Discussion Agenda

1. Health & Care under Solvency II
2. Internal Models – best practice
Health underwriting risk module
– target and key issues

- Target – each healthcare risk must be treated appropriately and it must be clear where it falls within the standard formula
- Key issues:
  - Diversity of healthcare insurance/provision across the EU Member States
  - Healthcare insurance varies depending on whether there is a developed State healthcare system

Difficult to develop a standard formula that works for all Member States

Health underwriting risk module
- key consultations

- March 2008 – QIS4
- July 2008 – questionnaire on “health treatment” to European supervisors
- February 2009 – proposal on how to define health lines of business and the SCR health underwriting module
- July 2009 - CP50 (part of 2nd wave of CP’s); SCR standard formula - health underwriting risk module
- September 2009 – CEIOPS Catastrophe Task Force 1st meeting

Health underwriting risk module
- key consultations (continued)

- November 2009 - CP72 (part of 3rd wave of CP’s); SCR standard formula – further advice on health underwriting risk module
- January 2010 – CEIOPS announces further calibration is required
- 8 April 2010 – CEIOPS’ final advice on Level 2 Implementing Measures (including health calibrations)
- 15 April 2010 – European Commission released draft technical specification for QIS5 and various calibration papers
Solvency Capital Requirement (SCR) – standard formula

\[ \text{SCR} = \text{BSCR} - \text{Adj} + \text{SCR}_{\text{op}} \]

- SCR = adjustment for the risk mitigating effect of future profit sharing

\[ \text{SCR}_{\text{BSCR}} \]

\[ \text{SCR}_{\text{op}} \]

\[ \text{SCR}_{\text{Adj}} \]

\[ \text{SCR}_{\text{life}} \]

\[ \text{SCR}_{\text{nl}} \]

\[ \text{SCR}_{\text{mkt}} \]

\[ \text{SCR}_{\text{def}} \]

\[ \text{SCR}_{\text{health}} \]

\[ \text{Adj} = \text{adjustment for the risk mitigating effect of future profit sharing} \]

QIS4, March 2008

NLpr

NLcat

MKTeq

MKTsp

MKTint

MKTprop

MKTfx

MKTconc

Lifelapse

Lifeexp

Lifedis

Lifemort

Lifelong

Lifecat

HealthLT

HealthST

HealthWC

Liferev

CP50 - SCR health underwriting risk module

CP50 –SCR health underwriting risk module (1)

- A lack of common understanding as to what exactly health insurance is
- Scope of "health insurance" is defined differently in the Member states
- Further guidance given on:
  - Classification of specific insurance products
  - Split between "SLT Health" (e.g. income protection) and "Non-SLT Health" (e.g. private medical insurance).

Should help to have a common understanding on the classification of health insurance and where it should be included in the SCR.
CP50 – SCR health underwriting risk module (2)

- Health CAT risk now in health module using “non-life CAT risk module methodologies”
- Risk drivers of the SLT health to be developed consistently with life underwriting risk module (except for CAT risk):
  - Calibration of stresses same as for life, although suggest separate stress tests for CI, IP and LTC to reflect different nature of the underlying risk
  - Recovery rates are now explicitly stressed
- Allowance for premium adjustment mechanisms in stressed scenarios unclear

Some improvements, but difficulty in setting a standard formula that allows for the diversity of healthcare products across Member states

CEIOPS - Catastrophe task force

- Terms of reference – develop standardised catastrophe scenarios* that adhere to the goals of a “1 in 200” event and harmony across Member states
- Membership – mainly non-life reinsurers (across the EU) plus representatives from the UK AP Health & Care Solvency II WP
- Initially non-life and health combined, but eventually split the task force
- First meeting – held on 11 September in Frankfurt
- Deadline – June 2010 (to be ready for QIS5)

* Health catastrophe scenarios matrix (initial draft):
  - Line of business (split SLT and NSLT)
  - Pan European or local event
  - Varies between countries with and without developed national healthcare systems

CP72 – further advice on SCR health underwriting risk (1)

- Health SLT – no significant changes from CP50
- Health non-SLT – calibration based on a broader sample than QIS4 calibration using data from six member states. Proposed factors for premium and reserve risk sub modules (for accident, sickness and worker's compensation) increased relative to QIS4 on average 34%
- No health specific correlations; however, CEIOPS does suggest that data is collected in the future to support the revision of these factors as appropriate
- Calibration of catastrophe risk – will be provided in June 2010 as output from the CEIOPS Task Force on catastrophe risk which includes health and non-life
- CEIOPS comment that there are limitations to the calibrations, largely due to the lack of data, and are based on the profile of a representative undertaking and that undertakings that consider such parameters to be inappropriate may apply for the approval of a partial internal model or make use of undertaking specific parameters.
CP72 – further advice on SCR health underwriting risk (2)

- Health SLT:
  - Disability - morbidity risk for income insurance stress retains one stress for all products, potentially too high for IP, too low for CI. Further analysis/justification is needed.
  - Further clarification on the scope of health revision risk is required as this is still not fully understood.
- Health non-SLT:
  - Option 3 chosen from CP50 for premium and reserve risk, which we are comfortable with
  - The calibration of premium/reserve risk is based on just six Member states data. Is it representative of all Member states? Why were those Member states chosen? Concern that the proposed increases would result on average in an increase of 34% on the premium and reserve risk sub module (as per CP72 3.8).

Health underwriting risk module - leading to QIS5

- January 2010 – further calibration required
- 8 April 2010 – final advice on Level 2 Implementing Measures
- 15 April 2010 – draft QIS5 released

Solvency Capital Requirement: The standard formula

- Adjustment for the risk mitigating effect of future profit sharing
Summary of non-SLT health underwriting risk sub-module – development of premium factors

<table>
<thead>
<tr>
<th>Line of business</th>
<th>QIS4</th>
<th>CP50 option 3</th>
<th>CP72 original</th>
<th>CP72 revised</th>
<th>QIS5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accident</td>
<td>5%</td>
<td>5%</td>
<td>10%</td>
<td>12.5% x NGR</td>
<td>9% x NGR</td>
</tr>
<tr>
<td>Sickness</td>
<td>3%</td>
<td>3%</td>
<td>7.5%</td>
<td>9.5% x NGR</td>
<td>6% x NGR</td>
</tr>
<tr>
<td>Workers compensation</td>
<td>7%</td>
<td>7%</td>
<td>10%</td>
<td>5.5% x NGR</td>
<td>5.5% x NGR</td>
</tr>
</tbody>
</table>

NGR – net-gross ratio

Summary of non-SLT health underwriting risk sub-module – development of reserve factors

<table>
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<th>QIS5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accident</td>
<td>15%</td>
<td>15%</td>
<td>17.5%</td>
<td>17.5%</td>
<td>16%</td>
</tr>
<tr>
<td>Sickness</td>
<td>7.5%</td>
<td>7.5%</td>
<td>12.5%</td>
<td>12.5%</td>
<td>10%</td>
</tr>
<tr>
<td>Workers compensation</td>
<td>10%</td>
<td>10%</td>
<td>12.5%</td>
<td>12%</td>
<td>11%</td>
</tr>
</tbody>
</table>

Health catastrophe risk

- Standardised catastrophe scenarios:
  - Arena disaster
  - Concentration
  - Pandemic
- Not split between SLT and non-SLT
- Open for consultation
Health task force  
– set up by the European Commission

• Purpose – to review the modelling on NonSLT health business (eg short-term business such as PMI)
• Reason – consensus among stakeholders and supervisors that further technical work is needed on the NonSLT health underwriting sub-risk module to arrive at an appropriate standard formula
• Membership – composed of representatives from the insurance and reinsurance industry, actuaries and supervisors. The following stakeholder associations to be represented by one member:
  - CEA
  - AMICE
  - CRO Forum/CFO Forum
  - Groupe Consultatif
  - CEIOPS
• Meetings - first meeting 22 April; work to be concluded by end of May

Internal Models – best practice

Tamsin Abbey  
Deloitte

What are Internal Models?

Relevancy to Solvency II

Internal model risk and capital management frameworks are core to Solvency II. The first pillar defines how models work, which when combined with the qualitative risk information (ORSA) in pillar 2 is used for disclosure under pillar 3.

A capital model is a mathematical model which forms part of, and is central to, the whole risk and capital management framework. This model enables the insurer to analyse the risk position, quantify risks and determine capital requirements.

An internal model not only includes the capital model but also the risk management framework and system of governance.

Role in Solvency II
Internal models under Solvency II

Overall framework

An internal model is a risk and capital management framework that not only includes the calculation engine to quantify capital requirements, referred to as the 'capital model', but also aspects of the risk management framework and system of governance.

How is Solvency Calculated?

Inputs, processes and outputs

SCR Approaches – Overall Methodology

Firms must determine the SCR by using appropriate methods chosen from the following list, taking into account nature, scale and complexity of the risks:

- Full internal model
- Standard formula
- Standard formula and partial internal model
- Standard formula with undertaking-specific parameters
- Simplifications

Firms should be able to explain what methods are used and why the specific methods are selected.

To decide whether the standard calculation or a simplified calculation could be considered proportionate to the underlying risks, firms should use the following steps:

- Assess the nature, scale and complexity of the risks.
- Assess the model error that results from the use of a given simplification, having regard to the nature, scale and complexity of the underlying risks. The simplification should be regarded as proportionate to...
SCR Approaches – Partial Internal Model

Article 112(2) of the Level 1 Text allows firms to use a partial model for the SCR of certain risks or part of their business.

Scope of partial models is flexible:
- One or more risk modules, or sub-modules
- Different risk categorisations or risks not covered by standard formula
- Whole business or only one or more major business units

Approval process is required for partial model:
- Requirements of Articles 120-125 for internal models (adapted)
- Justification for the limited scope, for example:
  - Transitory step
  - Lack of reliable information
  - Proportionality
  - Merger and acquisitions
  - Better reflection of the risk profile
  - Design consistent with SCR principles

Integration with standard formula could present challenges. Prescribed steps within Level 2 guidance around integration:

Step 1: The standard formula correlation matrix shall be used whenever:
- Feasibility test: It is possible to integrate the partial model this way
- Appropriateness test: No strong evidence that it is inappropriate

Step 2: Next alternative - choose from CEIOPS list of techniques (to be defined in Level 3).
- Initial review to identify shortlist
- In depth review of shortlisted techniques

Step 3: If none of the Level 3 techniques is both feasible and appropriate, then develop own techniques (subject to supervisory approval)

Step 4: If not approved then supervisory authority will impose an integration technique

How will internal models be approved?

Internal model tests

Demonstrate that the internal model is practical, robust and implemented so that it conforms to the principles of risk management systems and actuaries and Economic Capital requirements

Demonstrate that material internal risk models have been validated and that the validation procedure is regularly reviewed and updated (by way of review and testing of the model)

Demonstrate that the internal model has a significant impact on the capital and capital adequacy of the firm and that it is used to determine the level of protection required for the firm

Demonstrate that the causes and sources of profit and losses for each major business unit are reviewed at least annually and verify how categorisation of risks chosen explains the causes of profits and losses

Demonstrate that there is a regular cycle of model validation that includes monitoring performance, appropriateness of specification and back testing against actual observations

Demonstrate that the design and operational details of the internal model are sufficiently detailed and comprehensive to provide a detailed outline of how the model is implemented and used in practice, and the circumstances under which the model does not work effectively
The documentation standard

Objectives

- Give confidence to supervisors of appropriateness and reliability of the internal model
- Give confidence to the Board that the model upon which it is basing its business decisions is sound
- Mitigate key person risk
- In particular:
  - Documentation should be sufficiently detailed to allow a knowledgeable independent third party to be able to understand the reasoning, design and operational details of the internal model and to be able to judge its reliability and appropriateness and whether it complies with the requirements of the other 5 standards
  - In addition it should be detailed and comprehensive enough that the knowledgeable third party could in principle construct an independent model producing consistent results given the same data and parameters

Solvency II: Covering all angles

Documentation

General considerations

- It should be thorough, sufficiently detailed and sufficiently complete to satisfy the criterion that an independent knowledgeable third party could form a sound judgement as to:
  - the reliability of the internal model
  - compliance with the 6 tests
  - could understand the reasoning and the underlying design and operational details of the internal model
- Be timely and up to date
- Describe the drawbacks and weaknesses of the model (both design and operational details) including when it does not work effectively and possible implications of any lack of compliance with Articles 118-124. The Board need to demonstrate awareness of these issues when making decisions
- Granularity of the documentation should take into account the level in the organisation it is intended to be used
- Include evidence that all levels of management understand the relevant areas of the internal model
- Have an index of all relevant documents and where and how they can be accessed
- Document any changes in the internal model and rationale for changes – good version control
- Documentation of compliance with Articles 115-122 shall verify how the different requirements have been taken into account and how they have been fulfilled

Use Test Embedding

The internal model needs to be used in a number of areas to pass the use test. It will be important to have policies and processes in place to ensure that these form part of the business as usual of the firm:
- Reserving and regulatory capital
- External relations
- Risk transfer strategy
- Investment strategy
- Risk management
- Capital management
- Strategic decisions and business performance
- Mergers and acquisitions
- Product development
- Remuneration policy
Questions or comments?

Expressions of individual views by members of The Actuarial Profession and its staff are encouraged. The views expressed in this presentation are those of the presenters.