

## **GIRO Convention**

**23-26 September 2008  
Hilton Sorrento Palace**

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

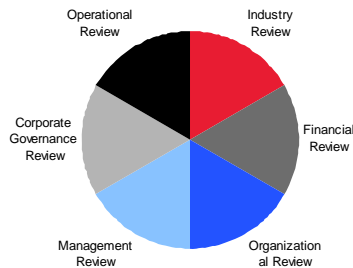
Andrew Murray, Lyuba Tarnopolsky – Fitch Ratings Ltd

### **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 Quantative 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

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## Rating methodology for non-life insurers - 2

Industry	<ul style="list-style-type: none"> <li>▪ Competition &amp; Competitive advantage</li> <li>▪ Barriers to entry/threats of new products</li> <li>▪ Bargaining power of insurers</li> <li>▪ Duration of losses ("tail")</li> <li>▪ Ability to price accurately</li> <li>▪ Exposure to large/cat losses</li> <li>▪ Regulatory, legal and accounting environment</li> </ul>	Organizational	<ul style="list-style-type: none"> <li>▪ Parent financial strength and flexibility</li> <li>▪ Upstream dividends requirement</li> <li>▪ Parent capital contributions</li> <li>▪ Capital support to affiliates</li> <li>▪ Business synergies with parent or affiliates</li> <li>▪ Strengths and weaknesses of subsidiary companies</li> <li>▪ Formal guarantees or support agreements</li> </ul>
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## Rating methodology for non-life insurers - 3

Financial	<ul style="list-style-type: none"> <li>Underwriting quality</li> <li>Profitability</li> <li>Investments and liquidity</li> <li>Reinsurance and other forms of risk mitigation</li> <li>Catastrophe risk</li> <li>Financial flexibility</li> <li>Loss reserve adequacy</li> <li>Capital adequacy – Prism/factor based</li> </ul>
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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

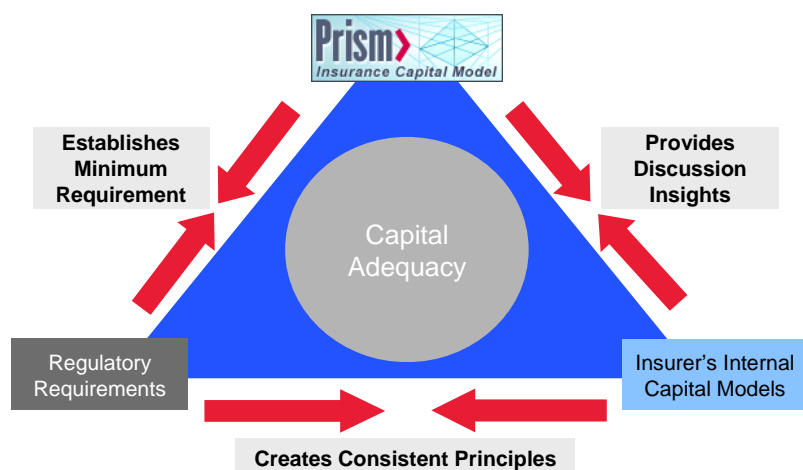
## Assessing Loss Reserve Adequacy - Quantative

- 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



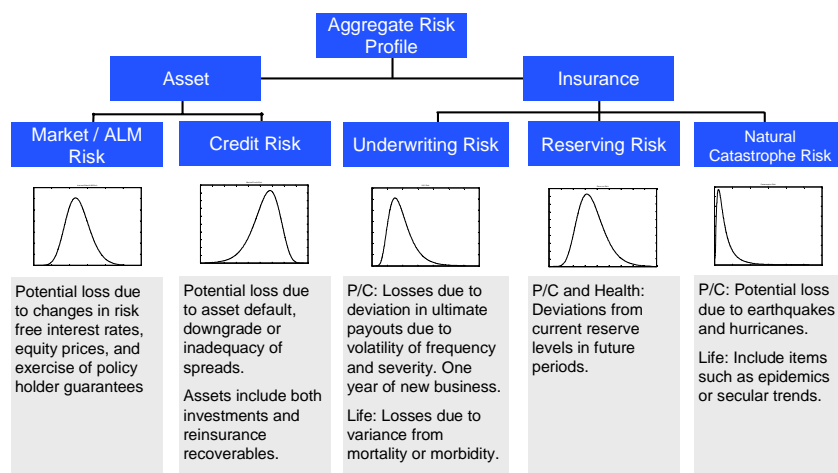
## Prism – Stochastic Capital Model

- **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

## 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



## Reserve Risk

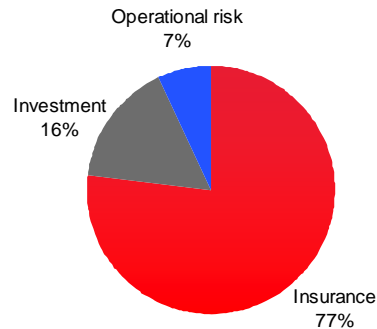
- **Simulate the likelihood that reserves will develop unfavourably (or favourably) on a present value/discounted basis.**
- **Assumptions:**
  - **Determine Reserve Adequacy**
    - In the US, Schedule P “squaring the triangle” model to estimate a redundancy or deficiency
  - **Reserve Volatility**
    - 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

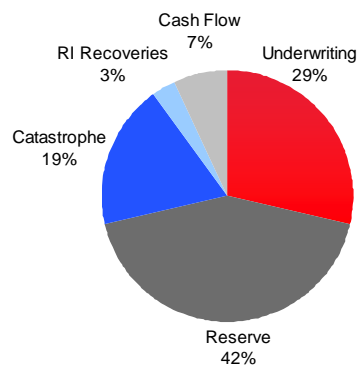
Average Distribution for Prism



## Insurance 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

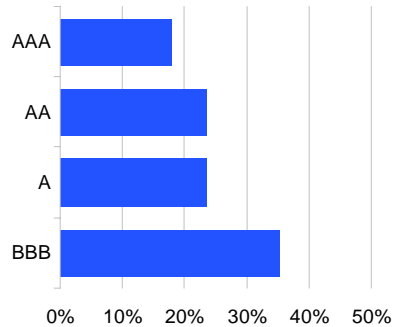
Split of Required Capital for Insurance Risk



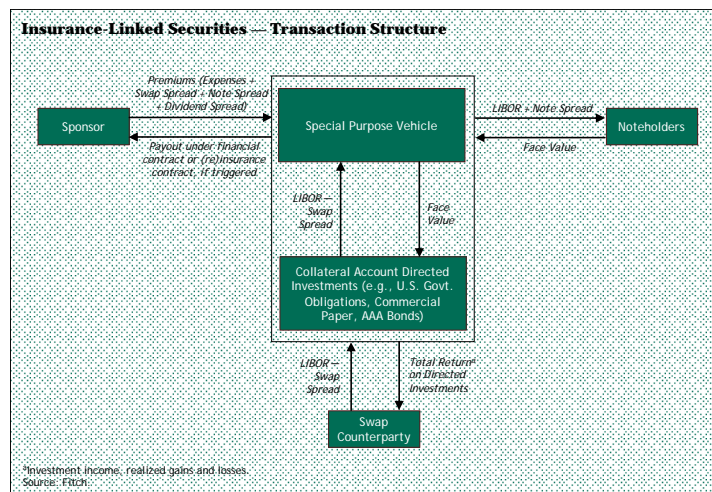
## UK Non-Life – 2006 Prism Results

- **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



## Reserve risk securitisations - Structure



# 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 Default Grid for ILS and Prism Model

**Fitch Ratings Insurance-Linked Securities 30-Year Cumulative Default Table**  
(%)

	1	2	3	4	5	6	7	8	9	10
AAA	0.005	0.017	0.033	0.054	0.078	0.106	0.138	0.172	0.210	0.251
AA+	0.010	0.031	0.058	0.092	0.132	0.176	0.225	0.279	0.336	0.397
AA	0.015	0.046	0.088	0.139	0.200	0.267	0.342	0.424	0.512	0.607
AA-	0.022	0.067	0.128	0.202	0.287	0.383	0.489	0.604	0.728	0.860
A+	0.030	0.090	0.171	0.270	0.384	0.512	0.653	0.806	0.970	1.145
A	0.034	0.104	0.199	0.315	0.450	0.602	0.769	0.951	1.147	1.356
A-	0.047	0.146	0.281	0.448	0.642	0.862	1.105	1.370	1.656	1.962
BBB+	0.189	0.471	0.804	1.173	1.572	1.995	2.440	2.904	3.384	3.880
BBB	0.279	0.698	1.191	1.740	2.331	2.959	3.617	4.302	5.010	5.739
BBB-	0.386	0.956	1.622	2.357	3.146	3.979	4.848	5.749	6.677	7.628
BB+	0.548	1.311	2.178	3.117	4.111	5.148	6.219	7.319	8.442	9.585
BB	0.737	1.795	3.012	4.339	5.747	7.218	8.738	10.296	11.885	13.496
BB-	1.989	4.451	7.086	9.808	12.571	15.348	18.117	20.865	23.581	26.256
B+	3.015	6.325	9.678	13.013	16.300	19.522	22.668	25.730	28.706	31.591
B	5.964	11.250	16.131	20.677	24.932	28.924	32.677	36.211	39.542	42.684
B-	10.867	18.703	25.324	31.111	36.256	40.878	45.062	48.868	52.346	55.535
CCC+	22.274	33.570	41.901	48.519	53.976	58.582	62.533	65.964	68.970	71.624



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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



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## Reserve risk securitisations

### 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



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## 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



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Thank you

Q&A?

Andrew Murray  
[andrew.murray@fitchratings.com](mailto:andrew.murray@fitchratings.com)  
Lyuba Tarnopolsky  
[lyuba.tarnopolsky@fitchratings.com](mailto:lyuba.tarnopolsky@fitchratings.com)

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