Claims reserve adequacy in the context of Capital modelling and ILS: A rating agency's perspective

This workshop will focus on:

- Overview of rating methodology for non-life insurers, focusing on financial review
- Qualitative and Quantitative rating factors involved in assessment of reserve adequacy and volatility
- Current and future trends in reserving adequacy, with impact on credit ratings
- Reserve risk - approach to assessment and impact on capital adequacy
- Reserve risk securitisations - overview of structures and approach to rating
Rating methodology for non-life insurers - 1

- Quantitative and qualitative factors
- Varying weight for different modules
- Current financial position and prospective assessment of future financial position
- Q-IFS ratings vs Interactive ratings
- Sources of information:
  - Management discussions
  - Public information
  - Confidential information

Rating methodology for non-life insurers - 2

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- Duration of losses ("tail")
- Ability to price accurately
- Exposure to large/cat losses
- Regulatory, legal and accounting environment

- Underwriting expertise, market knowledge
- Distribution capabilities and mix
- Lines of business and changes in mix
- Market share and growth
- Brand-name, franchise value
- Expense efficiencies, operational scale
- Product and geographical mix

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Assessing Loss Reserve Adequacy - Qualitative

- Actuarial Analysis
  - Frequency/Use
  - Internal/External reviews and audits
- Management’s reserving targets/risk appetite
- Historical track record
  - in establishing adequate reserves
  - in using reserves to smooth profitability
- General market and competitive pricing environment
- Methods used: sophistication and appropriateness
- Use of discounting, financial or finite reinsurance or accounting techniques that reduce carried reserves

Assessing Loss Reserve Adequacy - Quantitative

- Reserve ratio analysis including
  - paid losses
  - incurred losses
  - IBNR and total reserves
- Key reserving assumptions
- Comparison of company loss-development trends relative to industry and peers
- Speed at which negative trends in frequency or severity are reflected in reserves
- Fitch’s own reserve calculation: Schedule P analysis (US) or FSA Returns (UK)
Reserving Adequacy – Now and Future

- Improved reserve adequacy, following previous weaknesses during soft cycles of the 1990’s
- Shift towards greater reserving prudence
- Positive reserve developments in recent years common
- Asbestos developments
- Strengthened regulation
- Impact of Solvency 2
- Run-off management/Securitisation

Capital Adequacy & Reserving Risk

- Establishes Minimum Requirement
- Provides Discussion Insights
- Regulatory Requirements
- Insurer’s Internal Capital Models

Creates Consistent Principles
Prism – Stochastic Capital Model

- **Sophisticated Model**
  - Established Actuarial Models & Financial Theory
  - Recognise Risk Distributions

- **Local Data**
  - Use Country Data Where Available
  - Company Survey

- **Consistency**
  - The Same Model Applied to Each Region

- **“80/20” Rule**
  - Not Perfect, But Better

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Prism – Key Strengths

- **Global**
  - Current list of countries: FR, GER, UK, US
  - Consistent assumptions and structure (“platform”) allows us to bolt on others
  - Recognizes country specific products and parameters – good data sources

- **Integrated**
  - Risks are modeled simultaneously – captures both diversification and compounding effects
  - Economic Scenario Generator / Correlated Random Numbers

- **Stochastic**
  - Understand the “tail” events
  - Wave of the future – Solvency 2

- **Tool**
  - Powerful discussion piece
  - Tools and staff in place to make updates
Prism – Risks modelled

- **Market / ALM Risk**: Potential loss due to changes in risk free interest rates, equity prices, and exercise of policy holder guarantees.
- **Credit Risk**: Potential loss due to asset default, downgrade or inadequacy of spreads. Assets include both investments and reinsurance recoverables.
- **Underwriting Risk**: P/C: Losses due to deviation in ultimate payouts due to volatility of frequency and severity. One year of new business. Life: Losses due to variance from mortality or morbidity.
- **Reserving Risk**: P/C and Health: Deviations from current reserve levels in future periods.
- **Natural Catastrophe Risk**: P/C: Potential loss due to earthquakes and hurricanes. Life: Include items such as epidemics or secular trends.

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**Reserve Risk**

- **Simulate the likelihood that reserves will develop unfavourably (or favourably) on a present value/discounted basis.**
- **Assumptions:**
  - **Determine Reserve Adequacy**
    - In the US, Schedule P “squaring the triangle” model to estimate a redundancy or deficiency
  - **Reserve Volatility**
    - Use the “Mack Method”: determines a “coefficient of variation” or a “Mack CV”
      - Considers the correlation impact across various lines of business
  - **Favorable impact of the time value of money**
    - Only those scenarios in which adverse development exceeds the PV of available surplus does Prism say capital is required
UK Non-Life – Risk by Source

- **Insurance risk**
  - Range 53% - 89%
  - Stable share of Total Required Capital from 2005 to 2006
  - High historical underwriting and reserve volatility has negative impact
- **Investment risk**
  - Range 4% - 42%
  - Influenced by structure of assets
  - Average asset allocation: 12% shares, 49% fixed income, 34% cash, 4% other
- **Operational risk**
  - 10% charge on AC

**Average Distribution for Prism**

- **Insurance** 77%
- **Investment** 16%
- **Operational risk** 7%

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Insurance Risk in More Detail

- **Underwriting Risk**
  - In 2007 - continued decline in premium rates in UK non-life market
  - Average projected Combined Loss Ratio for 2007: 98%, with a range of 87% - 107%
  - Volatility of performance on average: 14%, with some as high as 36%
- **Reserve Risk**
  - Major contributor to Insurance Risk, especially for some long-tail writers
  - Driven by volatility of claim reserves: average of 15%, with a range of 5-26%
- **Cat Risk**
  - On average a 10% risk charge on exposure

**Split of Required Capital for Insurance Risk**

- **Cash Flow** 7%
- **RI Recoveries** 3%
- **Underwriting** 29%
- **Catastrophe** 19%
- **Reserve** 42%
UK Non-Life – 2006 Prism Results

- Coverage:
  - 17 groups (57 entities)
  - 61% of UK non-life market by GWP

- Market well capitalised:
  - Average Prism score: A
  - Larger companies → stronger capital on average
    - GWP > GBP2bn: Average Prism score A+
    - GWP < GBP2bn: Average Prism score A-
  - Unchanged since 2005 Beta results

- Consistent with Fitch’s current view of capital:
  - No ratings actions

**Distribution of Prism Scores**

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Reserve risk securitisations - Structure

Insurance-Linked Securities - Transaction Structure:

- Sponsor
- Special Purpose Vehicle
- Collateral Account Special Purpose Vehicle
- Noteholders
- Counterparty
- Premiums (Expenses + Swap Spread + Note Spread + Dividend Spread)
- Collateral Account Directed Investments (e.g., U.S. Govt. Obligations, Commercial Paper, AAA Bonds)

**Total Return on Directed Investments**

- Investment income, realized gains and losses.

*Source: Fitch.*
Reserve risk securitisations

Ratings Benchmarks

- Probability of loss
  - Used throughout Fitch for Structured Finance
  - Rather than “expected loss”
- Default grid
  - Used throughout Fitch insurance
    - Prism insurance capital model
    - Matrix financial guarantee model
  - Symmetrical with insurance ratings
- For ILS tranches exposed to loss from a single event, rating capped at “AA“

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Reserve risk securitisations

Fitch Ratings Insurance-Linked Securities 30-Year Cumulative Default Table

<table>
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<tr>
<th>Rating</th>
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<tbody>
<tr>
<td>AAA</td>
<td>0.005 0.017 0.033 0.054 0.078 0.106 0.138 0.172 0.210 0.251</td>
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<tr>
<td>AA+</td>
<td>0.010 0.031 0.058 0.092 0.132 0.176 0.225 0.279 0.336 0.397</td>
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<tr>
<td>AA</td>
<td>0.015 0.046 0.088 0.139 0.200 0.267 0.342 0.424 0.512 0.607</td>
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<tr>
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<td>0.022 0.067 0.120 0.200 0.300 0.407 0.513 0.635 0.766 0.907</td>
</tr>
<tr>
<td>A</td>
<td>0.030 0.090 0.171 0.270 0.384 0.512 0.653 0.806 0.970 1.145</td>
</tr>
<tr>
<td>A+</td>
<td>0.037 0.116 0.201 0.294 0.424 0.582 0.759 0.951 1.154 1.368</td>
</tr>
<tr>
<td>A/</td>
<td>0.047 0.146 0.251 0.368 0.522 0.708 0.918 1.145 1.402 1.683</td>
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<tr>
<td>BBB+</td>
<td>0.279 0.608 1.191 1.780 2.495 3.315 4.295 5.367 6.500 7.718</td>
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<tr>
<td>BBB</td>
<td>0.386 0.989 1.822 2.570 3.557 4.735 5.975 7.295 8.717 10.234</td>
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<tr>
<td>C</td>
<td>10.867 18.793 25.334 31.111 36.256 40.978 45.062 48.688 52.146 55.725</td>
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<td>22.274 33.570 41.901 48.519 53.976 58.582 62.533 65.964 68.970 71.624</td>
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Reserve risk securitisations

**Sponsor Analysis**
- Sponsor analysis forms part of ILS rating process
  - Need for, and weighting of, sponsor analysis can vary greatly
  - Fitch rates most major insurance entities
  - May be possible for sponsor risk to be structured out
- In general, ratings on ILS notes are not automatically capped by sponsor’s own rating
- However, for some transactions:
  - ILS rating could be restricted by sponsoring insurer’s rating
  - Regulator’s objective is to protect policyholders
  - Servicer-type risk

**Methodology**
- Understand the rationale for the transaction
- Understand risk to be securitised
- Review Model that has been used to assess reserves
- Use Fitch reserve model as a high level check of reserve volatility
- Assess deal model
Reserve risk securitisations

Additional Issues to consider
- Specification of Loss Trigger
- Reserving Methodology Employed
- Moral Hazard Risk
- Adverse Selection Risk
- Market developments
- Model and parameter Risk

Thank you

Q&A?

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