THE USE OF RISK LINKED SECURITIES TO MANAGE CATASTROPHIC RISKS

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Powerpoint presentation

This document is circulated for Session 2 of the Conference on Catastrophic Risks and Insurance, to be held on 22-23 November 2004 at the OECD Headquarters, 2 rue André Pascal, 75016 Paris, starting at 9:00 a.m.

For further information on this conference, please contact Cécile Vignial, Financial Markets Division (Cecile.Vignial@oecd.org), or Yosuke Kawakami or Morven Alexander, Outreach Unit for Financial Sector Reform (Yosuke.Kawakami@oecd.org or Morven.Alexander@oecd.org)
The use of risk linked securities to manage catastrophic risks

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OECD Conference
22 November 2004
Agenda

Nat cat risks: A success story

Terrorism: An open issue
Insurance and reinsurance industry have lost 20% of their equity.

Global P&C industry capital (USD bn)

- Capital, end of 2000
- Estimated capital destroyed
- Capital raised
- Estimated current capital

Source: Swiss Re Economic Research & Consulting
Most reinsurers have been downgraded

- Swiss Re
- Munich Re
- Berkshire Hathaway
- Employers Re
- Hannover Re
- Gerling Global Re
- Lloyd's
- Allianz Re
- SCOR
- AXA Re
- Converium

S&P rating:

- AAA
- AA+
- AA
- AA-
- A+
- A
- A-
- BBB+ and less

11 Sept '01
8 Nov '04

(1) Since Dec '01
Five peak risks in the world of P&C reinsurance

Peak risk: Geographical zone with
- high risk of natural hazards (e.g., earthquakes)
- high density of insured values (e.g., buildings)
Increasing value concentration (Hurricanes Atlantic)

Hurricanes recorded in the US in the last 110 years

Projected population change 1994-2015

Source: Swiss Re’s Nat Cat team

Source: National Oceanic and Atmospheric Administration (NOAA).
Consequence: Building a well-balanced book of business is difficult.

Worldwide cover bought in R/I market per peril in 2003

Legend: EQ = Earthquakes, WS = Windstorms, TC = Tropical cyclone

(1) No separation available between EQ and TC risks in the US market
Capital markets are an answer for Swiss Re

New issue volume of insurance linked securities (in USD millions)

Transformer by Swiss Re and/or underwritten by Swiss Re Capital Markets (lead or co-lead)
Sponsored by Swiss Re and underwritten through Swiss Re Capital Markets (sole)
Securitization prices have fallen about 20% since mid-2002

Secondary market spreads (as of 30 September 2004)

Hurricane Ivan
Terrorism: An open issue
New stage ahead?

**Industrialization**
- Concentration of population in urban centers
- Value concentration

**Globalization**
- Interconnectivity leads to higher system sensitivity
- New risks

- 1666 fire in London, growing importance of sea-borne trade leads to creation of first insurers
- Catastrophic fires in Hamburg and Glarus lead to creation of first reinsurers
- Terrorism and other new risks make the creation of new capacity sources inevitable

<table>
<thead>
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<th>1680</th>
<th>1840</th>
<th>2002</th>
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Insurance

Reinsurance

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Terrorism: Whence the threat today

- After Afghanistan, Iraq: al-Qaida weakened as operational network, but strengthened as source of inspiration for radical Islamists (Bin Laden as ‘hero’)

- Terrorist cells increasingly operate independently from al-Qaida. Presence estimated in 60 countries

- OECD countries/US still ‘targets of preference’, but more difficult to penetrate with tightened security. al-Qaida attacks more likely in countries with less security resources (M. East, SE Asia)

- 9/11 as ‘benchmark’ for indiscriminate use of violence by any terrorists (al-Qaida and others) -> escalating terror (eg Beslan)

- Seeking to acquire weapons of mass destruction (nuclear, chemical, bio)
The challenge: Is new terrorism risk insurable?

Insurability criteria

- **Assessibility**: loss probability and severity must be quantifiable

- **Randomness**: time of occurrence must be unpredictable, occurrence itself must be independent of the will of the insured

- **Mutuality**: numerous exposed parties must join together to form a risk community, to share and diversify the risk

- **Economic feasibility**: Private insurers must be able to charge a premium which is commensurate with the risk

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How much would you ask for insuring these objects?

Sears towers, Chicago

Swiss Re building, Zurich

Even without model, there is a price (although probably a high one) at which you would insure them.
Hypothesis: Without model, securitization could work in two areas

- 30%-50% spread for the cover
- target: hedge funds
- With just 2-3 deals the risk is nearly diversified away
- Quick payback over time

- 1%-2% spread for a risk which is perceived to be close to zero
- target: banks, pension funds who want some spread pickup with minimal risk
- “If it happens, it’s going to impact the world economy and other portfolios anyway”
Insurance-linked securities have worked very well for Swiss Re with **natural catastrophe risks**
- underlying threats are growing and well understood
- win-win situation given: these risks are eating up a disproportionate amount of capital for reinsurers
- Markets have become more efficient, prices have fallen

Securitizing **terrorism risk** will be a significant challenge
- underlying risk is not well understood (new and constantly changing risk)

Some potential in the two areas where models might not be essential:
1. Very low risk area (FIFA deal) where investors basically think it is not possible or very remote
2. High risk area where investors would basically “bet” and get a high return