CURRENT MARKET TRENDS FOR CATASTROPHE BONDS AND RISK LINKED SECURITIES

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Powerpoint presentation

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Paris, November 2004

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Managing Director, MMC Securities Corp.
Risk-Linked Securities: Growth of the Market

• This year marks the 10th anniversary of the catastrophe bond market
  – 1st cat bond sponsored by Hannover Re in 1994

• Since then, steady, incremental growth

• Catastrophe bonds dominate the Risk Linked Securities Market
  – Non-catastrophe bond issuance has been sporadic (e.g. FIFA’s Golden Goal and Swiss Re’s Vita Capital in 2003)

• Steadily increasing investor interest
## Perils Securitized by Geographic Region

<table>
<thead>
<tr>
<th>Year</th>
<th>US / Cal. Earthquake $MM</th>
<th>East Coast / Gulf Hurricane $MM</th>
<th>Europe Windstorm $MM</th>
<th>Japan Earthquake $MM</th>
<th>Japan Typhoon $MM</th>
<th>Other $MM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>$112.0</td>
<td>$395.0</td>
<td>$-</td>
<td>$90.0</td>
<td>$-</td>
<td>$36.0</td>
</tr>
<tr>
<td>1998</td>
<td>145.0</td>
<td>721.1</td>
<td>-</td>
<td>-</td>
<td>80.0</td>
<td>45.0</td>
</tr>
<tr>
<td>1999</td>
<td>327.8</td>
<td>507.8</td>
<td>167.0</td>
<td>217.0</td>
<td>17.0</td>
<td>10.0</td>
</tr>
<tr>
<td>2000</td>
<td>486.5</td>
<td>456.5</td>
<td>482.5</td>
<td>217.0</td>
<td>17.0</td>
<td>179.0</td>
</tr>
<tr>
<td>2001</td>
<td>696.9</td>
<td>551.9</td>
<td>431.9</td>
<td>150.0</td>
<td>-</td>
<td>120.0</td>
</tr>
<tr>
<td>2002</td>
<td>799.5</td>
<td>476.5</td>
<td>334.0</td>
<td>383.6</td>
<td>-</td>
<td>125.0</td>
</tr>
<tr>
<td>2003</td>
<td>803.8</td>
<td>416.1</td>
<td>474.1</td>
<td>691.2</td>
<td>277.5</td>
<td>260.0</td>
</tr>
<tr>
<td>2004</td>
<td>488.3</td>
<td>645.8</td>
<td>205.3</td>
<td>295.8</td>
<td>-</td>
<td>227.5</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$3,859.7</strong></td>
<td><strong>$4,170.7</strong></td>
<td><strong>$2,094.8</strong></td>
<td><strong>$2,044.5</strong></td>
<td><strong>$391.5</strong></td>
<td><strong>$1,002.5</strong></td>
</tr>
</tbody>
</table>

**Notes:**

- The total principal amount of bonds covering two or more perils (in which the total principal is exposed) have been included in all the peril categories they cover; therefore, the total figures do not reflect the actual volume of bonds issued.
- Accounts for Pioneer, Phoenix, Arbor and Foundation Re programs as six, three, six and two separate issues, respectively
- Pioneer / Arbor volumes alloc. to yr in which takedowns occur ('02 & '03 for Pioneer, '03 & '04 for Arbor)
- "Other" perils include Europe Hail, Hawaii Hurricane, Monaco Earthquake, Puerto Rico Hurricane and Taiwan Earthquake
### Increasing Issuance Size

<table>
<thead>
<tr>
<th>Year</th>
<th>&lt; $50MM</th>
<th>&gt; $50MM, &lt; $100MM</th>
<th>&gt; $100MM, &lt; $200MM</th>
<th>&gt; $200MM</th>
<th>Deal Size ($MM)</th>
<th>Average</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>$126.6</td>
<td>$126.6</td>
<td>$90.0</td>
</tr>
<tr>
<td>1998</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>$105.8</td>
<td>105.8</td>
<td>63.1</td>
</tr>
<tr>
<td>1999</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>$98.5</td>
<td>98.5</td>
<td>100.0</td>
</tr>
<tr>
<td>2000</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>126.6</td>
<td>126.6</td>
<td>136.5</td>
</tr>
<tr>
<td>2001</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>138.1</td>
<td>138.1</td>
<td>150.0</td>
</tr>
<tr>
<td>2002</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>$174.2</td>
<td>174.2</td>
<td>175.0</td>
</tr>
<tr>
<td>2003</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>4</td>
<td>216.2</td>
<td>216.2</td>
<td>180.0</td>
</tr>
<tr>
<td>2004</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>2</td>
<td>165.6</td>
<td>165.6</td>
<td>127.8</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>10</strong></td>
<td><strong>8</strong></td>
<td><strong>27</strong></td>
<td><strong>14</strong></td>
<td><strong>$141.5</strong></td>
<td><strong>$141.5</strong></td>
<td><strong>$125.0</strong></td>
</tr>
</tbody>
</table>

**Notes:**
- Accounts for each of Pioneer, Phoenix, Arbor and Foundation Re programs as single issues
- Pioneer / Arbor volumes alloc. to yr in which takedowns occur ('02 & '03 for Pioneer, '03 & '04 for Arbor)
Catastrophe Bond Market Overview

Sponsors

• **Sponsors:**
  – Insurance companies
  – Reinsurance companies

• **To date, there have only been three insureds that have sponsored catastrophe bonds**
  – Tokyo Disneyland
    • Japanese earthquake risk
  – Vivendi S.A.
    • California earthquake risk
  – Electricite de France
    • French windstorm
Catastrophe Bond Market Overview

Primary Motivations of Catastrophe Bond Issuers

- Full collateralization of losses, especially for major catastrophes
- Lock-in risk transfer capacity at fixed cost over a multi-year period
- Diversification of risk capital
  - Limit risks of capacity constraints and price volatility in the traditional reinsurance market
- Cost-savings
Catastrophe Bond Market Overview

Investor Motivations

• Diversification
• Yield
Catastrophe Bond Market Overview
Investors in Risked-Linked Securities

- A diverse investor base
- Insurers/Reinsurers hold less than 25% of the total catastrophe bond market volume
- Investor base continues to grow
- Substantial new capital inflows
- Now more than 40 active investors
- Hedge funds and dedicated catastrophe bond funds are growing rapidly in this sector
Catastrophe Bond Market Overview

Major Trends

• Increasing use of indices in transactions (PCS, Parametric, Modeled- Loss)
  – Simpler and transparent
  – Cost effective

• Why?
  – Indemnity based transactions are complex
    • Disclosure
    • Liability
  – Perceived information asymmetry between sponsor and investor

• Trend?
  – Creation of better indices
  – More index-linked transactions
Catastrophe Bond Market Overview

Major Trends

• **Greater standardization**
  – Easier and faster to complete
  – Cheaper to complete
    • Transaction costs
    • Coupon to investor

• **Why?**
  – Maturing marketplace
    • Sponsors, investors, bankers, rating agencies and attorneys all have more experience
  – More investor capital, thus more competition

• **Trend?**
  – More downward pressure on price/cost
Catastrophe Bond Market Overview

Major Trends

• **Issuances have been increasingly by reinsurers**
  – Since 2001, 11 insurer / corporate sponsored transactions compared to 16 reinsurer sponsored transactions
  – But insurance companies with large catastrophe risk have used the catastrophe bond market (e.g. USAA, Zenkyoren, Hartford and CEA)

• **Why?**
  – Risk transfer capacity for reinsurers is scarce and expensive
  – Insurance companies have good reinsurance options
  – For insureds, insurance is generally cheaper and easier

• **Trend?**
  – More insurers to sponsor. Insureds will rarely sponsor
Conclusions

• **Growth continues, albeit slowly**
  – Total Volume –
    • But much will be less obvious – private undisclosed transactions
    • Substantial growth potential

• **Transaction size will continue to grow**

• **Focus will still be on “Big Four” territories and perils**
  • But growth outside peaks zones expected

• **Very few NON cat bond RLS projected**
  – Life mortality risk may be an exception

• **Terrorism – in the future**
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