of multinationals and addresses the fears of smaller markets and companies

Failure of industry to participate, agree and clearly communicate on a coherent, practical approach may result in an unsatisfactory result

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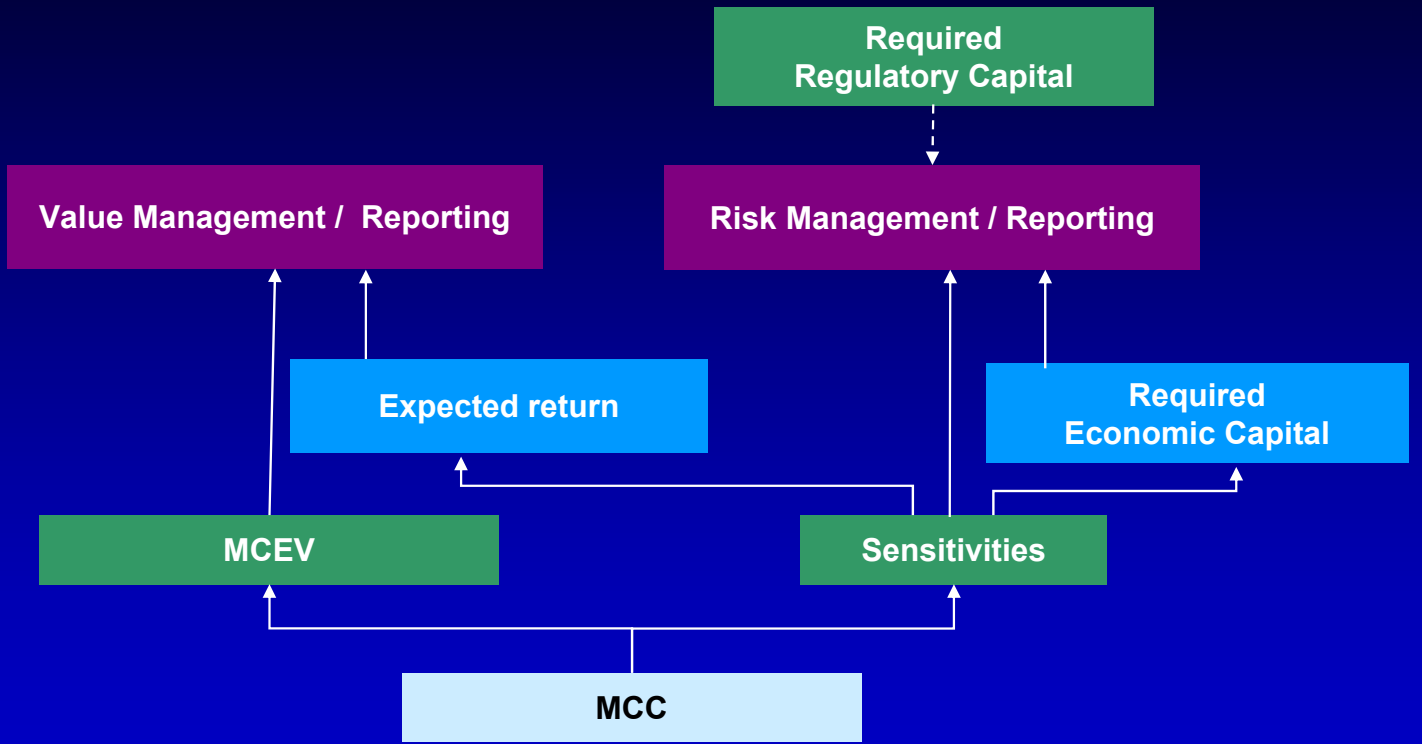
Solvency II is expected to have a substantial impact on the industry

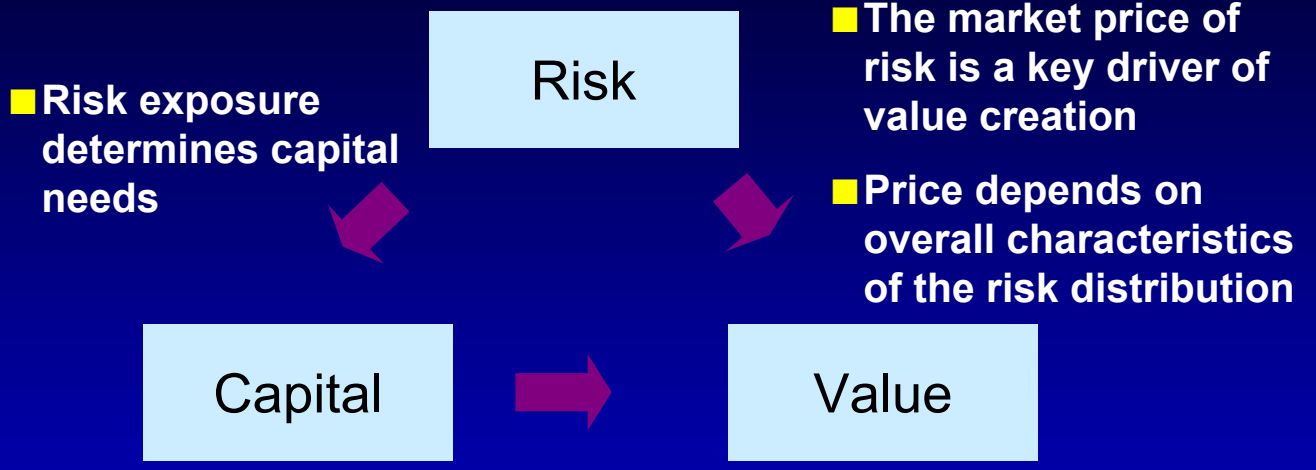
- A risk based system founded on economic principles brings many benefits:
  - A well defined level of protection for consumers
  - An efficient allocation of capital
- Recognition of diversification may lead to consolidation
- The regulation is designed to encourage improved risk management
- Incentives to develop internal models will lead to a better managed industry

Economic capital models can be used for Solvency II and for value management



The framework allows insurers to use the same tools to measure and manage value and risk

Capital calculations are just one component of a modern financial management system



- Risk exposure determines capital needs
- The market price of risk is a key driver of value creation
- Price depends on overall characteristics of the risk distribution
- Capital utilisation has a cost of capital and hence reduces value creation

Value is created when performance exceeds the price of risk and the cost of capital employed