



The Actuarial Profession

making financial sense of the future

33rd ANNUAL GIRO CONVENTION

Solvency II – Recent Developments and Implications

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Agenda

- Solvency II introduction
- Solvency II concepts
- Quantitative Impact Studies
- Impact Assessment
- Conclusions

Solvency II - aims

- Establish solvency standard to match risks
- Encourage risk control in line with IAIS principles
- Harmonise across EU
- Assets and liabilities on fair value basis consistent with IASB if possible
- Set higher solvency standard than currently to permit timely intervention
- 3 Pillar approach consistent with Basel II

Solvency II – Three Pillars



Pillar 1 –

Technical rules for valuation of assets, liabilities and solvency margin (both SCR and MCR)



Pillar 2 –

Supervisory review process including individual capital adjustments having regard to effectiveness of risk management and corporate governance arrangements



Pillar 3 –

Public and private disclosures to the regulator

Solvency II – Lamfalussy structure

Level 1

European Commission
(Internal Markets Division)

Level 2

European Insurance and Occupational
Pensions Committee (EIOPC)

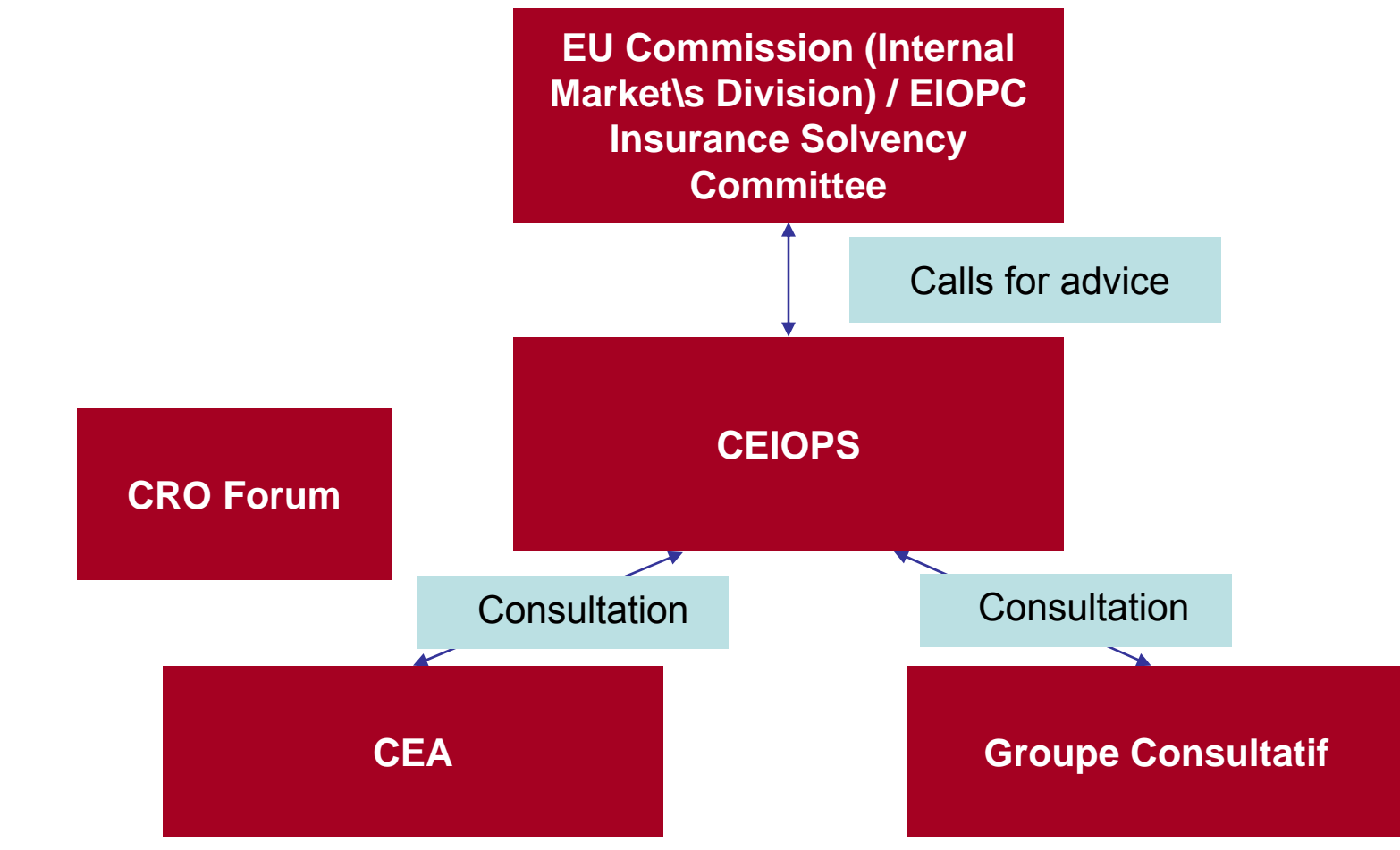
Level 3

Committee of European Insurance and
Occupational Pensions Supervisors
(CEIOPS)

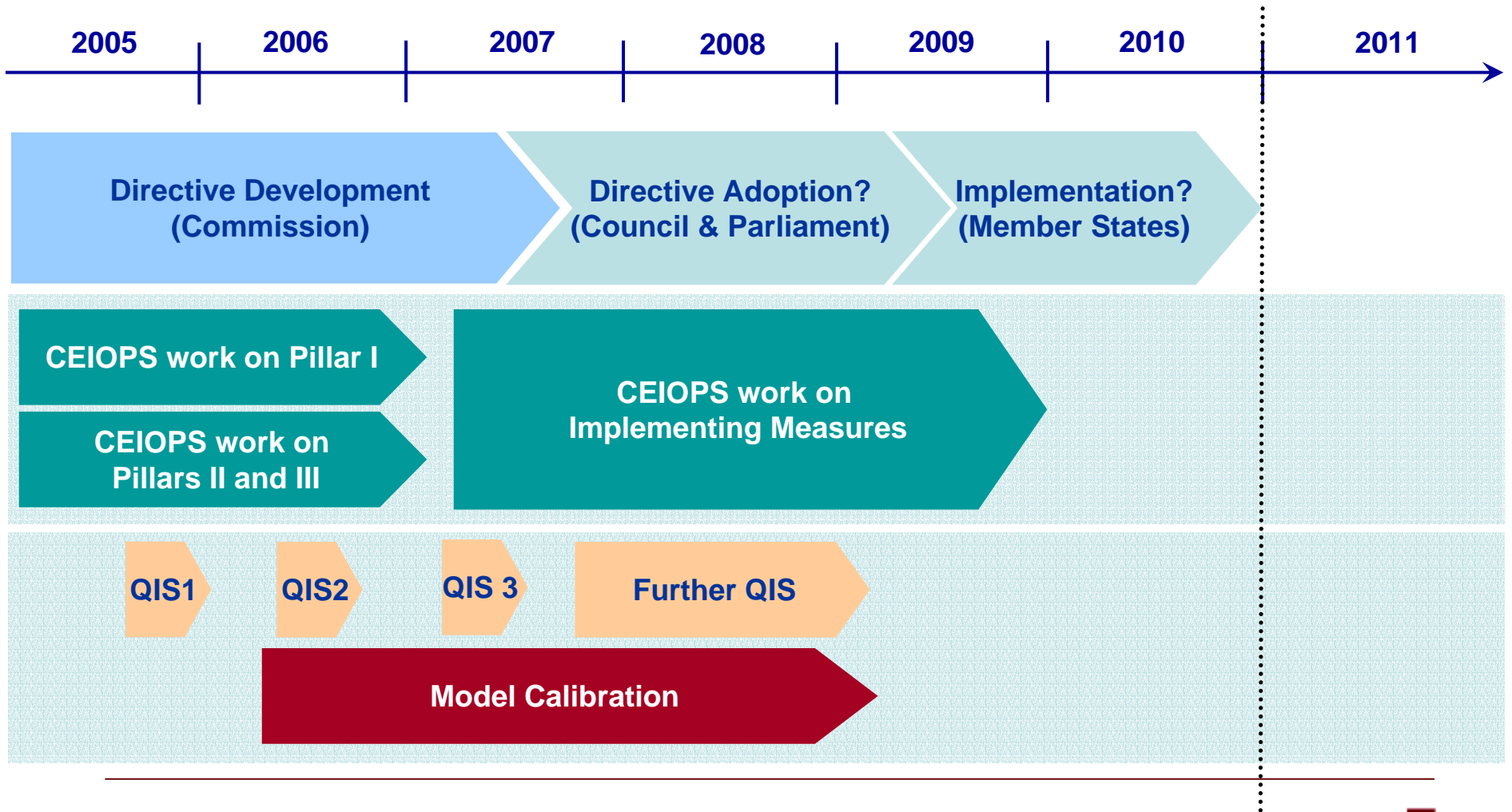
Level 4

European Commission review of
member state implementation

Solvency II – consultative structure



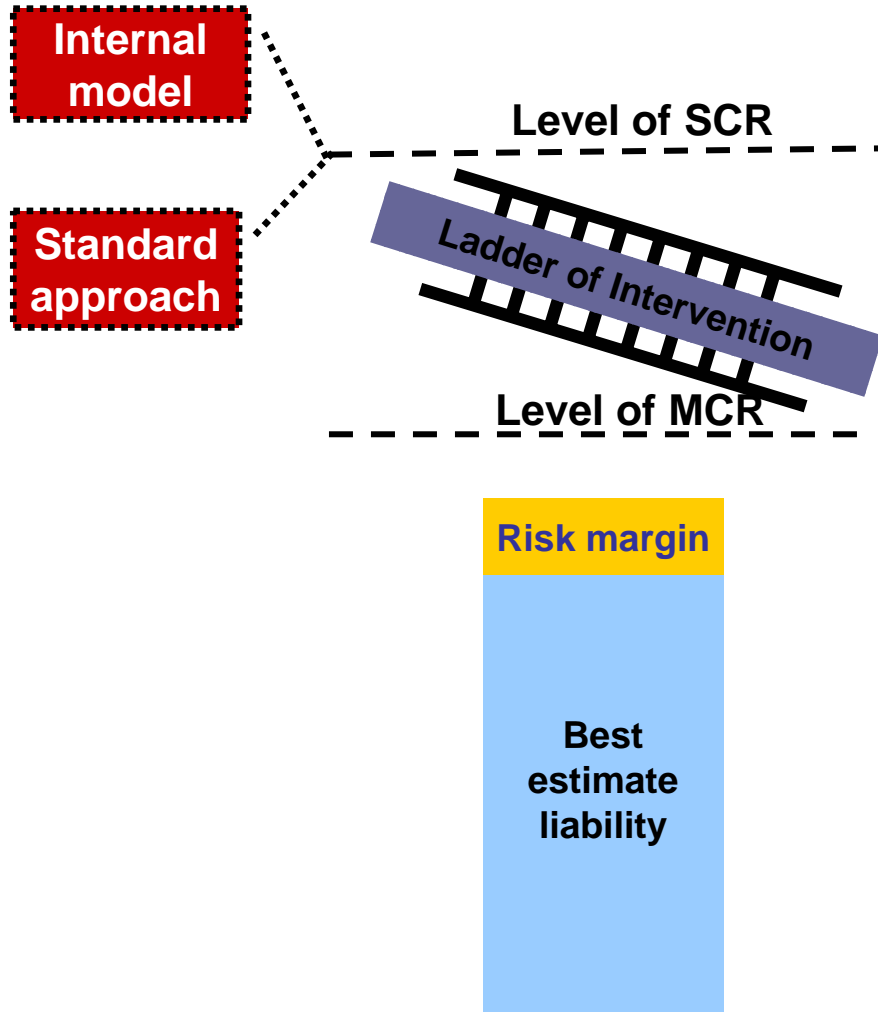
Where does Solvency II stand?



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Solvency II - main reference points



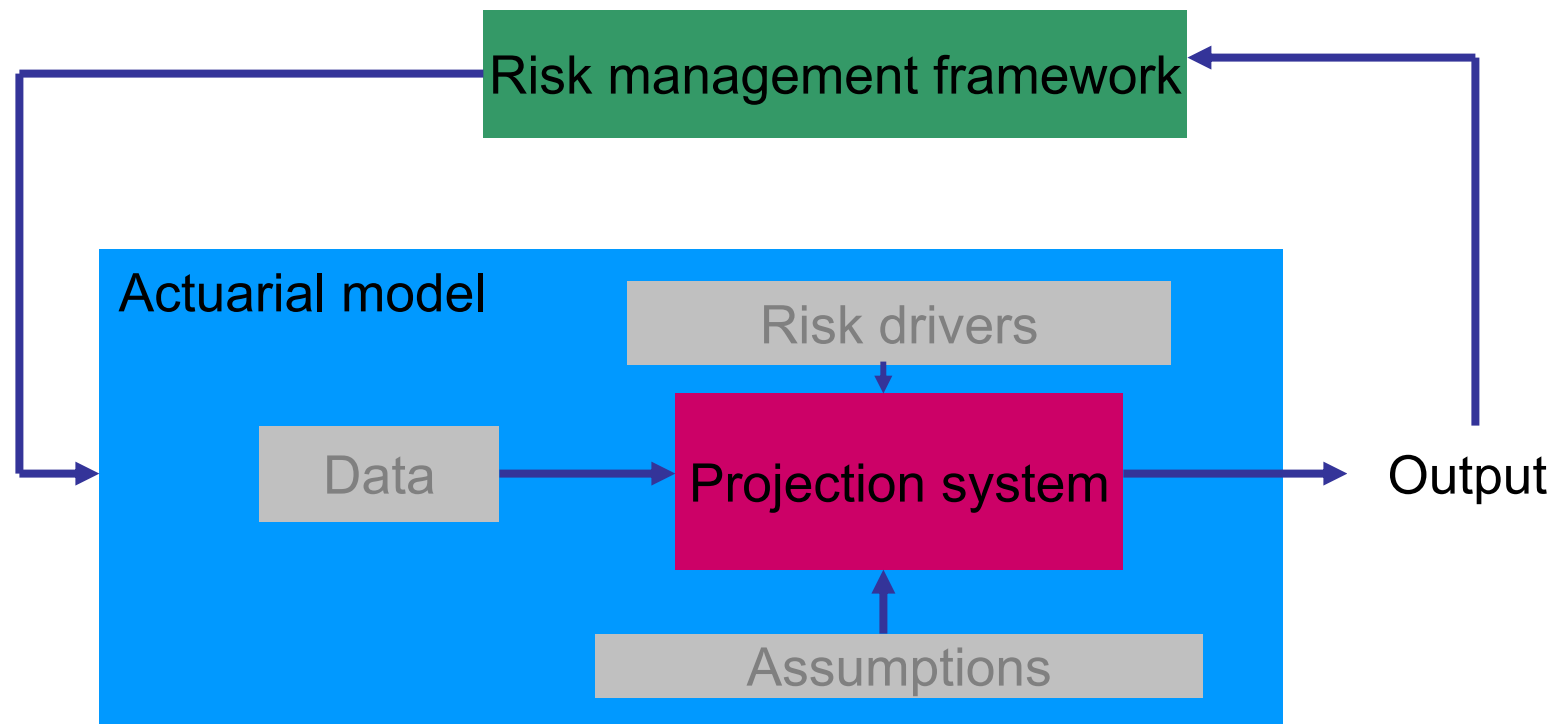
- Technical Provisions – amounts set aside to fulfil obligations towards policyholders and other beneficiaries; includes a risk margin
- Solvency Capital Requirement (SCR) – capital that enables absorption on significant unforeseen losses and gives reasonable assurance to policyholders
- Minimum Capital Requirement (MCR) – capital below which ultimate supervisory action would be triggered
- Ladder of intervention as available capital falls from SCR towards MCR

Solvency II – other features

- Technical provisions on a fair value basis
 - Estimates based on discounted value of expected cash-flows (best estimate) plus risk margin
- Market-consistent assumptions for financial elements of valuation basis
- Assets at market value
- Other liabilities on GAAP basis

Definition of an Internal Model

Internal Model



An internal model is more than an actuarial model.

Technical provisions – allowing for risk

- Hedgeable risk (largely financial): market price or market-consistent basis
- Non-hedgeable risk (mostly insurance risk)
 - Percentile approach – ability to run off liabilities at given confidence level; subject to minimum risk margin of one-half standard deviation
 - Cost of capital approach (as applied in the Swiss Solvency Test)



SCR and MCR Concept

- Solvency Capital Requirement (SCR)
 - Target level of capital
 - Capital to meet technical provisions with 99.5% certainty after one-year stress events
 - Pillar 2 add-ons intended to be unusual
- Minimum Capital Requirement (MCR)
 - Regulatory intervention floor
 - Alternatives under consideration
 - Similar approach to SCR
 - Solvency I for transition period

Time horizons - Definitions

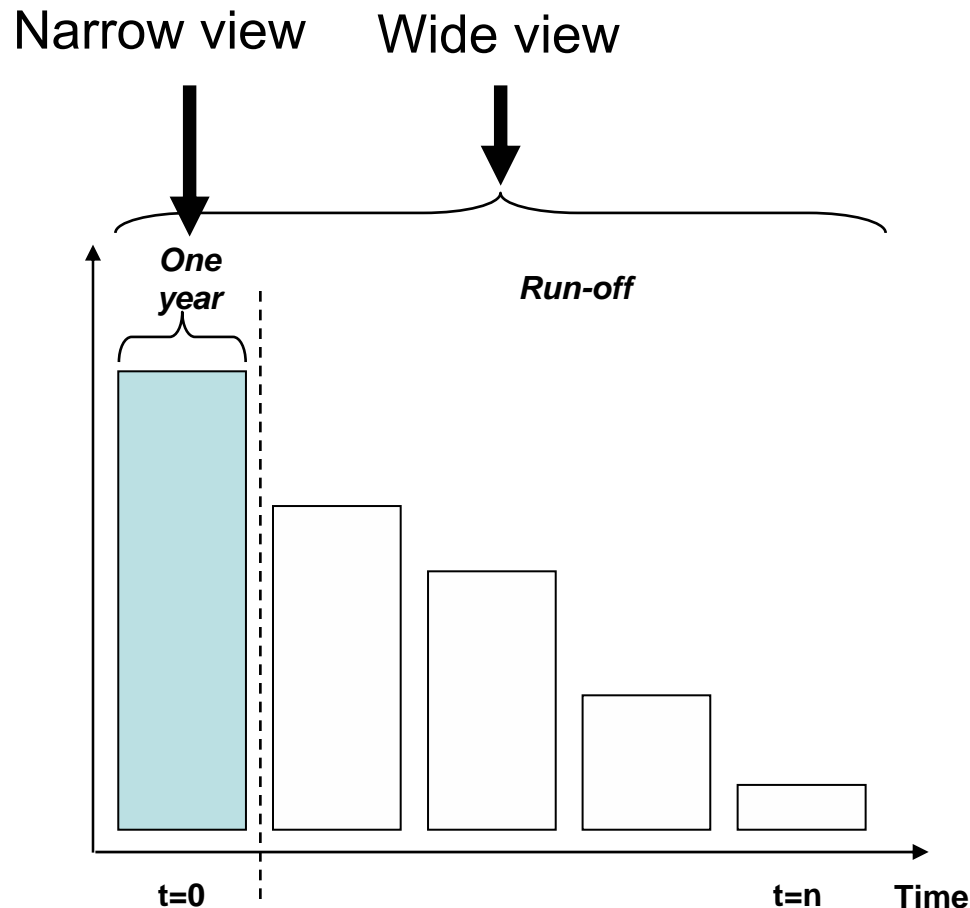
- Solvency assessment period (SAP) – the period of time for which a business is modelled as an ongoing entity for the solvency test. SAP is one year under Solvency II.
- Risk assessment period (RAP) – the period over which variability in the underlying risks are considered in the valuation model.

SAP - Solvency assessment period

- Under UK ICAS implementation firms were given a choice of different solvency assessment periods (1,3 and 5 year periods) with different levels of confidence (99.5%, 98.5% and 97.5%)
- UK Firms expected to give reasons why longer time horizons were not considered if a one-year approach was adopted
- Some potential for inconsistency in considering the risk assessment periods for run-off

UK position will change to align with Solvency II (or vice-versa).

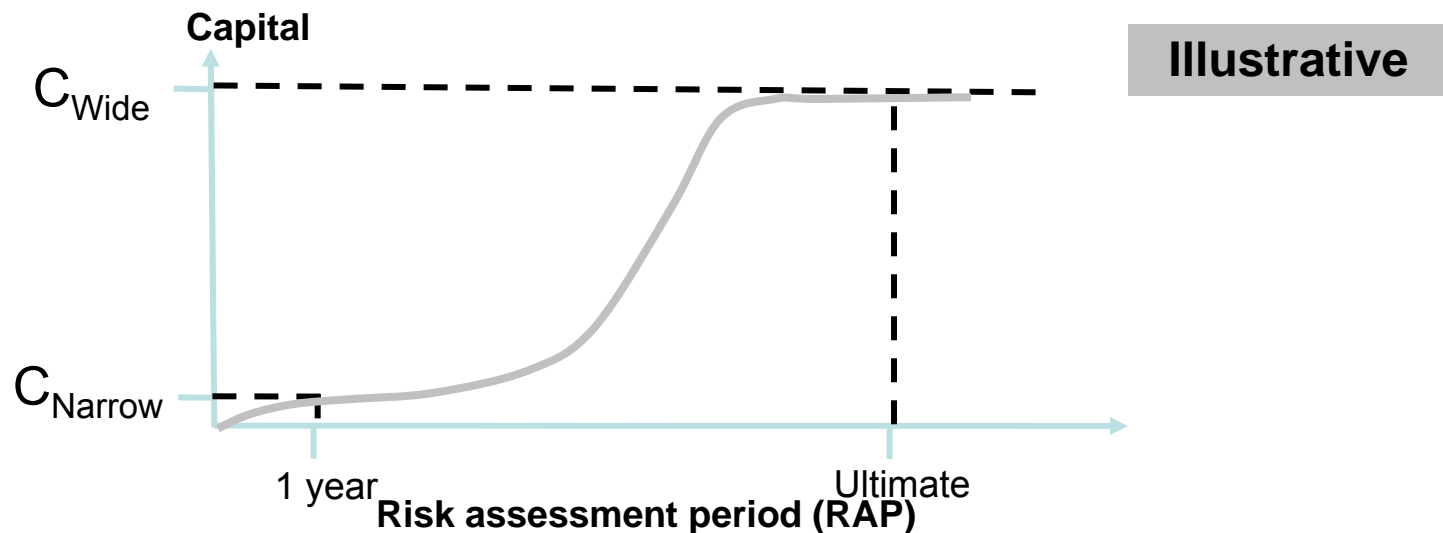
RAP - Risk assessment period



- The narrow view bases capital on what is likely to be recognized over a single year
- The wide view considers potential trends and their development to ultimate on a reasonably foreseeable basis

Illustrative RAP example

- C_{Narrow} and C_{Wide} represent capital requirements with a narrow and wide RAP assuming in both cases a SAP of one year



- Using C_{Narrow} could underestimate potential variation as C_{Narrow} could be close to zero although C_{Wide} is non-trivial

Contrasting approaches to RAP

- In previous advice to the European Commission, CEIOPS has stated that the capital assessment should consider only risks over the period of assessment.
- Although the FSA has not produced definitive guidance, there is a recommendation that risks be considered to ultimate.
- The two approaches are inconsistent.

Time horizons - Conclusions

- Wide approach more consistent with the perspective of an external third party buying the risk after an adverse scenario.
- Wide approach requires consideration of underlying variability of ultimate outcomes.
- Under the wide approach, capital assessments would be higher than under the narrow approach for the same percentile level of confidence.

Loss reserve implications

- Wide approach fits with conventional stochastic methods
- Narrow risk assessment approach requires ad-hoc methodology to consider calendar year variability
- For harmonisation to work, the narrow approach demands consistent technical provisions across companies

Technical provisions – other issues

- What is the risk free rate for discounting purposes?
 - Government bonds or swap yields?
 - Allowance for liquidity premium?
- Risk margins are not additive
 - Allowance for diversification
 - Unit of account

The option of centrally calibrated factors to determine the risk margin should be available to companies.

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Quantitative Impact Studies

- Companies asked to provide data confidentially that simulate proposals under consideration
- Companies also provide feedback and alternative proposals
- Output is used for Impact assessment of the Directive
- Results will influence calibration of Solvency regime by regulators

Format of QIS illustrate CEIOPS' current thinking

QIS1 and QIS2 - UK market participation

	Life		Non-life	
	No. of companies	Market share	No. of companies	Market share
QIS1	9	35%	15	47%
QIS2	19	65%	23	67%

- Small companies under-represented

QIS1- Scope

- Ran from 1 October 2005 – 31 December 2005
- Focused on technical provisions
 - 75th and 90th percentile risk margins
 - optional margins based on the 60th percentile or an undefined cost of capital approach
 - No allowance for “own credit risk”
 - Discount rates specified by reference to swap yields

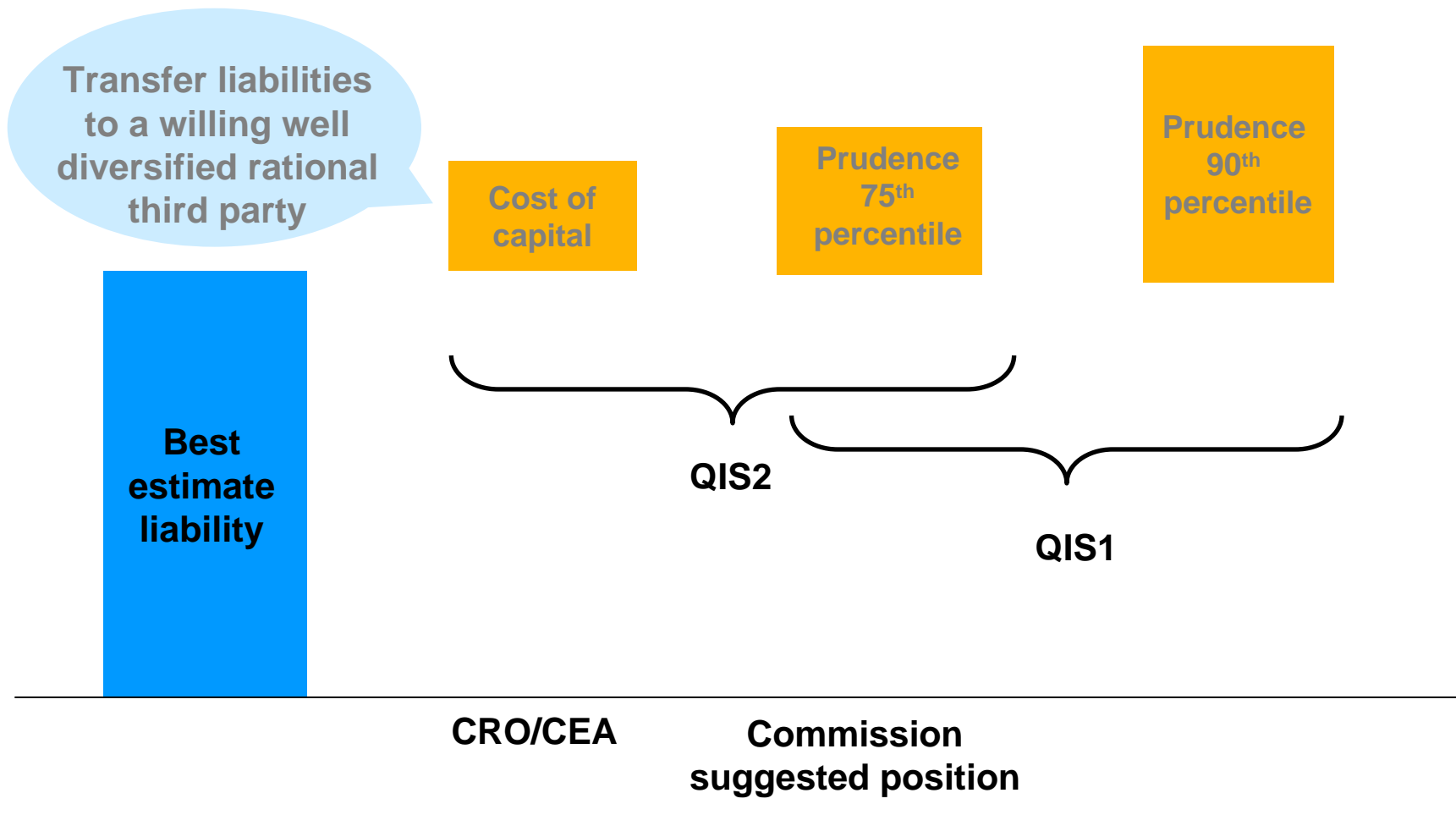
QIS1 - Findings

- Impact of 75% confidence risk margins on provisions: 2%-7% apart from UK 14%
- Problem areas noted by participants were:
 - Lack of resources, time and experience
 - Lack of data and choosing actuarial assumptions
 - Derivation of risk margins
 - Treatment of reinsurance
- Wide range of methods used by companies to produce results

QIS2 - Scope

- Took place from 1 May 2006 to 31 July 2006
- QIS2 covered:
 - Technical Provisions – on market consistent basis and undiscounted
 - Other Liabilities – on local regulatory basis
 - Asset Values – market values
 - The SCR – on formulaic bases
 - The MCR – on both current Solvency I approach and on a basis consistent with SCR
- Feedback required on design and structure
- Placeholder Calibration

Percentile or cost of capital approach?



Technical provisions - Cost of capital approach

- Based on Swiss Solvency Test (SST)
- Allocated capital based on regulatory capital for non-hedgeable risk
- Allocated capital reduces as risk runs-off
- A cost of capital would have to be specified
 - 6% pa (pre tax) in excess of risk free rate is assumed
- Annual costs then discounted

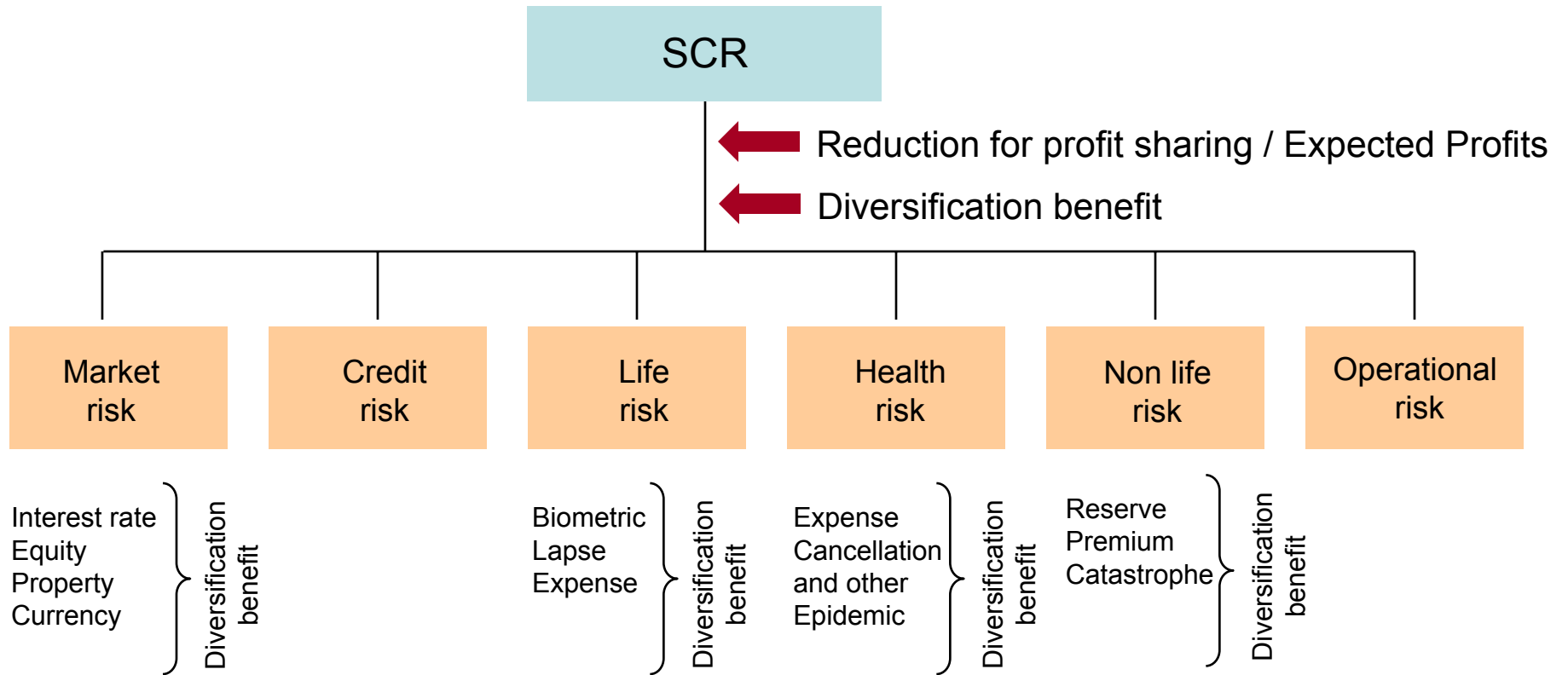
Technical provisions - Percentile approach

- Treatment of reinsurance not straightforward under percentile approach
- Should percentile estimates allow for:
 - Process uncertainty
 - Parameter uncertainty
 - Model uncertainty
- No commonly accepted methods
 - Actuarial profession is actively considering these issues

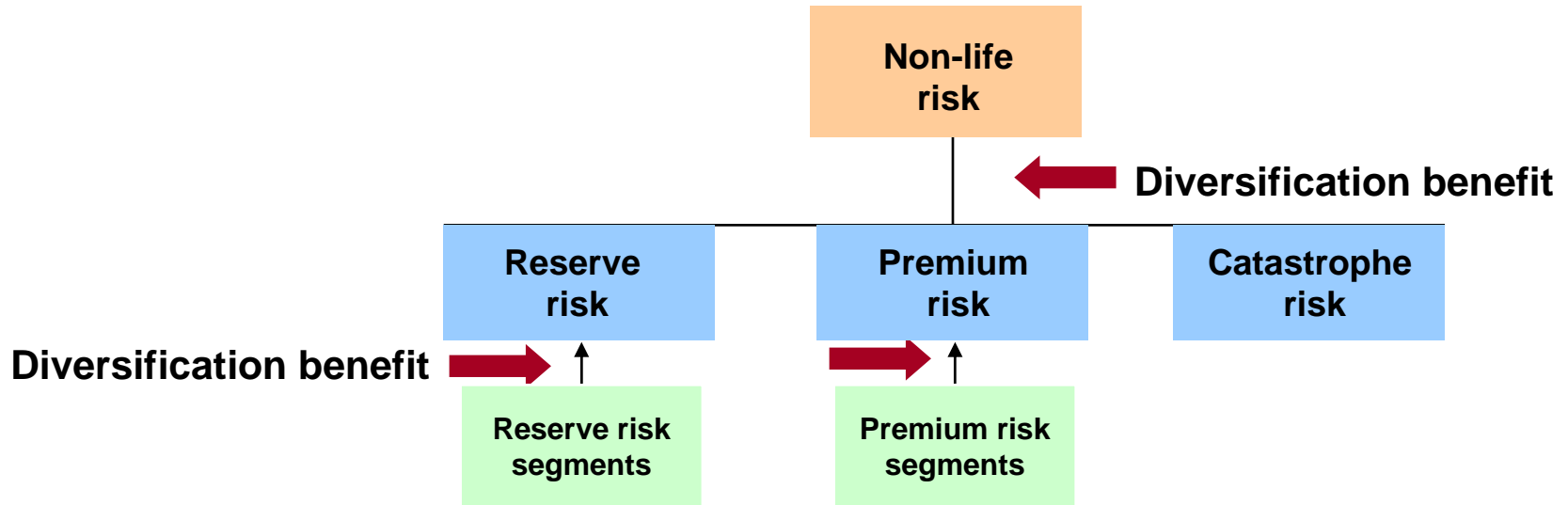
QIS2 – Risk margins

- Industry has expressed a preference for Cost of Capital approach
 - Parameters need to be calibrated
- Although the CoC approach was optional, many companies used this approach

QIS2 – Overview SCR



QIS2 - Non-life insurance risk



+/-	<p>Product class segmentation is the 11 classes specified in the EU Council Directive on Insurance Accounts</p> <ul style="list-style-type: none"> ▪ Scope for significant variation of risk within each class by market
+	<p>Risk based structure of framework:</p> <ul style="list-style-type: none"> ▪ Risk types separately assessed ▪ Allowance for diversification / recognition of reinsurance
-	<p>Framework and spreadsheet relatively complex - unattractive for smaller companies?</p>

QIS2 - Premium risk

Capital charge = factor x net earned premium next year

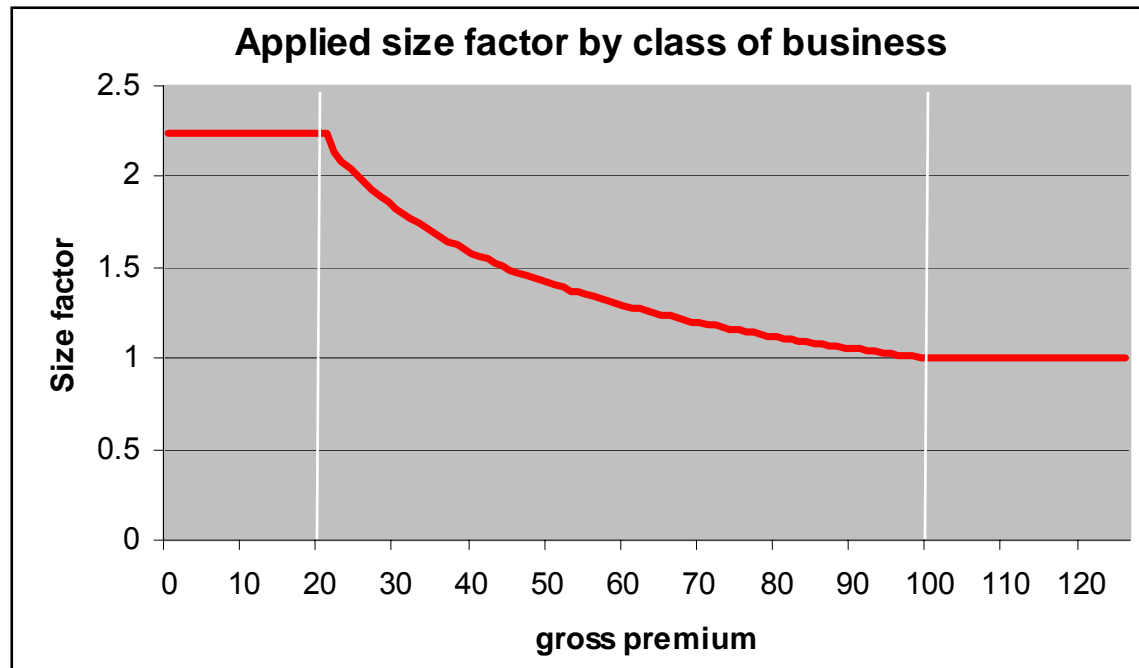
Standard factors

Size factors

In addition: Company specific based on mechanical calculation of volatility of historical combined ratios

+	Company specific information may be used
-	Due to mechanical calculation, changes in strategy (e.g. reinsurance, pricing not captured adequately)
-	Information is based on historical combined ratios and does not reflect the latest estimates
??	Calibration of factors. These seem very high (40% to 60% for larger companies and 80% to 120% for smaller companies)

QIS2 - Premium risk: size factors



Size factor = 2.236
if $GWP \leq \text{€ } 20\text{mln}$

Size factor = 1
if $GWP \geq \text{€ } 100\text{mln}$

The size factors apply to each line of business

QIS2 - Reserve risk

Capital charge = factor x claims provisions

Standard factors

Size factors

-	Reserve risk could be significant for many non-life insurers. No company-specific data is used
??	Calibration of factors. These seem very high. (40% to 60% for larger companies and 80% to 120% for smaller companies)

QIS2 - Catastrophe risk

- Scenario-based approach
- Market share approach
 - Events specified by the national regulator
 - Reinsurance taken into account

+	Company specific stresses may be used
+	Reinsurance taken into account
+/-	Market loss approach may be used for those companies which cannot develop their own catastrophe models. This approach is inappropriate for insurers writing international catastrophe exposures

QIS2 - Expected profits / losses

- Expected profits are part of the SCR
 - Expected profits are subtracted from SCR (but expected losses are added)
 - Two equally volatile companies can still have a different SCR

Expected Profits

$$= \text{Earned premium next year} \times (100\% - \text{expected combined ratio}) + \text{Expected run-off result next year}$$

Expected (discounted) combined ratio based on average combined ratio previous 3-5 years

+	Allowance for expected profits/losses next year (original intention to respond to the cycle)
-	Due to mechanical historical basis the result is counter-cyclical

QIS2 – Non-life findings

- Difficulties with percentile approach
- Calibration gives high capital requirements
- Single reinsurance class too wide
- Catastrophe risk market scenario approach problematic
- Operational risk formula not consistent with ICAS
- Company-specific scenario approaches preferred
- MCR and SCR relativity on some bases not reasonable

QIS3

- QIS3 will run from 1 April 2007 to 31 July 2007
- Main issues:
 - Capital requirements at group level
 - Eligible elements of capital
 - Calibration

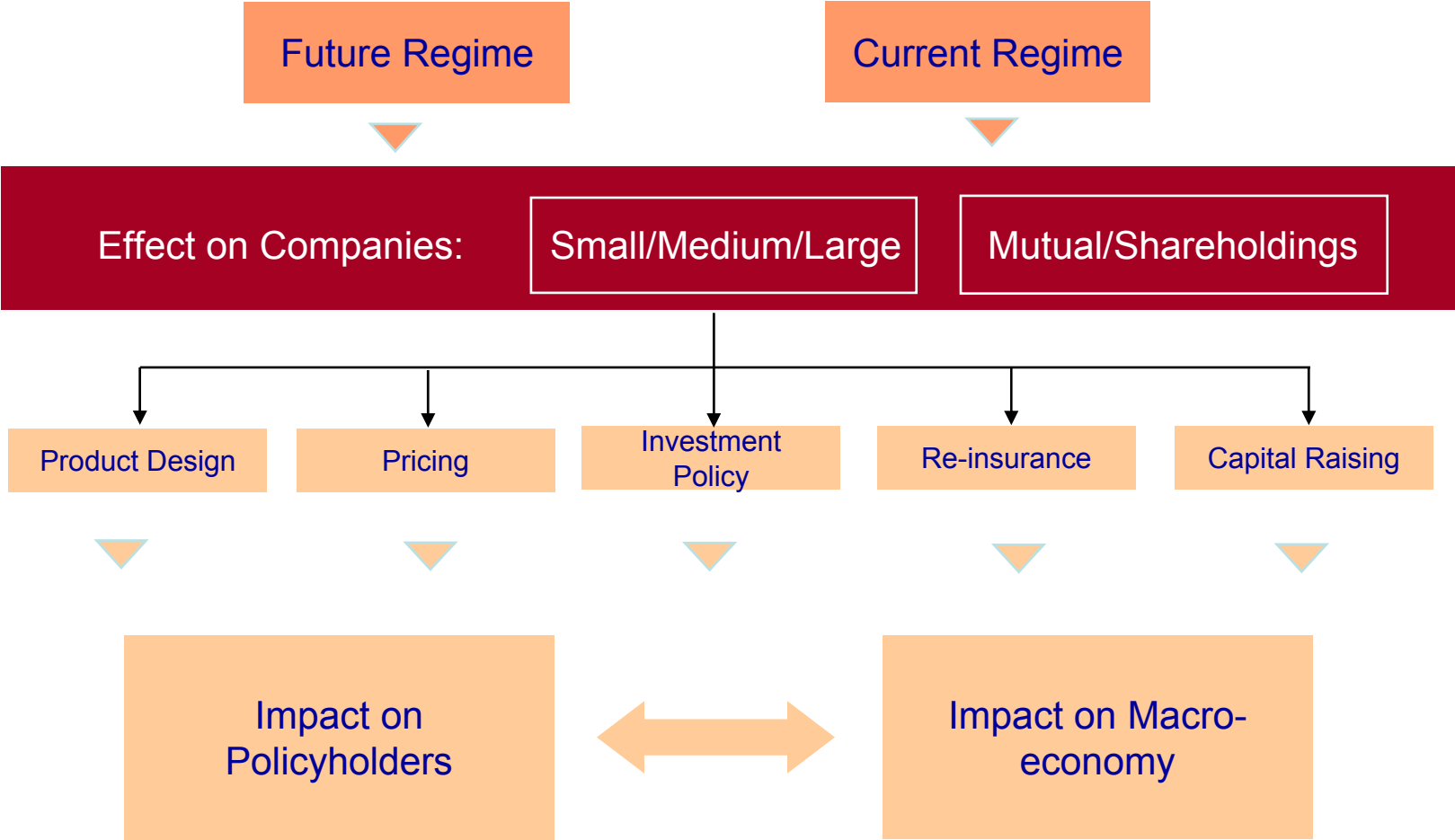
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Impact Assessment - Commission request

- Impact Assessment report considers:
 - Macroeconomic and financial stability
 - Insurance undertakings and supervisory authorities
 - Insurance products and markets
 - Consumers
- CEA questionnaire to assess Solvency II impact on insurance products and markets

Impact Assessment - Structure



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Conclusions

- Move toward risk-based economic approach
- Risk margins likely to be a reality
- Time horizon issues for capital definition
- Concerns over placeholder QIS2 calibration
- UK ahead on internal models with ICAS regime
- Pillar 2 capital add-ons intended to be unusual

Solvency II still far from finalised and could still change significantly.