Investors’ Day – Reserves workshop
Zurich, 4 April 2018
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Swiss Re’s reserving approach ensures transparent assessment of insurance liabilities

**Principles for Reserving**

- Based on all latest, relevant information
- Enable a consistent, global view across the Group
- Ensure we understand the uncertainties and risks to the reserves
- Not to build buffers or under-reserve
- Not to manage results, or perform “step-reserving”
- Not to manage capital or create an effective statutory “equalisation reserve” where not required

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**US GAAP**

- P&C: Best estimate, but with no discounting of expected future cashflows
- L&H: Primarily rules-based, with many product lines “locked-in” at inception

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**EVM**

- Principles-based, best estimate reserves with discounting of expected future cashflows
- Market-consistent
Robust process and governance for appropriate reserve setting

**First line of defence**

**Business Unit Regional Reserving Actuaries**
- Propose assumptions and methodology
- US GAAP, EVM and statutory bases
- Feedback loop to pricing and claims management
- Local control process and peer reviews

**Regional Reserving Committees (RRCs)**
- Approve regional assumptions and reserves

**Group Reserving Committee**
- RRC oversight

**Second line of defence**

**Actuarial Control**
- Independent quarterly reserve and assumptions review
- Deep-dive reviews
- Range and duration analysis
Swiss Re’s P&C initial loss reserving is gradually updated based on actual loss experience

- Initial loss reserving is determined at the time of writing the business
- Subsequently, initial loss estimates are gradually replaced by taking into account actual loss experience; ultimate loss estimates are periodically updated
- IBNR (Incurred but not reported) reserves are based on a weighted average between the initial loss estimate and a projected ultimate loss estimate
P&C reserving approach depends on the type of claims

- For **large events** which are sudden and unexpected, a separate process combines the knowledge of all relevant areas of expertise in estimating the initial ultimate loss.
- Reserving for **asbestos and environmental** claims is based on industry benchmarks which are reassessed annually.
- Reserving for claims subject to periodic payments depending on survival, such as **motor liability**, is performed separately and depends on the level of information provided by our cedents.
- Reserving for **non-traditional business**, such as retroactive deals or multi-year deals, is carried out on a deal-by-deal basis according to each deal's specifications.

**Loss development triangles** for homogeneous portfolios are used for reserving traditional reinsurance and direct insurance claims. Standard actuarial techniques such as the Chain Ladder or the Benktander methods are applied using past claims experience.
Swiss Re’s P&C reserving strength is demonstrated by being in the upper half of a range of best estimates

- Swiss Re’s reserving strength is independently assessed every quarter by the Actuarial Control team
- Booked reserves are positioned on a range of best estimates – for more than 15 years, Swiss Re’s P&C reserves have been between the 60th and 80th percentile
- Swiss Re does not target a specific percentile in the range

- Reserves were released over the last few years
- All major lines of business contributed to reserve releases
- Strength in reserves remained strong and even increased between 2011 and 2017
## Considerations when analysing P&C claims development triangles

<table>
<thead>
<tr>
<th>Reasons for potential pitfalls</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Segmentation of claims into triangles</td>
<td>Large number of triangles might contribute to a certain degree of conservatism</td>
</tr>
<tr>
<td>Changes in cedent reporting practices, changes to internal claims processes or one-off diagonal effect such as changes to discount rate for bodily injury claims</td>
<td>Workers’ comp and liability triangles for 2016 and 2017 show higher reported claims because of a change in cedent practice. Motor triangles are also impacted by one-off diagonal effects</td>
</tr>
<tr>
<td>Market specific practices; in some countries, cedents often overestimate the initial case reserves</td>
<td>Motor triangles need to be analysed by country to adequately assess trend (not possible based on aggregated information); negative IBNR in accident year triangles for proportional business</td>
</tr>
<tr>
<td>Atypical or unusual large losses</td>
<td>Risk of mis-projection</td>
</tr>
</tbody>
</table>
Property Reinsurance – 2017 loss ratio impacted by natural catastrophes

- Ultimate loss ratio 2016 includes natural catastrophe events in 2017 impacting business written in 2016 (e.g. Cyclone Debbie)

- High ultimate loss ratio for 2017 includes impact of 2017 hurricanes (Harvey, Irma, Maria), Californian Wildfires and Mexican earthquakes
• 2016 and 2017 show larger than usual reported losses as these years include “cedent” IBNR
• 2007 underwriting year should be ignored when projecting to Ultimate because it contains a high share of business that is fully retroceded
Liability proportional – reflects recent growth

- Higher IBNR on recent years given the immature nature of the business
- This portfolio is also impacted by the change in the cedent reporting, however to a lesser extent
### Underwriting and accident year triangles serve different purposes

<table>
<thead>
<tr>
<th>Definition</th>
<th>Underwriting year (UY) triangle</th>
<th>Accident year (AY) triangle</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>Underwriting year groups claims information according to the calendar year in which the original policy or reinsurance contract was incepted</td>
<td>Accident year groups claims information by the calendar year in which the claim event (the date of loss) falls</td>
</tr>
<tr>
<td><strong>Basis</strong></td>
<td>Gross of external retrocession</td>
<td>Net of internal and external retrocession</td>
</tr>
<tr>
<td><strong>Data</strong></td>
<td>Paid and reported loss ratio triangles, earned premiums net of commissions and <em>latest</em> IBNR</td>
<td>Paid and incurred (i.e. reported plus IBNR) claims triangles</td>
</tr>
<tr>
<td><strong>Scope</strong></td>
<td>Traditional P&amp;C business</td>
<td>Traditional and non-traditional business</td>
</tr>
</tbody>
</table>
| **Purpose** | • **Project paid or reported claims to ultimate** and are the basis for deriving the best estimate reserves  
  • **Used internally to project to ultimate** | • Give an indication on **how the ultimate loss** (i.e. reported plus IBNR) **developed over time**  
  • Constructed in order to comply with US GAAP **reporting requirement** |
| **Number of years disclosed** | 16 underwriting years | 10 accident years for Reinsurance and 6 accident years for Corporate Solutions |
Reserves walk between underwriting and accident year triangles

- Underwriting year triangles and accident year triangles are used for different purposes and are on a different basis.
- Accident year triangles show incurred claims, i.e. reported claims and IBNR, while, underwriting year triangles show reported triangles.
Swiss Re discloses its underwriting year triangles online and its accident year triangles in the Financial Report

The above shows Swiss Re Property Reinsurance figures and chart as an example of the underwriting year P&C loss ratio development triangles

The above triangle shows P&C Reinsurance – Property as an example of the accident year triangles disclosed in the Financial Report

• Underwriting year triangle is the basis to determine best estimate ultimate claims
• Accident year triangle can give an indication of how Swiss Re’s initial estimation has developed over time
Significant share of Swiss Re’s US GAAP L&H reserves are calculated using assumptions ‘locked-in’ at inception

<table>
<thead>
<tr>
<th>Liabilities</th>
<th>Life &amp; Health</th>
<th>Life Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liabilities for life and health policy benefits</td>
<td>18 230</td>
<td>29 491</td>
</tr>
<tr>
<td>Unpaid claims and claim adjustment expenses</td>
<td>12 129</td>
<td>2 308</td>
</tr>
<tr>
<td>Policyholder account balances</td>
<td>1 574</td>
<td>35 963</td>
</tr>
<tr>
<td>Other reinsurance liabilities</td>
<td>5 528</td>
<td>4 410</td>
</tr>
<tr>
<td>Short-term debt</td>
<td>4 766</td>
<td>904</td>
</tr>
<tr>
<td>Long-term debt</td>
<td>6 914</td>
<td>1 603</td>
</tr>
<tr>
<td>Other</td>
<td>7 197</td>
<td>2 954</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td><strong>56 338</strong></td>
<td><strong>77 633</strong></td>
</tr>
<tr>
<td><strong>Shareholders’ equity</strong></td>
<td><strong>8 221</strong></td>
<td><strong>7 088</strong></td>
</tr>
</tbody>
</table>

Claims reserves are best estimate and reflect the expected future payments due for claims that have been incurred prior to the valuation date – they are mostly driven by L&H Reinsurance

Policy reserves are the net amount held to fund claims to be incurred after the valuation date; they take into account premiums due after the valuation date. These reserves are calculated using assumptions that are ‘locked-in’ at inception of the business, and include a margin for adverse deviation

Policyholder account balances are amounts held on behalf of the policyholder, for example in unit-linked funds – the vast majority stems from Life Capital closed book

Life & Health reserve patterns vary with contract type – size of Swiss Re’s reserves is not a good indicator for the amount of risk

- Life & Health contracts cover risks over many years, in some cases for the whole of life
- Structure of premium rates affects how reserves build up
- For coinsurance life contracts, reserves build up in the early years to fund the cashflow shortfall in later years
- For YRT contracts, there is minimal reserve build-up if the premiums and claims cashflows are well matched
EVM best estimate reserves show that Swiss Re’s US GAAP L&H reserves are conservative with significant margin to emerge over time

![Illustrative Chart]

- Under EVM, the full value of expected profits are recognised upfront; this is represented in the chart by the negative reserves at inception
- Future assumptions are regularly re-assessed for EVM
- The conservatism in the US GAAP reserves is gradually released into reported earnings – this difference is called GAAP margin
- Swiss Re uses EVM as it shows the true economic value of a transaction – indicating the future US GAAP earnings potential (before allowance for taxes and capital costs)

1 Projected reserves = Present value of claims – Present value of premiums
More than USD 20bn L&H margin within Swiss Re’s US GAAP reserves

<table>
<thead>
<tr>
<th>As of 31 December 2017, USD billions</th>
<th>Life &amp; Health Reinsurance</th>
<th>Life Capital</th>
<th>Total L&amp;H</th>
</tr>
</thead>
<tbody>
<tr>
<td>US GAAP shareholders’ equity</td>
<td>8.2</td>
<td>7.1</td>
<td>15.3</td>
</tr>
<tr>
<td>Discounting</td>
<td>-0.3</td>
<td>-4.2</td>
<td>-4.5</td>
</tr>
<tr>
<td>Investments and debt</td>
<td>-2.3</td>
<td>0.0</td>
<td>-2.3</td>
</tr>
<tr>
<td>Reserving basis</td>
<td></td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>GAAP margins</td>
<td>17.3</td>
<td>3.3</td>
<td>20.6</td>
</tr>
<tr>
<td>Other</td>
<td>0.1</td>
<td>-0.5</td>
<td>-0.4</td>
</tr>
<tr>
<td>Recognition differences</td>
<td>0.0</td>
<td>-0.5</td>
<td>-0.5</td>
</tr>
<tr>
<td>Goodwill and other intangibles</td>
<td>-1.9</td>
<td>-0.2</td>
<td>-2.1</td>
</tr>
<tr>
<td>Taxes</td>
<td>-0.9</td>
<td>0.6</td>
<td>-0.3</td>
</tr>
<tr>
<td>Capital costs</td>
<td>-7.1</td>
<td>-1.6</td>
<td>-8.7</td>
</tr>
<tr>
<td>Other</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total EVM valuation adjustments</td>
<td>4.9</td>
<td>-3.1</td>
<td>1.8</td>
</tr>
<tr>
<td>Economic net worth</td>
<td>13.1</td>
<td>4.0</td>
<td>17.1</td>
</tr>
</tbody>
</table>

- US GAAP margin has increased from USD 13.8bn at year end 2012 to USD 20.6bn at year end 2017
- The margin is diversified across geography and product lines
- Significantly more margin in L&H Reinsurance than in Life Capital despite higher reserves in the latter
EVM sensitivities demonstrate resilience of Swiss Re’s L&H reserves to changes in assumptions

<table>
<thead>
<tr>
<th>Change in economic net worth as of 31.12.2017, USD billions</th>
<th>Life &amp; Health Reinsurance</th>
<th>Life Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce lapse rates by 10% (eg from 8.0% to 7.2%)</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Mortality and morbidity rates reduced by 5%:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>2.8</td>
<td>0.1</td>
</tr>
<tr>
<td>Longevity</td>
<td>-0.4</td>
<td>-0.1</td>
</tr>
<tr>
<td>Morbidity</td>
<td>0.6</td>
<td>0.0</td>
</tr>
<tr>
<td>Remove all allowance for future mortality improvement:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>-8.0</td>
<td>-0.3</td>
</tr>
<tr>
<td>Longevity</td>
<td>1.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Increase future mortality improvement assumption by 100bps p.a.:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>5.9</td>
<td>0.2</td>
</tr>
<tr>
<td>Longevity</td>
<td>-1.1</td>
<td>-0.3</td>
</tr>
</tbody>
</table>

Source: http://reports.swissre.com/2017/financial-report/evm/evm-sensitivities-online-only-content.html

- The margin in the L&H reserves may be higher or lower depending on the eventual outcome of mortality, morbidity and lapse rates
- Even with no mortality improvements there would be positive margin emerging in future
Swiss Re is strongly reserved

- Swiss Re’s reserving approach ensures best estimate and transparent assessment of insurance liabilities

- Swiss Re’s reserving approach is not a way of managing capital or creating artificially high reserve buffers

- Despite significant reserve releases, the strength in P&C reserves remained strong and even increased between 2011 and 2017

- US GAAP L&H reserves margin amounts to USD 20.6bn at year-end 2017

P&C reserves consistently in 60th to 80th percentile

USD 20.6bn US GAAP margin in L&H reserves

Robust governance ensures strong reserve adequacy

Swiss Re
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- the frequency, severity and development of insured claim events, particularly natural catastrophes, man-made disasters, pandemics, acts of terrorism and acts of war;
- mortality, morbidity and longevity experience;
- the cyclical nature of the insurance and reinsurance sectors;
- instability affecting the global financial system;
- deterioration in global economic conditions;
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- policy renewal and lapse rates;
- uncertainties in estimating future claims for purposes of financial reporting, particularly with respect to large natural catastrophes and certain large man-made losses, as significant uncertainties may be involved in estimating losses from such events and preliminary estimates may be subject to change as new information becomes available;
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Corporate calendar & contacts

Corporate calendar

2018
20 April
4 May
3 August
1 November

154th Annual General Meeting
First Quarter 2018 Key Financial Data
Half-Year 2018 Results
Nine Months 2018 Key Financial Data
Zurich
Conference call
Conference call
Conference call

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