

## Solvency II update

CILA - 31<sup>st</sup> May 2007  
Steve Dixon

## Solvency II update: Agenda

- Quick recap on project and its aims
- Recent advice from CEIOPS
- QIS3 and why it matters
- Key issues to consider
- Planning ahead

## Solvency II: The aim

*"The European Commission, having consulted the Insurance and Occupational Pensions Committee (EIOPC), requests CEIOPS and other stakeholders to advise on the development of a new solvency system to be applied to life assurance, non-life insurance and reinsurance undertakings, which Member States and supervised institutions are able to apply in a robust, consistent and harmonised way."*

*"The solvency system aims at the protection of policyholders and beneficiaries."*

*"It should also improve the competitiveness of EU insurers and provide for a better allocation of capital resources, without causing significant market disruptions and impeding innovation in the insurance industry."*

"Amended Framework for Consultation on Solvency II"  
European Commission (April 2006)

## Some comments from Paul Sharma

- I would like to start by reiterating what I think Solvency 2 should achieve – namely – to create a regulatory environment which **incentivises and rewards insurance firms to use modern risk management practices** that are appropriate to the size and nature of their business.
- In one of the early Solvency 2 background reports which analysed insurance failures and near misses and which carries my name – the Sharma Report – we found that the main causes were clustered around the broad themes of **management quality and inappropriate risk decisions rather than inadequate capitalisation per se**. So, it is quite clear to me that all aspects of the framework – Pillars 1, 2 and 3 – should be geared towards improving and incentivising firms to use modern risk measurement and management techniques.
- Clearly, fostering robust risk management in insurance companies is only one of the building blocks for a successful prudential framework - protecting policyholders and maintaining market confidence also require adequate levels of capital. The focus of my Pillar 1 working group has been to flesh out what this should mean in practice - in essence - to create a **more risk-sensitive and risk-responsive capital requirement** that not only takes account of the risks on the liability side, but also on the asset side, and gives due credit to the use of risk mitigation techniques.

Speech by Paul Sharma to mutual sector conference,  
19<sup>th</sup> October 2006

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## FSA objectives for UK solvency supervision

- that each firm holds capital that is appropriate to its business and to the quality of the controls it applies in its risk management
- to emphasise the responsibility of a firm's senior management (including the Board) for ensuring that the firm has adequate financial resources
- to provide incentives for better risk management
- to enhance consumer protection and market confidence through a reduced, but not a zero, risk of failure

John Tiner speech – 9 November 2004

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## Solvency II: more background

- "Better Regulation" agenda leads to 4 goals:
  - Codification of currently 14 Insurance Directives into one Directive;
  - a Directive that is as principle based as possible, but still aiming at a high level of harmonisation through its implementing measures;
  - a Directive developed in transparency with stakeholders and based on a solid impact assessment; and
  - a Directive compatible with international developments.
- "At the same time, we see Solvency II as a **contribution to the emergence of a world-wide standard**. A large number of countries around the globe are looking with great interest at the EU developments. And our work is very much in line with the solvency standards being developed by the International Association of Insurance Supervisors. I take this opportunity to underline how much I value the gradual convergence of insurance regulations at international level. This is a long-term process but one that will bring tremendous benefits to insurers, policyholders around the world and the economy at large."
- "Solvency II should enhance this confidence [in the capacity of the industry to honour its commitments] by improving risk management and by setting capital requirements that are directly based on the level of risk taken. Within this new system, supervisors will have to co-operate more closely and independently. The possibilities for further integration of the insurance industry largely depend on this **supervisory convergence**. Solvency II is already having a positive effect on the way companies are being run. More emphasis is being put on **modern risk management**, and I am happy to see that."

Speech by Commissioner Charlie McCreevy, LIMRA  
Conference, Warsaw, 15 September 2006

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### What are the FSA's Solvency 2 objectives?

- Based on same principles as domestic reforms
  - 3 pillar framework
  - Risk management
- Market consistent valuation; risk-responsive capital requirements
- Encouragement of internal models
- Greater convergence requirements across Europe
- More stream-lined supervision of groups

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### Solvency 2: Three Pillar Framework

- Pillar 1: Asset and liability valuation standards; Minimum Capital Requirement; Solvency Capital requirement\*
- Pillar 2: Supervisory Review Process
- Pillar 3: enhanced public disclosure and confidential supervisory reporting

\* Can be calculated by internal model, subject to regulatory approval

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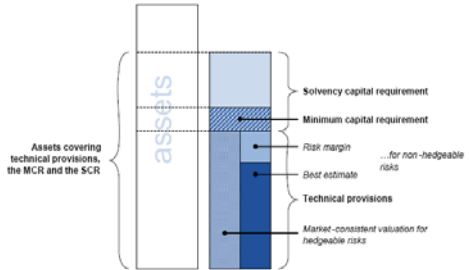
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### Solvency II: proposed Pillar 1

- "The overall objective of prudential regulation must be to ensure that an insurer maintains, at all times, financial resources which are adequate, both as to amount and quality, to ensure there is no significant risk that its liabilities cannot be met as they fall due." (CP20, 2.2)



  
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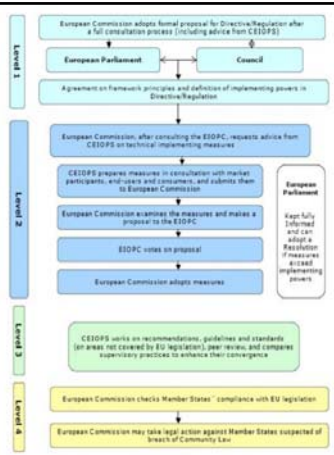
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## Lamfalussy Process

### CEIOPS version

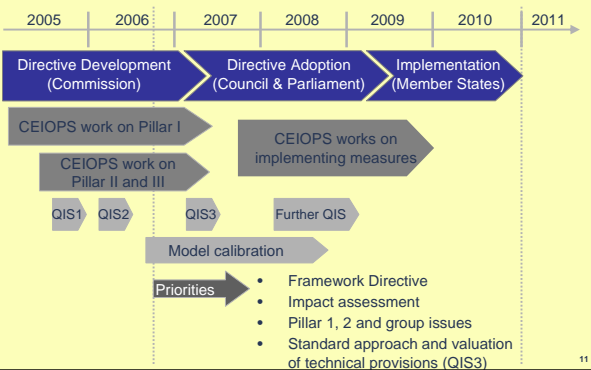
- Level 1 (Parliament)  
Framework Directive
- Level 2 (Commission)  
Implementing measures
- Level 3 (CEIOPS)  
Guidance, standards, peer review, convergence
- Level 4 (Commission)  
Compliance check of MSs



Groupe Consultatif – 29th Annual Meeting, Barcelona

GC Project

## Where are we?



## Recent advice from CEIOPS (March 07)

- Supervisory Reporting and Public Disclosure in the Framework of the Solvency II Project (CP15)
- Pillar II issues relevant for reinsurance (CP16)
- Pillar II capital add-ons for solo and group undertakings (CP17)
- Supervisory powers – further advice (CP18)
- Safety Measures (Limits on Assets) (CP19)
- Pillar I issues – further advice (CP20)

## Possible Pillar 3 disclosure

- **Business overview**
  - Would include any material changes in business and ownership structure that have taken place during the year. In particular:
    - Nature of the insurer's business and the external environment
    - Objectives and strategies
    - Performance
- **Governance**
  - Description of the main governance structures including specific key committees and roles. In particular:
    - Fit and Proper requirements
    - Statement from Board of the actual risk profile
- **Valuation bases used for solvency**
  - Key areas:
    - Technical provisions
    - Assets covering technical provisions and capital requirements
    - Other assets and liabilities

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## Possible Pillar 3 disclosure (contd)

- **Risk and capital management**
  - In particular:
    - Risk management - processes and controls
    - Capital management - eligible capital and quality of capital
- **Model/IRCA information (Internal Risk and Capital Assessment)**
  - Level of confidence and time horizon
  - Risks analysed
  - Valuation methodologies and key assumptions
  - Stress and scenario tests applied
  - Diversification assumptions and effects
  - Capital transferability/fungibility
  - Management actions
  - Comparison with the standard SCR
  - Process of validation of the IRCA or internal model
- Split between public and private to supervisor still to be agreed – e.g.
  - ORSA (Own Risk and Solvency Assessment) confidential
  - Solvency and Financial Condition Report public

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## Solvency II update: Agenda

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- **QIS3 and why it matters**
- Key issues to consider
- Planning ahead

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### Solvency 2: QIS 3 - scope

- **Technical Provisions:** market consistent/cost of capital
- **Available capital (Own Funds)**
- **MCR**
- **SCR**
- **Group Capital Requirements**

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### Solvency 2: QIS 3 – Why do it?

- **Influential on negotiations:**
  - Level 1 text
  - Ongoing development of implementing measures
- **A good way to get Solvency 2 on your Board agenda; springboard to plan for implementation**

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### Open issues that QIS 3 could influence

- **Level 1 Directive negotiations**
  - MCR
  - Own Funds
  - Group requirements
- **Development implementing measures**
  - Technical provisions
  - SCR (calibration, internal models)

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### QIS 3: What is the FSA doing?

- Workshops, in collaboration with trade associations
- Q+A
- QIS3@fsa.gov.uk
- SCR Calibration/internal models

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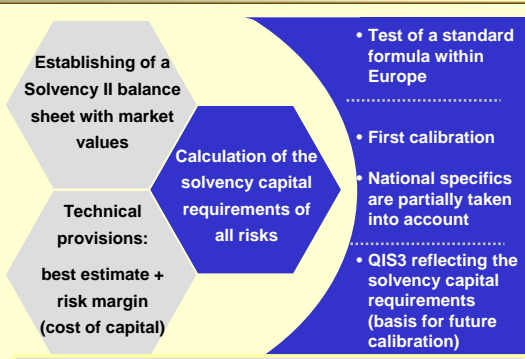
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### Third Quantitative Impact Study (QIS3)



The diagram illustrates the QIS3 process flow. It starts with 'Establishing of a Solvency II balance sheet with market values' and 'Technical provisions: best estimate + risk margin (cost of capital)'. These lead to the 'Calculation of the solvency capital requirements of all risks'. This calculation is based on three main points: 'Test of a standard formula within Europe', 'First calibration', and 'National specifics are partially taken into account'. The final output is 'QIS3 reflecting the solvency capital requirements (basis for future calibration)'. A footer note states: 'Analysis of QIS3 results by National supervisors in autumn 2007'.

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### QIS3

- Groupe Consultatif involved in the technical preparation of QIS3
- Main difficulties (experience from QIS2):
  - Level of needed technical knowledge too high for smaller companies / countries
  - Data availability
  - No translation for many member states

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## SCR – Objective

- The SCR should deliver a level of capital that enables an insurance undertaking to absorb significant unforeseen losses and gives **reasonable assurance to policyholders** that payments will be made as they fall due.
- It should reflect the amount of capital required to meet all obligations over a **specified time horizon to a defined confidence level**. In doing so, the SCR should limit the risk that the level of available capital deteriorates to an unacceptable level at any time during the specified time horizon.
- The SCR should take into account **all significant, quantifiable risks** (CfA 10.121).
- Even if the capital covering the SCR has been used up at some time during the specified time horizon, the **risk margin in technical provisions** should ensure that the portfolio could still be transferred to a third party (CfA 10.125).

Source: CP20 final advice, 2.21

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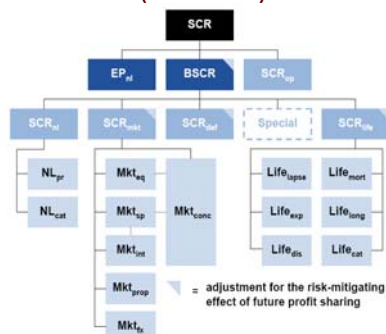
## SCR – Definition

- It is important to have a **consistent** solvency standard so that there is equivalence in the minimum level of security expected from insurers.
- Therefore, the definition of the SCR needs to be detailed enough to achieve **materially-consistent results** in the calculation of the SCR across undertakings.
- To achieve this, the definition needs to specify a number of key aspects for the quantification of solvency capital...
  - The choice of the **risk measure**;
  - The choice of the **confidence level**;
  - The choice of the **time horizon** of the solvency assessment;
  - the **definition of ruin**, and
  - the **valuation of assets and liabilities** underlying the calculation of the SCR
- Specifying these aspects of the SCR provides a common basis for the calculation of the SCR, either by the standard formula by partial internal models or by full internal models. This should provide comparability of SCR calculations across different insurers, and between the standard formula and internal models.

Source: CP20 final advice, 2.23

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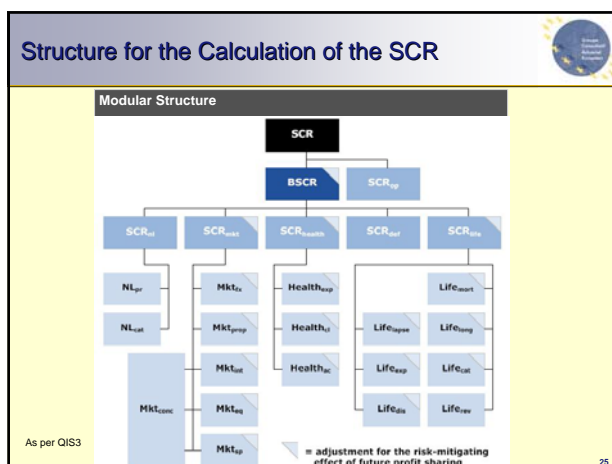
## SCR structure (in CP20)



Source: CEIOPS CP20.5.46

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### Ratio of Internal Model figures to SCR Placeholder

FSA

	Minimum	Median	Maximum
<b>Total</b>	<b>16%</b>	<b>63%</b>	<b>216%</b>
<b>Market risk</b>	<b>13%</b>	<b>85%</b>	<b>305%</b>
<b>Credit risk</b>	<b>21%</b>	<b>142%</b>	<b>1023%</b>
<b>Life u/w placeholder</b>	<b>246%</b>	<b>335%</b>	<b>1113%</b>
<b>Life u/w scenario</b>	<b>70%</b>	<b>139%</b>	<b>208%</b>
<b>Non-life u/w risk</b>	<b>16%</b>	<b>54%</b>	<b>130%</b>
<b>Operational risk</b>	<b>16%</b>	<b>121%</b>	<b>514%</b>

QIS 2 - UK results

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### QIS3 – changes since QIS2

- Scenarios agreed as standard approach for market & insurance risks
- Margin for non-hedgeable risk is on a cost-of-capital basis
- Key correlation factors have been reduced
- Equity shock has been reduced (from 40% to 32%)
- Revised approach to risk-absorbency in with-profits business
- “Size” factors have been removed
- Can exclude free capital from SCR calculations
- Submission segregated into more business lines

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### QIS3 – aggregation and correlation

- Key correlation factors have been reduced:
  - Equity/FI – down from .75 to 0
  - Equity/Property – down from 1 to .75
  - FI/Property – down from .75 to .5
  - Market/Credit – down from .75 to .25
- Operational risk has been moved up a level in the SCR structure
  - so no longer any diversification with other risks

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### QIS3 – calibration issues

- Longevity risk calibration appears harsh
  - immediate 25% reduction in all q
- Main persistency scenario is practically difficult
  - requires policy level consideration of shock direction
- New lapse catastrophe scenario appears harsh
  - immediate 75% lapse on all UL business
- Credit spread allowance attempts to combine spread widening and default/transition risk
- Market concentration risk may be too complex
- Operational risk calculation improved, but may still be too simplistic for some types of business
- Cost-of-too-much-capital margin
  - cost of SCR at product grouping level rather than entity

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### QIS3 – own funds

- Definitions for eligible capital tiers will be tested for first time
  - MCR must be backed by tier 1 and tier 2 capital
  - SCR may be backed by a mix of tiers 1, 2 and 3
- See QIS3 spec, section I.2
- Classification of certain elements (e.g. contingent support for subsidiaries) is giving rise to some debate
  - cf recent correspondence from CRO Forum and others

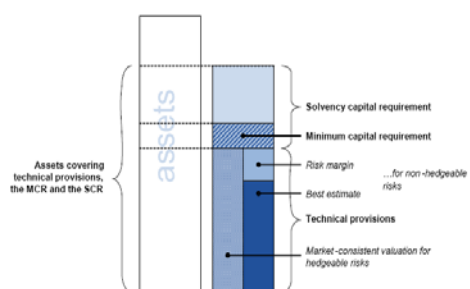
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## Solvency II – Minimum Capital Requirement

- EC design priorities (restated in CfA 9) are for a “simple and straightforward calculation” with “robustness” and “objectivity”
  - calibrated to a 90%ile 1-year VaR (Commission letter to CEIOPS in February 2007)
- QIS3 tests two modular approaches (see QIS3 spec, II.4.7-8):
  - “Alternative 1 is a simple factor-based approach based on asset-side volume measures. Alternative 2 is a more sophisticated factor-based approach, taking into account also the liability-side and durations.”
  - “The two alternatives are tested on an equal footing, without specifying a placeholder. Testing results will assist CEIOPS’ assessment of the two approaches and the eventual choice between them.”
- Risk-mitigating effect of with-profits business is allowed for in both approaches, but it is not clear how well this will work
- Alternative “compact approach” proposal is to set MCR equal to 33% of last SCR is included in QIS3 as “additional information”

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## Solvency II: Pillar 1



Source: CEIOPS CP20, 2.2

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## Solvency II - Groups issues

- Concept of “lead supervisor” is widely accepted, but differences of view exist on powers relative to local supervisors and on allowance for diversification
  - cf HMT paper of last year
- QIS3 will test a proposal that each sub must hold:
  - $MCR + 50\% * (Solo\ SCR - MCR)$
- A Commission proposal that group support must be backed by an external 3rd party guarantee is being strongly opposed by CEA and others
- Final outcome still awaited!

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## Solvency II: definition of “hedgeable”

- If a liability can be perfectly hedged or replicated on a **sufficient deep, liquid and transparent market**, the hedge or the replicating portfolio provides a directly observable price (mark-to-market).
- Deep, liquid and transparent markets are defined as markets where participants can **rapidly execute large-volume transactions with little impact on prices**.
- For non-hedgeable liabilities the valuation should correspond to the **explicit sum of a best estimate plus a risk margin**, the latter being determined according to a cost-of-capital (CoC) approach. However, for long-tailed non-life business alternative methods are envisaged.

(2.11-2.13 QIS3 pre-test specification Feb 2007)

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## Solvency II: definition of “hedgeable”

- If a liability can be perfectly hedged or replicated on a sufficient deep, liquid and transparent market, the hedge or the replicating portfolio provides a directly observable price (mark-to-market). **Reasonable inter/extrapolations from directly observable prices are also permitted.**

(I.1.12 final QIS3 spec April 2007)

- .... In practise perfect hedges are expected to be relatively rare.
- Even if it would be desirable, the values of hedgeable and non-hedgeable risks might not be separable under all circumstances.

(II.1.3-4 final QIS3 spec)

Q Is UK with-profits business hedgeable or non-hedgeable?

A We believe that a realistic balance sheet/ICA approach may be applied for with-profit business, but with an additional risk margin for underwriting, reinsurance counterparty, and operational risks. A combined figure for the provisions on each line of business may then be given, where a split between hedgeable and non-hedgeable risks is not appropriate. (FSA QIS3 FAQ)

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## Solvency II – presentation of with-profits

- Realistic solvency reporting in UK considers with-profits liabilities as an asset share underpinned by a guaranteed value at maturity/death
  - ie liability = asset share + call option
- Solvency II considers with-profits liabilities as a guaranteed amount plus potential for future discretionary bonus
  - ie liability = guaranteed amount + put option
- QIS3 approach to the risk-absorbency of with-profits business is not straightforward to apply in models designed for existing UK reporting framework

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## Solvency II – “net” and “gross” WP liabilities

- QIS3 requires each SCR scenario to be applied to with-profits business on two different bases:
  - “Net” runs in which projected future RB, TB and other management actions allow for the impact of the shock scenario; and
  - “Gross” runs in which projected RB and TB are applied at pre-stress levels in post-stress conditions
- The difference between the “gross” and “net” capital requirements for a scenario is the “**reduction for profit sharing**” for that scenario.
- QIS3 spec is unclear on the extent to which (other) management actions should be “turned off” in a gross run (cf I.1.84 v I.3.21)
- Gross runs are practically difficult with existing UK models:
  - eg TB usually varies for each model point at each future timepoint in each stochastic simulation in a stochastic valuation
  - It remains to be seen whether firms are able to take TB rates from each pre-stress run and feed back into corresponding “gross” post-stress run

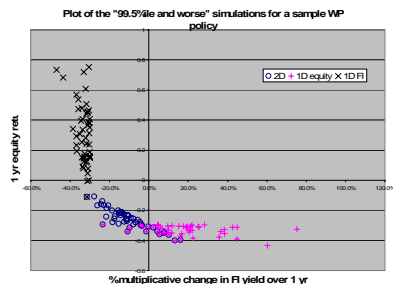
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## Solvency II – aggregating the SCR for WP

- QIS3 requires firms to
  - aggregate the “gross” requirements using correlation matrices to get “gross SCR”
  - aggregate the reductions for profit sharing using the same correlation matrices to get an “aggregate RPS”
  - $Net\ SCR = Gross\ SCR - min(agg\ RPS, TP\ future\ discretion)$
  - where *TP future discretion* is that part of the technical provisions which relates to future discretionary benefits
- The definition of TP(future discretion) could be critical for UK firms
- Correlating the effect of management actions was never going to be straightforward!

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## Correlation issues – purely illustrative



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## Solvency II - Internal models

### Supervisory objectives (CP20 final advice)

- **better risk management**, which also improves policyholder protection (CfA 11.4),
- continual upgrading and encouragement of **innovation in risk management methodology** (CfA 11.2 and 11.4) and
- **improved risk sensitivity** of the SCR, especially for undertakings with non-standard risk profiles (CfA 11.2-11.3).

Cf Paul Sharma's comments

- incentivises and rewards insurance firms to use modern risk management practices
- management quality and inappropriate risk decisions rather than inadequate capitalisation per se
- more risk-sensitive and risk-responsive capital requirement

Source: CP20 final advice, 6.5

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## Solvency II - Internal models

### Conceptual framework

- Base methodology / 'actuarial model':
  - **Statistical quality test**
  - Are the data and methodology underlying both internal and regulatory applications sound and sufficiently reliable to support both satisfactorily?
- Internal risk management:
  - **Use test**
  - Is the actuarial model genuinely relevant for and used within risk management?
- Regulatory capital requirement:
  - **Calibration test**
  - Is the SCR computed by the undertaking a fair, unbiased estimate of the risk as measured by the common SCR target criterion?
- The combination of the actuarial model and the risk management function built on top of it is called the **'internal model in a wider, risk management sense'** (CfA 11.14).

Source: CP20 final advice, 6.7 and 6.11

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## Solvency II - Internal models

### Statistical quality test

- The insurance undertaking shall have a **regular cycle of model validation** that includes monitoring the performance of the actuarial model, reviewing the on-going appropriateness of its specification, and testing its forecasts against outcomes ('back-testing').
- As a general rule, the evaluation of forecast performance should be based on the statistical methodology for the evaluation of the quality of distributional forecasts. This means that the model is tested not only against losses that exceed a high threshold, but against all losses. The QQ plot is a one of the more powerful tools that **compare predicted and realized losses**. This kind of back-testing the whole distribution shall be performed up to the highest level of aggregation where it is still practically feasible.
- The frequency and type of loss data across the insurance industry is so diverse that no specific back-testing methodology can be optimal in all cases. However, **back-testing the 80%-TailVaR or the 90%-VaR of losses occurring over a suitably chosen time interval** is likely to be a useful tool across a variety of risk classes and business lines. It requires the comparison of the predicted and the realized average of all losses beyond the 5-year-event in the first case and the comparison of the predicted and realized 10-year-event in the second case.

Source: CP20 final advice, 6.69-71

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## Solvency II: more key issues

- Principles-based or prescription?
  - "Prudent person plus"
- Ensuring consistency of regulatory discretion
  - internal model approval process
- Alignment with IASB
  - "prudential filters"
- Ensuring "small company voice" is heard
- Should actuaries have reserved roles under Solvency 2?

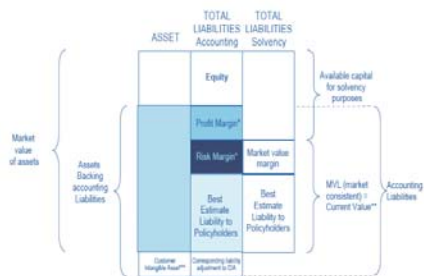
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## Solvency II: planning ahead

- Importance of following the debate:
  - Groupe Consultatif Newsletters ([www.gcactuaries.org/solvency.html](http://www.gcactuaries.org/solvency.html))
- Engage as appropriate:
  - FSA, HMT, ABI, AISAM & ACME, Groupe Consultatif (Seamus Creedon), Life Board working group (David Hare)
- Take part in QIS3
- Start thinking through the consequences for your firm of what is being proposed, particularly regarding:
  - Standard formula SCR
  - Internal models (and partial models)
  - Pillar 2 (and the IRCA / ORSA)
  - Disclosure

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## A coherent framework?



Source: CEA, CFO Forum and CRO Forum (2006)

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