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Catbonds in Asia
The timing is right

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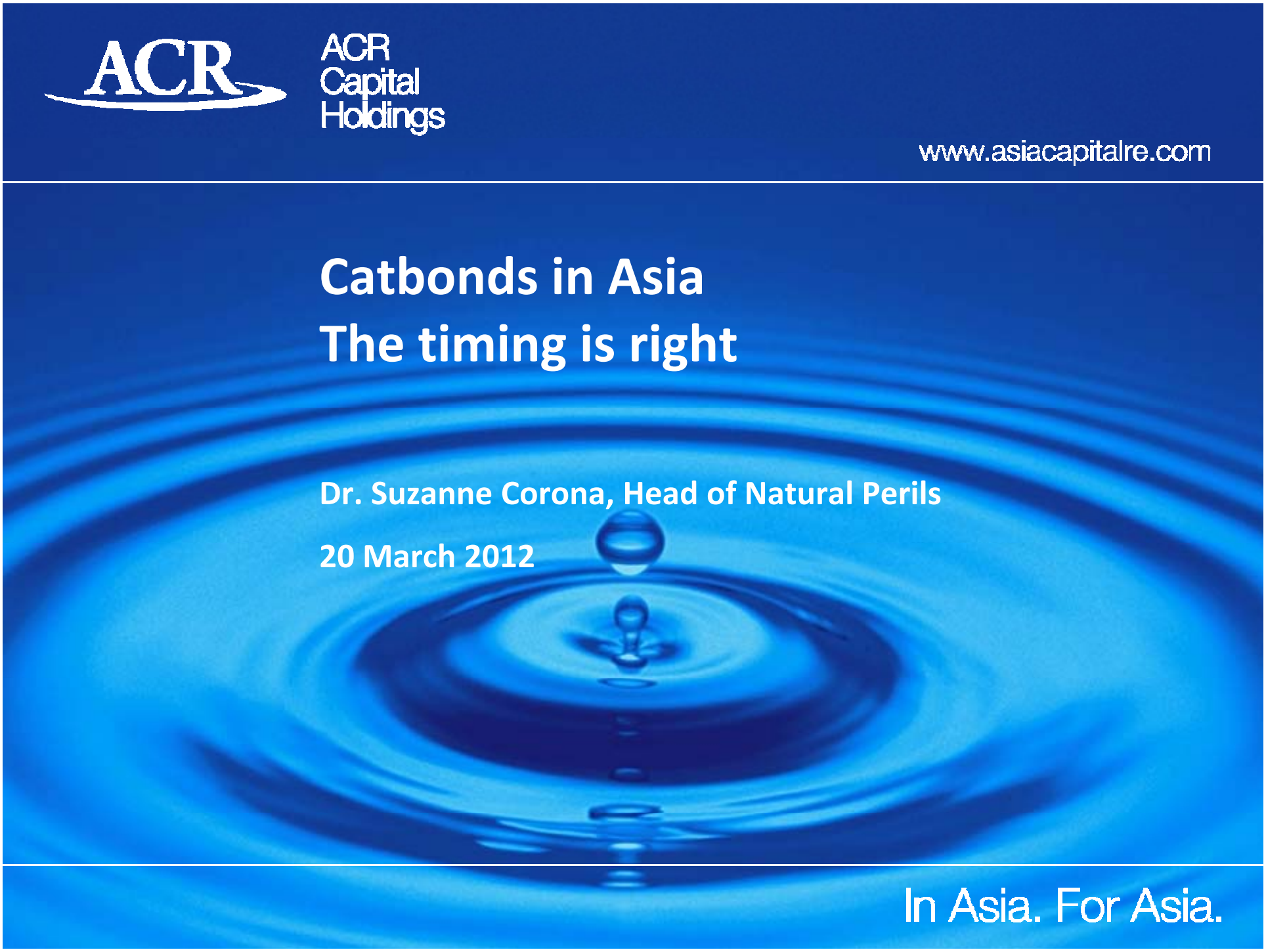


In Asia. For Asia.

Agenda

- The current market for cat bonds within APAC
- Case Study: Japanese cat bonds following the 2011 catastrophes
- Capital markets risk transfer : the timing is right

ILS/ILW and Asia (1/3)

- Since the first cat bonds in 1996, there are 64 issuances covering Asian territories*
- The recent series of events in Asia have pushed reinsurers and investors alike to reassess their risk appetite for catastrophes
- Post event analysis of catastrophe model performance shows model failure and model misses
  - New Zealand : liquefaction
  - Japan : tsunami
- In the past 12 months there have been 5 known cat bond issuances covering Asian territories*

Source : Artemis

ILS/ILW and Asia (2/3)

- Issuances in the past 12 months

Issuer	Liability (USD m)	Cedent	Inception	Trigger
Kibou Ltd. (Series 2012-1)	300	Hannover Re for Zenkyoren	Jan 2012	Parametric
Kizuna Re Ltd.	160	Tokio Marine	Aug 2011	
Sector Re V Ltd. (Series 1, Class B)	70	Swiss Re	Jun 2011	
Loma Reinsurance Ltd. (Series 2011-1)	100	Argo Re	Jun 2011	Industry loss index
Sector Re V Ltd. (Series 1, Class A)	95	Swiss Re	Mar 2011	

- Total issuance dedicated to Japan : USD 460 m
- Total issuance including Asian cover : USD 725 m
- Total issuance all countries in 2011 : USD 4.95 b
- Japan is about 9.3% of the total

Source : Artemis

ILS/ILW and Asia (3/3)

- Although Japan represents about 10% of total outstanding limits, there is yet no home grown Asian cat bond. Most are Cayman Islands or Bermuda.
- Hardening cat prices and favourable tax regimes should eventually attract investors to use these tools in Asia.
- Regulatory framework exists in Asia.
- Asia does not yet have Special Purpose Insurance vehicles to rival Bermuda, currently we would structure a transaction using an SPV.
- Asia does not have an industry equivalent to the U.S.'s PCS or Europe's PERILS for measuring industry loss triggers in ILW.

Case study : Tohoku Earthquake

- Earthquake is not a fully insurable peril in Japan. Residential risks are covered by the Japanese Earthquake Reinsurance Fund. Commercial and industrial risks are covered on a case by case basis and ceded to treaties with international reinsurers.
- The Tohoku earthquake is a “Black Swan”. None of the earthquake hazard models predicted an event of such a high magnitude on that fault line.
- Catastrophe models nevertheless reproduced in general the loss due to earthquake shaking and fire following earthquake, but the tsunami and nuclear disaster were completely missed.
- Losses on internationally placed reinsurance programs vary widely depending on the program. Some are completely hit while others clean.
- Ten cat bonds were on risk.

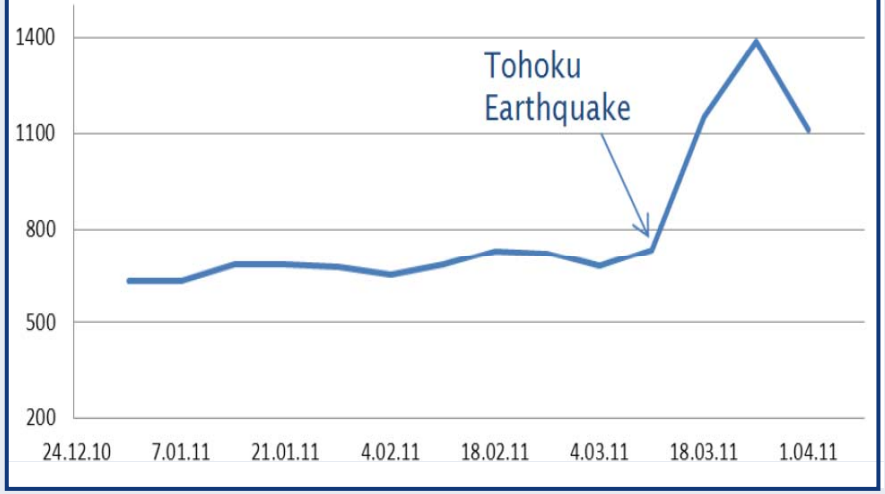
Case study : Tohoku Earthquake
Ten cat bonds from six sponsors

Issuer	Liability	Cedent	Maturity	Trigger
Montana Re Ltd. (Series 2010-1)	210	Flagstone Re	Jan 8, 2014	Parametric Annual agg 2nd event
Vega Capital Ltd. (Series 2010-1)	106.5	Swiss Re		Parametric Annual agg
Atlas Capital VI Ltd. (Series 2010-I)	€75m	SCOR		Parametric Annual agg
Successor X Ltd. (Series 2010-1)	120	Swiss Re		Parametric Occurrence
Atlas Capital VI Ltd. (Series 2009-1)	€75m	SCOR		Parametric Annual agg
Topiary Capital Ltd.	200	Platinum Underwriters		Parametric 2nd event Occurrence
Vega Capital Ltd. (2008)	150	Swiss Re		Modeled loss Annual agg
Valais Re	104	Flagstone Re	Jun 6, 2011	Indemnity Annual Agg or per Occurrence
Muteki Re	300	Zenkyoren through Munich Re		Parametric Occurrence
Midori Ltd.	260	East Japan Rail Company through Munich Re		Parametric Occurrence

Case study : Tohoku Earthquake Performance of Cat Bonds

- The notional exposure of the ten cat bonds on risk at the time of the event was about US$ 1.7 bn of capacity, representing about 13% of the then total global current outstanding cat bond volume
- These cat bonds were structured to trigger in different ways. Some were based on the actual losses suffered by the sponsor while others were based on the physical parameters of the event.

Cat Bond Market Spread in bps



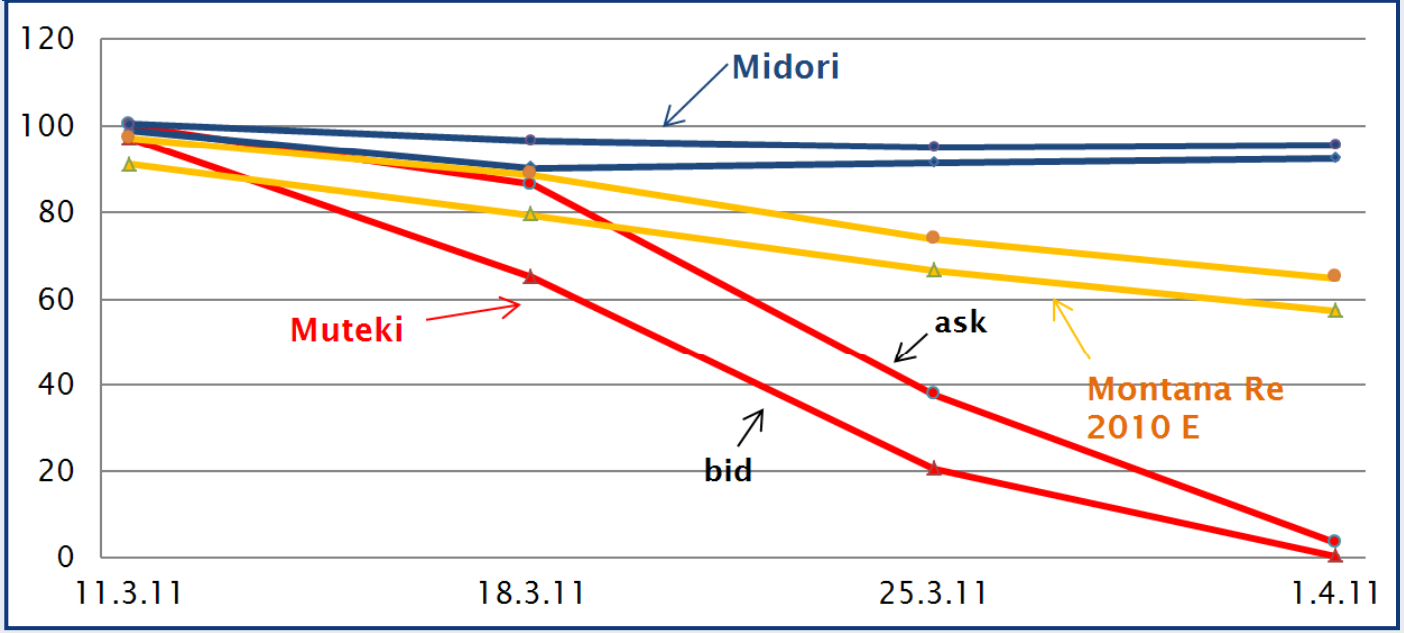
Source : Twelve Analytics / CatEye

- The graph shows the market weighted initial spread plus spread changes as the impact of the Tohoku earthquake and tsunami unfolded.
- The spreads widened until the Muteki bond of Zenkyoren was “declared” as fully defaulted.
- The uncertainty in the calculation of the event index value halted trading

Case study : Tohoku Earthquake Performance of Cat Bonds

- The spread of Midori first widened then reduced when it became clear that it would not trigger.
- The spread of Montana widened when it became clear that it would drop down and trigger on the next event.
- The spread of Muteki widened and then crashed when it was declared a default.

Bid and Ask Prices of Three Cat Bonds Nearing Trigger



Source : Twelve Analytics / CatEye

Case study : Tohoku Earthquake Flagstone (1/5)

Issuer – JPN notes	Liability	Date of issue	Maturity	Rating	Trigger
Montana Re Ltd. (Series 2010-1) Class E notes	60	Dec 2010	Jan 8, 2014	B- (S&P) negative watch	Parametric Annual agg 2nd event
Valais Re – Class A notes	64	May 2008	Jun 6, 2011	Ba2/bb	Indemnity Annual agg
Class C notes	40	May 2008	Jun 6, 2011	B3/b	Indemnity Occurrence

In USD millions

1Q losses amount to **26.4%** of shareholder equity @ 12/31/2010, and consume **35.9%** of NEP 2010

- USD 60-80m for Australian floods and Cyclone Yasi
- USD 60-90m for Lytleton New Zealand EQ
  (based on USD 8-12b industry loss)
- USD 80-130m for Japan EQ & tsunami
  (based on USD 25-35b industry loss)

Case study : Tohoku Earthquake Flagstone (2/5)

- Financial market risk : shareholders' equity shrinks and loss ratio increases

Case study : Tohoku Earthquake Flagstone (3/5)

Montana Re : a parametric-based index is based on spectral acceleration for earthquake (USGS data). These index values are used to estimate industry losses by line of business per prefecture.

- First event : USD 200 m XS USD 100 m
- Second event : USD 60 m XS USD 100 m (JPN EQ)
- Rapid calculation of loss amount through parametric based index

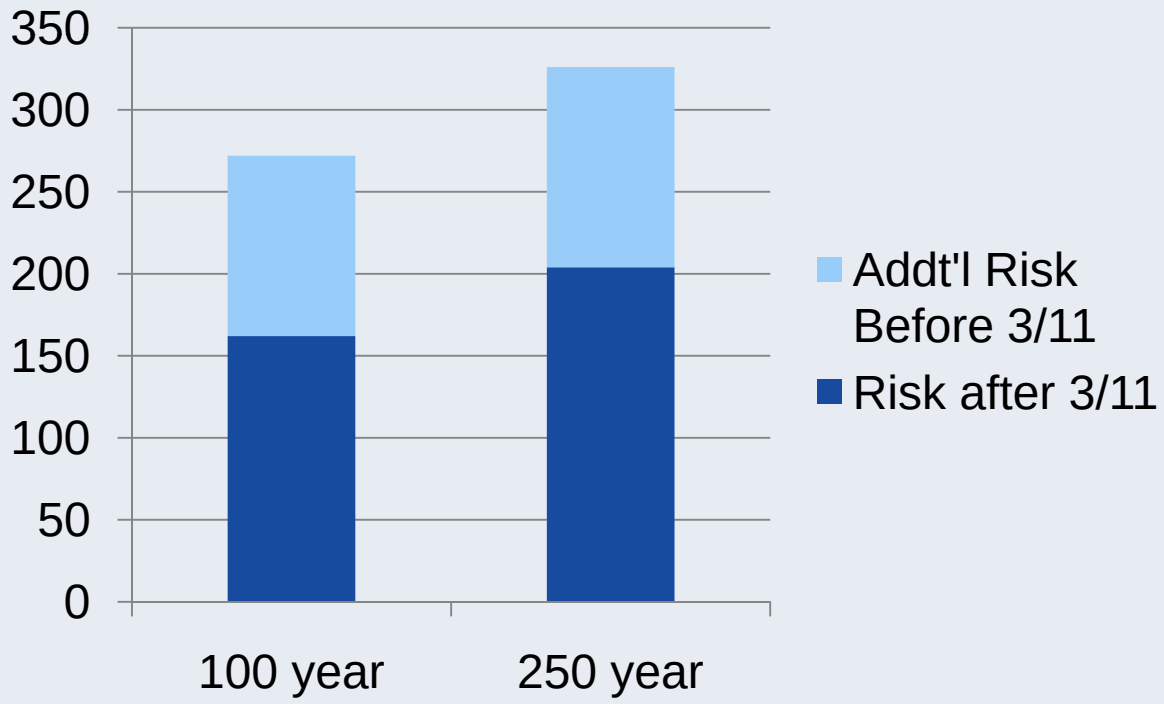
Valais Re : an indemnity based trigger, risk analysis was done using modelling.

- Provides fully collateralized retrocessional cover
- Not expected to pay out, awaiting final loss estimates

Case study : Tohoku Earthquake Flagstone (4/5)

Significant reduction in risk profile since 31 Dec 2010:

- 1 in 100 year event reduced by 40.4%
- 1 in 250 year event reduced by 37.4%



Case study : Tohoku Earthquake Flagstone (5/5)

- FSR's retrocession program incorporates cat bonds and traditional programs allowing the company to push capital optimization to its limits
- Efficient dropping down of risk reduction after the first hit
- Market risk may have been neglected as we see 26% of shareholders' equity has vanished
- In hindsight, since the Japanese EQ loss is under the 1 in 100 year portfolio loss (USD 130m versus USD 272m) even traditional per event catastrophe reinsurance may not have helped
- Protection of attritional losses would have been useful for the exceptional spate of major losses

Capital markets risk transfer
The timing is right

- The demand for catastrophe cover is increasing with heightened risk awareness, increasing exposures and insurance penetration.
- Pricing is the main driver for many reinsurance purchases in Asia. Hardening markets combined with increased demand will push the markets towards these alternative covers.
- Cat bonds may supplement or replace higher levels of reinsurance cover without reinsurer credit risk.
- Regulatory and legal environment is ready for Asian ILS. Loss triggered ILW will be more challenging due to lack of industry benchmark.
- New ideas and open-mindedness may be useful to help spur the cat bond market in Asia

Thank you

Q & A