Good, Better, Best Practice:

A look at how actuaries are meeting today’s challenges with respect to ICA, EV and Regulatory Reporting

John Jenkins and Clayton Balkind
e-Survey:

Background
Background

- Information on assumptions and results are readily available in public. But there is comparatively little information available on the actuarial methodologies used.

- Earlier this year KPMG carried out a series of three e-surveys to benchmark common industry practices used in ICA, EV and FSA regulatory reporting calculations.

- The survey was addressed to all 70 life offices with an internal actuarial function.

- The responses we received have been wide-ranging, significant and representative of the UK market. Total responses for each part of the survey were:
  - ICA: 27
  - EV: 20
  - Regulatory reporting: 28
List of participants

Abbey National
ALICO (UK Branch)
Aviva
BUPA Health Assurance
Clerical Medical Investment Group
Chesnara
Engage Mutual Assurance
Equitable Life Assurance Society
Friends Provident
GE Pensions
GenRe Life-Health UK
Hannover Life Re (UK)
HSBC Life
Irish Life & Permanent
Legal & General Assurance Society
Marks & Spencer Life Assurance
MGM Assurance
Nationwide Life
Prudential
Reliance Mutual Insurance Society
Resolution
Revisos
RGA UK
Royal Liver Assurance
Royal London Mutual Insurance Society
Scottish Friendly Assurance Society
Scottish Legal Life
Scottish Widows
St. James’s Place
Standard Life
Swiss Re Life and Health UK
Threadneedle
The Co-operative Insurance Society
Unum
Wesleyan Assurance Society
Windsor Life Assurance Company
Winterthur
XL Re
A note on the interpretation of results

- Best practice is a term used to describe an ideal way in which things could be done so that they comply with the relevant legislation, regulations, standards, guidance and principles of corporate governance. Rather than use the word “best” we would say that the report reflects the current state of market practice.

- The information contained in this report is of a general nature and it is not intended to address the circumstances of any particular individual or entity. Although we have tried to provide timely and accurate information we cannot guarantee that this information was accurate at the date it was received or that it will continue to be accurate in the future. No one should act on any information contained in this report without appropriate professional advice and a thorough examination of their particular situation.
ICA practices
ICA highlights

- Fundamental approach
- Market risk
- Insurance risk
- Operational risk
- Aggregation of risk
- Some other interesting bits
Fundamental approach

- Basis of calculation

Approach to calculating best estimate liabilities

- Using published realistic balance sheet: 10
- Using specially created realistic balance sheet: 11
- Other: 6
Fundamental approach

- Stress testing

**Application of ICA stress tests**

- Time zero stress tests to a realistic balance sheet
- Using a projection over 1 year
- Using a run-off approach with no solvency testing over the projection period
- No response
Market risk

- Equity stresses

Rise or fall in equity market values considered

Number of responses

- 0% - 15%
- 15% - 30%
- 30% - 45%
- 45% - 55%
- over 55%
Market risk

- Interest rate shifts

![Graph showing up and down shift applied to yield curve](image)

- Number of responses
  - < 0.5%
  - 0.5% - 1.0%
  - 1.0% - 1.5%
  - 1.5% - 2.0%
  - 2.0% - 2.5%
  - > 2.5%
Market risk

- Correlations

Correlation between equity values and fixed interest yields
Insurance risk

- Basis for stress tests

Source of mortality and persistency stress test data

Number of responses

- Own data and judgement
- External consultants
- Industry bodies
- Reinsurer data

Mortality
Persistency
Operational risk

- New challenge for actuaries and life offices
- 63% of companies feel that their OR models are less developed than their overall ICA
- Typical approach is to use a 3-stage process:
  - Define operational risk
  - Identify operational risk exposures
  - Quantify operational risk capital
Operational risk

- Definition of operational risk

![Pie chart showing operational risk categories]

- Only pure operational risks: 19
- No attempt to separate overlapping exposures: 3
- Other: 6
Operational risk

- Most common operational risk events modelled

<table>
<thead>
<tr>
<th>Operational risk type</th>
<th>Protection</th>
<th>Reinsurance</th>
<th>Unit-linked</th>
<th>With-profit</th>
<th>Other</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems and technology risks</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>13</td>
<td>2</td>
<td>27</td>
</tr>
<tr>
<td>Management of employees</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>13</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>Business continuity</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>12</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>Legal risks</td>
<td>3</td>
<td>6</td>
<td>2</td>
<td>11</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>Breach of underwriting guidelines</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>Reputational risk</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>8</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Difficulty in recruiting qualified staff</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>7</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Marketing and distribution risks</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>10</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Pensions scheme deficits</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>
Aggregation of risk

- 48% of respondents use the root sum of squares method to aggregate capital across risk exposures

- Evidence of a two-tier approach to applying correlations and determining the reported diversification benefit
Some other interesting bits

- **Other liabilities in the ICA**
  - 70% pension scheme
  - 25% service company costs
  - 19% bond repayments
  - 11% dividend payments

- **Use of ICA in new business pricing**
  - 74% of respondents do not use their ICA in profit testing

- **Publication of ICA / ICG**
  - 100% had not published their ICA
  - 52% not prepared to publish ICA / ICG
EV practices

As not all participants responded to every section all percentages included in the following slides are based on those that responded to the applicable section.
EV highlights

- Importance
- Basis of calculations
- Required capital
- Discount rates
- Options and guarantees
- Some other interesting bits
Importance of EV results

![Bar chart showing the number of responses regarding the importance of EV results compared to IFRS.](chart.png)
Basis of calculation

Overall EV methodology

- Real world, no reference to market consistency: 7
- Market consistent, direct calculation: 5
- Market consistent via real world assumptions with an appropriate RDR: 6
- Other: 2
Required capital

Basis for EV required capital

- Based on FSA capital requirements: 9
- Based on Group targets: 2
- Based on internal targets: 2
- Based on rating agency requirements: 1
- Some combination of the above: 2
- Other: 2
Required capital

Level of required capital (as a proportion of pillar 1)

Number of responses

0 1 2 3 4 5 6

100% 125% 150% Other Don't use Pillar 1

The Actuarial Profession
making financial sense of the future
Discount rates

- Real world

Method used to set real world RDR

- Top down - using a WACC approach
- Top down - other
- Bottom up - using a RFR plus equity risk premium approach
- Bottom up - using a RDR obtained by equating to a MCEV
Discount rates

- Market consistent
  - 77% calibrate to gilt yield curve
  - Only 15% calibrate to the swap curve
  - 75% of these companies make an adjustment for non-market risk
Options and guarantees

- Valuation method

![Bar chart showing the number of responses for different valuation methods. The chart includes:
- Simulation - real world model: 3 responses
- Simulation - market consistent model: 6 responses
- Deterministic model using closed form solutions: 3 responses
- Other: 1 response]
Some other interesting bits

- **New business**
  - Historically this has been considered an area where practice varies widely
  - We found that:
    - 71% of companies value new business at the year end rather than the point of sale
    - 63% of companies use their closing EV basis
    - 94% of companies use average cost expenses

- **Analysis of EV profit**
  - We found that:
    - 55% do a fairly detailed analysis using a series of valuation runs
    - 25% do a fairly detailed analysis but rely on some approximations
    - 15% do a high level analysis only
    - 5% do no analysis at all
Regulatory reporting practices
Regulatory reporting highlights

- Realistic reserving for non-profit business
- Hypothecation of assets
- Deductions from asset shares
- Checks on ESG calibrations
- Analysis of surplus
Realistic reserving for non-profit business

- 65% of respondents are planning to adopt a realistic reserving approach in time for the year end

- The chief deterrents are:
  - Clarity over proposals
  - Short timescales
  - Tax implications
Hypothecation of assets

Objective of asset hypothecation

Number of responses

- No hypothecation
- To minimise realistic liabilities
- To minimise capital requirements

Mathematical reserves
Resilience stress test
Hypothecation of assets

Detail used in asset hypothecation

<table>
<thead>
<tr>
<th>Number of responses</th>
<th>No hypothecation</th>
<th>High level work</th>
<th>Detailed work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematic reserves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resilience stress test</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Actuarial Profession
making financial sense of the future
## Deductions from asset shares

<table>
<thead>
<tr>
<th>Deductions</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Claims</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>11 of 12</td>
</tr>
<tr>
<td>Commission</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>11 of 12</td>
</tr>
<tr>
<td>Expenses</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>11 of 12</td>
</tr>
<tr>
<td>Guarantee charges</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>9 of 12</td>
</tr>
<tr>
<td>Policy charges</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>8 of 12</td>
</tr>
<tr>
<td>Policyholder tax</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>12 of 12</td>
</tr>
<tr>
<td>Tax on shareholder transfers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0 of 12</td>
</tr>
</tbody>
</table>
Checks on ESG calibrations

- 1=1 test
- Randomness of number generator
- Reproduces the yield curve
- Compare results with market prices
- Check sampling errors

Number of responses
Analysis of surplus

- Comparison of work done on Peak 1 and Peak 2
Wrap up
Wrap up

- We hope that this has been informative

- It is intended that this will be an annual survey project to help the industry benchmark and track best practice

- If you would like a copy or have any suggestions for areas that should be included in future exercises please let us know

- We would like to thank all those that took part in our survey for their time and effort

- We look forward to working with you in the future
If you would like further information on our Technical Practices Survey or a copy of the detailed report please contact:

John Jenkins
John.A.Jenkins@kpmg.co.uk
020 7311 6199

Clayton Balkind
Clayton.Balkind@kpmg.co.uk
020 7311 5964

or your usual KPMG contact.