Marine Insurance Day

Reinsurance Outlook: Markets, Models, and Myopia

September 2013
• Outlook for Global Reinsurance and Marine Reinsurance Markets
  – Global Market Events
  – Marine Market Events
  – Other Market Drivers
  – News from Monte Carlo
  – Alternative Capital Review
  – Some words on models…
State of the Reinsurance Market

- Supply vs Demand
- What is the dominant emotion in the current market?
  - FEAR
  - or GREED?

For a (re)insurance buyer.....
Global Reinsurance Market Events

- US Tornados/Hail - USD5.25bn

- Floods:
  - European USD5.3bn
  - Alberta USD3.5bn
  - Toronto USD1bn
  - Colorado (?)
German Hail Loss – July 2013

- Industry loss estimates between $2b and $4b

- Swiss Re and Munich Re each expect approx $240M in net losses
## Natural Disaster Losses in the United States: First Half 2013

<table>
<thead>
<tr>
<th>As of July 1, 2013</th>
<th>Number of Events</th>
<th>Fatalities</th>
<th>Estimated Overall Losses (US $m)</th>
<th>Estimated Insured Losses (US $m)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Severe Thunderstorm</strong></td>
<td>29</td>
<td>66</td>
<td>10,180</td>
<td>6,325</td>
</tr>
<tr>
<td><strong>Winter Storm</strong></td>
<td>13</td>
<td>17</td>
<td>2,434</td>
<td>1,255</td>
</tr>
<tr>
<td><strong>Flood</strong></td>
<td>10</td>
<td>9</td>
<td>500</td>
<td>Minor</td>
</tr>
<tr>
<td><strong>Earthquake &amp; Geophysical</strong></td>
<td>5</td>
<td>0</td>
<td>Minor</td>
<td>Minor</td>
</tr>
<tr>
<td><strong>Tropical Cyclone</strong></td>
<td>1</td>
<td>1</td>
<td>Minor</td>
<td>Minor</td>
</tr>
<tr>
<td><strong>Wildfire, Heat, &amp; Drought</strong></td>
<td>11</td>
<td>23</td>
<td>700</td>
<td>365</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>68</td>
<td>116</td>
<td>13,814</td>
<td>7,945</td>
</tr>
</tbody>
</table>

Source: MR NatCatSERVICE
Natural Disaster Losses in the United States: 2012

<table>
<thead>
<tr>
<th>As of January 1, 2013</th>
<th>Number of Events</th>
<th>Fatalities</th>
<th>Estimated Overall Losses (US $m)</th>
<th>Estimated Insured Losses (US $m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tropical Cyclone</td>
<td>4</td>
<td>143</td>
<td>52,240</td>
<td>26,360</td>
</tr>
<tr>
<td>Severe Thunderstorm</td>
<td>115</td>
<td>118</td>
<td>27,688</td>
<td>14,914</td>
</tr>
<tr>
<td>Drought</td>
<td>2</td>
<td>0</td>
<td>20,000</td>
<td>16,000†</td>
</tr>
<tr>
<td>Wildfire</td>
<td>38</td>
<td>13</td>
<td>1,112</td>
<td>595</td>
</tr>
<tr>
<td>Winter Storm</td>
<td>2</td>
<td>7</td>
<td>81</td>
<td>38</td>
</tr>
<tr>
<td>Flood</td>
<td>19</td>
<td>3</td>
<td>13</td>
<td>0†‡</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>184</strong></td>
<td><strong>284</strong></td>
<td><strong>$101,134</strong></td>
<td><strong>$57,907</strong></td>
</tr>
</tbody>
</table>

Source: MR NatCatSERVICE
† - Includes Federal Crop Insurance Losses. † † - Excludes federal flood.
Reinsurers Paid a High Proportion of Insured Losses Arising from Major Catastrophic Events Around the World in Recent Years

Source: Insurance Information Institute from reinsurance share percentages provided in RAA, ABIR and CEA press release, Jan. 13, 2011.
Top 16 Most Costly World Insurance Losses, 1970-2012*

(Insured Losses, 2012 Dollars, $ Billions)

*Figures do not include federally insured flood losses.

**Estimate based on PCS value of $18.75B as of 4/12/13.

Sources: Munich Re; Swiss Re; Insurance Information Institute research.
Where’s the Wind?

- 7 years without a hurricane making landfall in Florida (longest streak since 1900), CAT rates down significantly at June 1;

- 2013 is 5th year since 1950 with No hurricane formation through August. Each of the 4 prior years without one finished the year with at least 4. None have made it through September, until 2013?
Average thunderstorm losses are up 7 fold since the early 1980s. The 5-year running average loss is up sharply.

Hurricanes get all the headlines, but thunderstorms are consistent producers of large scale loss. 2008-2012 are the most expensive years on record.

1st Half 2013 thunderstorm losses total $6.325B; The system that included the EF-5 tornado in Moore, OK, accounted for $1.575B

Source: Property Claims Service, MR NatCatSERVICE
Large risk losses:
- Asiana Airline crash - USD500m
- Texas refinery explosion - USD500m
- Argentina refinery flood and fire - USD500m to USD1bn

Boston Terror Attack
Marine Market Events

- Superstorm Sandy “Loss Creep”
- “Perro Negro 6” – jack up rig (removal of wreck)
- String of bulk carrier groundings in South Africa; “Smart” and “Kiani Satu”
- Two “Weed” ship fires in Med during same week in September
Marine Market Events

- “Costa Concordia”
  - Since April P&I deterioration from USD743m to USD1.169bn
  - Delays in removal of wreckage
  - P&I and Hull combined around USD1.7bn
Marine Market Events

- MOL Comfort Loss;
  - Broke in two
  - Stern section sank
  - Bow section towed, broke tow line
  - Bow section caught on fire, then sank

- Estimated loss of $400M-$500M; implies a potential cargo/hull/liability single vessel loss of +$2 billion for new generation container vessels.
Ultra Large Container Vessels

MOL Comfort Details
- 4,382 Containers equivalent to 7,041 TEU. Overall capacity 8110 TEU
- Estimated Cargo loss approx. $450,000,000 (average per TEU = $63,911)

Implications for Ultra large Container vessel losses:
- There are currently over 100 vessels with capacity greater than 13,000 TEU
- Largest Container vessels approx. 18,000 TEU (Maersk Triple E vessels)
- Cargo values based on $100,000 per TEU, could be as high as $1.8BN

<table>
<thead>
<tr>
<th>Source</th>
<th>Average TEU Value</th>
<th>Implied Triple E Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matthew O'Sullivan – IUMI 2006</td>
<td>$80,000 - $210,000</td>
<td>$2,610,000,000</td>
</tr>
<tr>
<td>Munich Re: Estimate</td>
<td>$80,000 - $100,000</td>
<td>$1,620,000,000</td>
</tr>
<tr>
<td>XL Re Studies</td>
<td>$35,000 - $120,000</td>
<td>$1,395,000,000</td>
</tr>
<tr>
<td>MSC Carla (AIMU RI Committee Survey)</td>
<td>$74,000</td>
<td>$1,332,000,000</td>
</tr>
<tr>
<td>APL China (AIMU RI Committee Survey)</td>
<td>$211,000</td>
<td>$3,798,000,000</td>
</tr>
<tr>
<td>Japan – LA study</td>
<td>$90,000</td>
<td>$1,620,000,000</td>
</tr>
<tr>
<td>LA – Japan study</td>
<td>$30,000</td>
<td>$540,000,000</td>
</tr>
<tr>
<td>AIMU Reinsurance Committee</td>
<td>$95,000</td>
<td>$1,710,000,000</td>
</tr>
</tbody>
</table>

Taken from Swiss Re presentation to AIMU in 2007
Other Market Fear Factors

- Investment performance
  - Low investment income
  - Drop in net unrealized gains and book value as mark to market bond portfolios in light of rising interest rates.

- Inflation / loss cost uncertainty

- Uncertainty of TRIA reauthorization
A combined ratio of about 100 generates an ROE of ~7.0% in 2012, ~7.5% ROE in 2009/10, 10% in 2005 and 16% in 1979.

Combined Ratios Must Be Lower in Today’s Depressed Investment Environment to Generate Risk Appropriate ROEs

* 2008 -2012 figures are return on average surplus and exclude mortgage and financial guaranty insurers. 2012 combined ratio including M&FG insurers is 103.2, 2011 combined ratio including M&FG insurers is 108.1, ROAS = 3.5%.
Source: Insurance Information Institute from A.M. Best and ISO data.
P/C Profitability Is Both by Cyclicality and Ordinary Volatility

Hugo
Andrew
Northridge
Lowest CAT Losses in 15 Years
Sept. 11
Katrina, Rita, Wilma
4 Hurricanes
Financial Crisis*
Sandy
Record Tornado Losses

Sources: ISO, Fortune; Insurance Information Institute.

The P/C Insurance Industry Fell Well Short of Its Cost of Capital Every Year Since 2008

US P/C Insurers Missed Their Cost of Capital by an Average 6.7 Points from 1991 to 2002, but on Target or Better 2003-07, Fell Short in 2008-2010

The Cost of Capital is the Rate of Return Insurers Need to Attract and Retain Capital to the Business

* Return on average surplus in 2008-2011 excluding mortgage and financial guaranty insurers.
Source: The Geneva Association, Insurance Information Institute
Despite all the challenges, First half 2013 results are strong for most players:

- Lloyds – GBP1.38 billion half year profit
- Munich Re – Euro1.5 billion 6 month profit
- Swiss Re – USD2.2 billion 6 month net income
- RAA – USD4.75 billion net income at 6 months
Feeding the Greed

- Protecting Market Share in face of increased supply / reduced demand
  - Influx of alternative capacity from the capital markets;
  - New entrants into market; Berkshire Hathaway and Chinese insurers;
  - Broker “tracking” facilities, adding to sense of desperation;
  - Companies retaining more risk, buying less post large loss;
  - Stagnant exposure base
Feeding the Greed

- Improving economy, equity returns and increasing interest rates;

- Run up in equity values of insurers during 2013;

- Stubbornly high expense ratios;

- Capital continues to increase, more than enough supply;

- “Excess Capacity chasing static volumes” (AM Best)
News from Monte Carlo

- Alternative capacity increasing;

- Pressure on rates particularly in USA, buyers retaining more and consolidating the number of reinsurers they do business with;

- IBNR Weekly – “Absent storm in November; won’t be surprised to see property CAT pricing down double digits at 1/1 on a blended basis for excess of loss business with expanded terms and conditions.”
Beyond rate relief, reinsurers have indicated willing to provide:

- multi-year deals;
- private layers;
- aggregate covers;
- more favorable terms & conditions;

Primary market not sharing upside

“What the primary market is getting, the reinsurance market is surrendering in the form of weakening terms and conditions.” XL Re CEO Jamie Veghte
News from Monte Carlo (cont)

- Not just a cat market issue; shifting capital allocations to other lines in light of increased competition in cat, creating broader competitive issues.

- Mature markets spend outlook continues to be benign.

- Heightened M&A activity
Not just a difficult environment for underwriters…

- Cyclical and secular pressures building on r/l broking;
  - cyclical pricing pressures from more capacity,
  - secular due to alternative sources where fees less, more competition from Credit Suisse, Goldman, Swiss Re, and threat of disintermediation.

- “Absent any “event” expect brokerage organic growth to turn negative for the industry over next 12-18 months.” (IBNR#31 Vol. XX)
Alternative Capital

- Alternative Capital, alternative capacity, capital market convergence, etc
  - What is it?
    - collateralized reinsurers / sidecars;
    - ILS (insurance linked securities):
      - catastrophe bonds;
      - industry loss warranties;
    - Asset managers;

- Who?
  - Primarily institutional investors via hedge funds, private equity funds, and recently pension and mutual funds.

- Is it a big deal? Yes, very…
Alternative Capacity as a Percentage of Global Property Catastrophe Reinsurance Limit

Alternative Capacity accounted for approximately 14% or $45 billion of the $316b in global property catastrophe reinsurance capital as of mid-2013 (expected to rise to ~15% by year-end 2013)

Source: Guy Carpenter, Insurance Information Institute
Explosive Growth Expected to Continue

- Guy Carpenter expects alternative capacity to provide 15% of global CAT limits by year end 2013.
- Willis and Aon both estimate the market will grow to $100 billion over next few years (up to 30%);
- Investor demand greater than current supply:
  - Nephila Capital, a leading ILS fund manager ($9b), has turned away more than $1 billion of capital after closing its funds to new investors;
  - Credit Suisse ($5.4b) and Fermat Capital ($4.5b) have closed funds or have waiting lists; (source Trading Risk)
Other Alt Capital Comments

- Stone Ridge launched reinsurance focused mutual funds, new ILS issuance had 12% from mutual funds.
- Expect scope of ILS market to expand beyond plain vanilla nat cat risks.
- Swiss Re and others have both commented that expect investors are long term and will stick around even if interest rates go up.
- “It is sobering to note that only a .5% allocation of global pension funds’ assets under management into ILS products would be sufficient to deliver US $150 billion of ILS capacity.” — Willis Re 1stView July 2013
Goldman Sachs view on Alternative Capital in Reinsurance

- one of eight disruptive themes in business today; Others: Cancer Immunotherapy, E-Cigarettes, LED Lighting, Natural Gas Engines, Software Defined Networking (SDN), 3D Printing, and Big Data

- rise of a new asset class, disruptive and increases risk for traditional reinsurers, “Creative Destruction” in the market.

- evidence at mid-year renewals in pricing, terms and conditions flexibility, and number of reinsurers starting capital markets and third-party capital management units

- if pension funds increase their allocations into the reinsurance space with just a fraction of their portfolios to it, reinsurers ability to generate attractive, risk-adjusted returns alongside this alternative capital could be severely, and potentially permanently, impaired
Goldman Sachs view on Alternative Capital in Reinsurance

- Investors attracted by the low-correlation returns as part of a balanced and diversified investment strategy. With much lower cost of capital, compared to a traditional reinsurer, makes for deep, quick impact on the reinsurance market.
- Ability to enter markets quickly will dull post-loss market rate reaction, dampen cycles further.
- Force traditional CAT writers into other markets
- Trend for reinsurers to manage alternative capital themselves, trading risk income for fee income;
- Believe that alternative capital will broaden its focus in reinsurance, likely beyond pure property catastrophe, as adoption improves
- Capital and underwriting may become even more abstracted than we are currently seeing, underwriters become agnostic as to the source of capital; shareholder equity no longer being considered more valuable than external, or alternative, capital.
Models

Issues of Alignment between Models and Actual Portfolios
Sometimes models are just wrong.
QUESTIONS?