Alternative Risk Transfer - Capital Markets Update

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• What are cat bonds?
• Why use them?
• Current cat bond market
• An Australian cat bond
• Beyond cat bonds
Why consider alternatives to traditional reinsurance?

- (Re)Insurance market has limited capacity to meet potential for enormous losses
- Diversity and scale of additional investors/protection providers
- (Re)Insurance market pricing and capacity can be very volatile
What are cat bonds?

- A means of transferring insurance risks from insurers, reinsurers or corporates via capital markets
- Risk transfer mechanism operates through the loss of principal and/or coupons by investors in the event of a significant pre-defined event
- Investors receive a Libor/Euribor/Treasury benchmarked spread, akin to an insurance premium
- Cat bonds have been around for more than 15 years with the first transaction placed in the market in the late 1990s
**Typical Structure**

- **Sponsor** (insurer / reinsurer)
  - Periodic payments
  - Risk transfer contract
  - Loss payment amounts

- **Issuer (SPV)**
  - Permitted investment yield
  - Collateral account
  - Permitted investment yield + interest spread or extension spread

- **Investors**
  - Note proceeds
  - Principal At-Risk Variable Rate Notes
  - Outstanding principal amount at redemption
Why use cat bonds?

**Sponsors / Protection Buyers**
- Regulatory pressures
- Rating agency pressures
- Changes to catastrophe models
- Capacity is:
  - Collateralised
  - Multi-year
  - Fixed price

**Investors / Protection Sellers**
- Uncorrelated with other asset classes
- Attractive yields
- There is a variety of differentiating perils, trigger types, maturities and risk levels available in the market
## Case study

### Summary Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issuer</strong></td>
<td>Eurus III Ltd (SPV)</td>
</tr>
<tr>
<td><strong>Offered</strong></td>
<td>€75m</td>
</tr>
<tr>
<td><strong>Issue Date</strong></td>
<td>September 2012</td>
</tr>
<tr>
<td><strong>Maturity Date</strong></td>
<td>April 2016</td>
</tr>
<tr>
<td><strong>Sponsor</strong></td>
<td>Hannover Re</td>
</tr>
<tr>
<td><strong>Underlying</strong></td>
<td>Europe Windstorm</td>
</tr>
<tr>
<td><strong>Trigger</strong></td>
<td>CRESTA-weighted PERILS Index</td>
</tr>
<tr>
<td><strong>Currency</strong></td>
<td>EUR</td>
</tr>
<tr>
<td><strong>Size</strong></td>
<td>€100m</td>
</tr>
<tr>
<td><strong>Rating (S&amp;P)</strong></td>
<td>BB-</td>
</tr>
<tr>
<td><strong>Coupon</strong></td>
<td>EBRD + 375 bps</td>
</tr>
<tr>
<td><strong>Attachment</strong></td>
<td>2.22% (annualised)</td>
</tr>
<tr>
<td><strong>Expected Loss</strong></td>
<td>1.59% (annualised)</td>
</tr>
<tr>
<td><strong>Risk Period</strong></td>
<td>3.5 years covering 4 Europe Windstorm seasons</td>
</tr>
</tbody>
</table>

1EBRD pays 3-month Euribor – 38 bps

### Contribution to expected loss by country

<table>
<thead>
<tr>
<th>Country</th>
<th>%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>61</td>
<td>12</td>
</tr>
<tr>
<td>UK</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Netherlands</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>France</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Belgium</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
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<td></td>
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<tr>
<td>Other</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

### Impact of historical events on index value

- Exhaustion level: 236
- Attachment level: 161

<table>
<thead>
<tr>
<th>Event</th>
<th>Index Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daria</td>
<td>150</td>
</tr>
<tr>
<td>Lothar</td>
<td>120</td>
</tr>
<tr>
<td>Capella</td>
<td>100</td>
</tr>
<tr>
<td>Kyriel</td>
<td>80</td>
</tr>
<tr>
<td>Vivian</td>
<td>60</td>
</tr>
<tr>
<td>87j</td>
<td>40</td>
</tr>
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</table>
Evolution of the cat bond market

• Heavily weighted toward US perils, notably US Wind
• At similar level of risk, US Wind paying higher spread than other perils
• Specialist ILS funds use so-called “diversifying cat bonds” to manage concentration risks of their portfolio
• Anticipated 2012 issuance around USD 6.0bn
• Over 60 (re)insurance companies have sponsored cat bonds since creation of the market
• Some companies return to market annually (USAA, SCOR, Swiss Re), others are more opportunistic

Multi-peak perils are transactions exposed to US Wind and at least one other peril
Diversified multi-peril are transactions exposed to two or more perils, none of them being US Wind
An Australian cat bond?

- Australian earthquake or cyclone cat bond structurally feasible, potentially issued in AUD
- Investors are particularly keen for diversifying perils to complement core US wind / earthquake risks
- Currently industry lacks credible third-party Australian flood model but we anticipate such model to be available within a couple of years
- Achieving regulatory recognition may require certain structural features (indemnity trigger, AUD denominated, multi-peril coverage)
Beyond cat bonds: Private Placements

- Alternative to public cat bond, can issue “cat bond lite” notes on private placement basis
- More bespoke structures and tighter information control
- Reduced issuance costs and shortened execution timeline
- Drawbacks - constraints on marketing (sold only to qualified parties), limitations on secondary market transferability
- Greater number of private placements as ILS investors become increasingly sophisticated
Beyond cat bonds: ILW Transformers

- If investor wants a very specific risk, may be possible to source through Industry Loss Warrants (ILW) market
- ILWs - type of reinsurance contract which includes an industry loss index clause
- Capital market investors do not hold insurance licence, so ILW transformed into a financial contract such as a bond or a swap
- Usually done via a segregated cell company

Diagram of a segregated-cell company

- Insurer 1
- Insurer 2
- Insurer n
- Cell 1
- Cell 2
- Cell n
- Investors notes 1
- Investors notes 2
- Investors notes n
- SPI
- ILW contract
- Note / swap
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Appendix
The “riskiness” of a cat bond is expressed by its expected loss, a figure calculated by a third party modelling agent such as AIR, EQECAT or RMS.

The trigger metrics of the cat bonds are recalculated once a year to maintain the expected loss constant.

The price of a new issuance determined by comparing the expected loss of that bond with the other bonds already in the market (distinguishing between US perils and diversifying perils).

Some factors may be applied to take into account the specific nature of each cat bond. For instance:

- Indemnity bonds will price at a premium owing to the increased opacity of the index calculation.
- Japan earthquake bonds will also price at a premium owing to the uncertainty surrounding aftershocks following the 2011 earthquake.

Over time, the secondary market spreads will move depending on the reinsurance rates and the cash that investors have available to deploy to new issuance.
Cat bond investors

A diversified pool, with lead participation from dedicated Insurance Linked Securities (ILS) funds

– In recent years, the number of investors has remained stable with net asset value under management showing healthy signs of growth
– The financial crisis proved that real expertise was needed to invest in ILS. This has resulted in increased intermediation by dedicated ILS funds on behalf of end investors
– Real money accounts in particular have reduced their direct presence and favour investment via institutional ILS fund managers
## Structural considerations

<table>
<thead>
<tr>
<th>Maturities</th>
<th>&lt; 3 years</th>
<th>3 years</th>
<th>4 years</th>
<th>5 years</th>
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<tbody>
<tr>
<td>Trigger mechanisms</td>
<td>Industry loss index (PERILS)</td>
<td>Indemnity</td>
<td>Parametric</td>
<td>Modelled loss</td>
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<tr>
<td>Occurrence mechanisms</td>
<td>Per occurrence</td>
<td>Aggregate</td>
<td>2nd event / 3rd event</td>
<td>Others (combination)</td>
</tr>
<tr>
<td>Modelling / Calculation / Reset agents</td>
<td>AIR</td>
<td>EQECAT</td>
<td>RMS</td>
<td></td>
</tr>
<tr>
<td>Issuer specifics</td>
<td>Location</td>
<td>Shelf / no-shelf</td>
<td>Listing</td>
<td>Clearing</td>
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<tr>
<td>Currencies</td>
<td>EUR</td>
<td>USD</td>
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<tr>
<td>Collateral</td>
<td>Supranational puttable Notes</td>
<td>Money market funds</td>
<td>Tri-party repo</td>
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<tr>
<td>Rating agencies</td>
<td>S&amp;P</td>
<td>Moody’s</td>
<td>Fitch</td>
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