

Taiwan NLUA Seminar

國際天災保險之前瞻與回顧

14 November 2011

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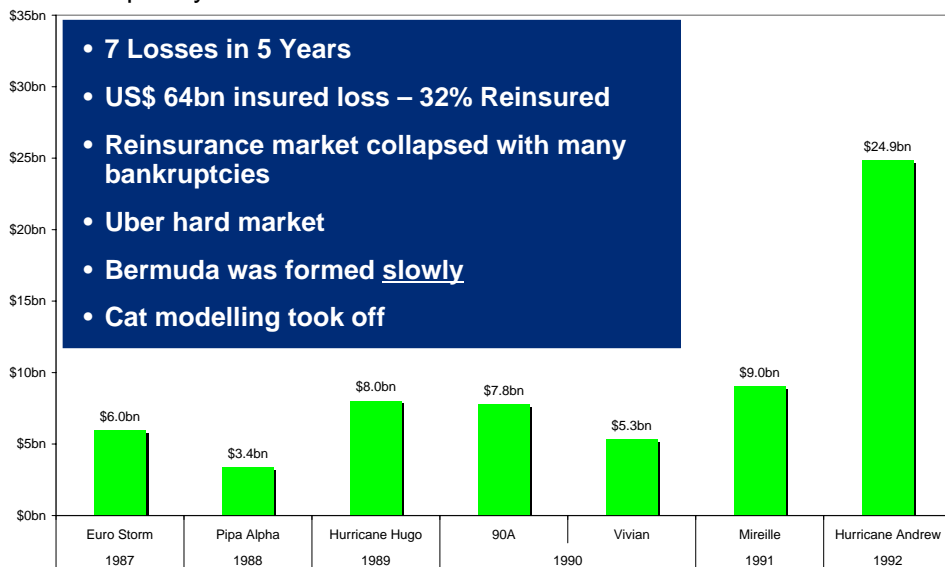
Agenda

- Retrospective
- Global Reinsurance Market Update
- A Quick Overview of CAT Risk in AsiaPac & Taiwan
- Perspective

Retrospective



Late 80's / Early 90's Cat Frequency



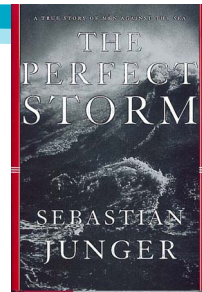
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2001 / 2 Correlation

The Perfect Storm:

- **Stock Market Downturn, recession**
 - Burst of the tech bubble
- **Asbestos and Other Liability Reserve Strengthening**
 - 1980s, 1997-2000 accident years
- **World Trade Centre Loss**
 - Correlation between business lines eg Property & WCA, Life
 - Correlation between Treaty and Fac

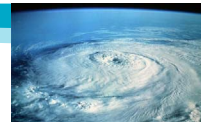
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2005 KRW Mega Loss

- **Hurricane Katrina, Rita and Wilma**
 - US\$ 97.6bn insured loss
 - 45% reinsured
- **Be strong after a loss**
 - Companies who lost less than 20% of PHS were in a strong position after a loss
 - Today trading at higher book value than the rest of the group
- **Reputation**
 - Companies who lost between 20% and 40% maintained position
- **Rating**
 - Companies who lost more than 40% were either downgraded, lost reputation, went out of business or merged.

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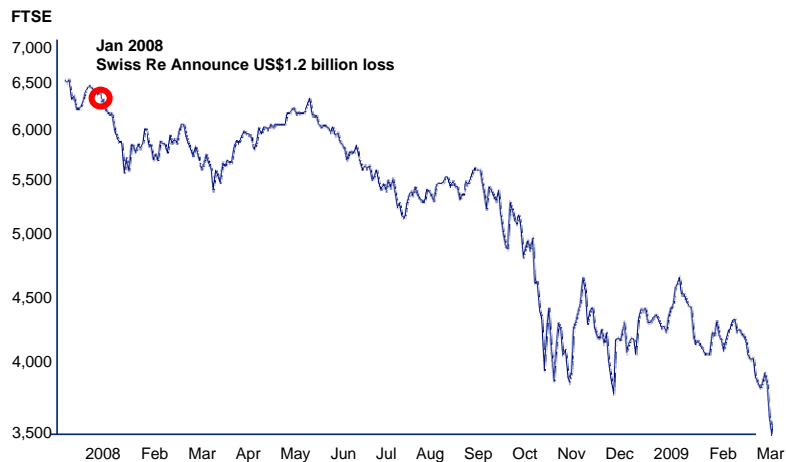


2008 / 9 New fears, new lows, new hopes



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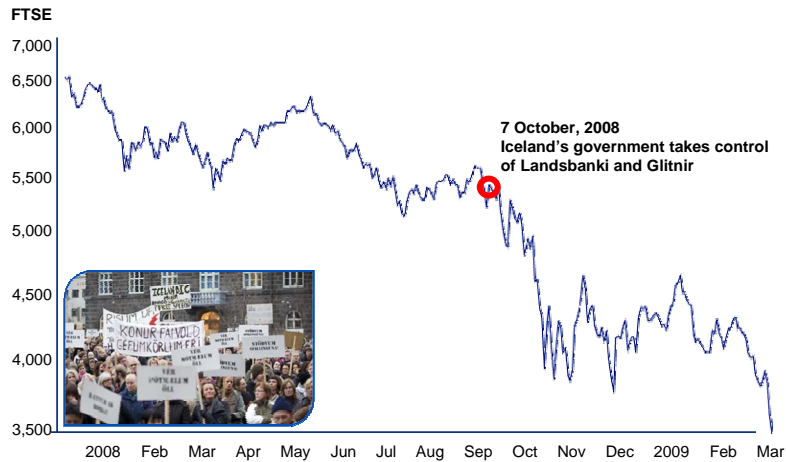
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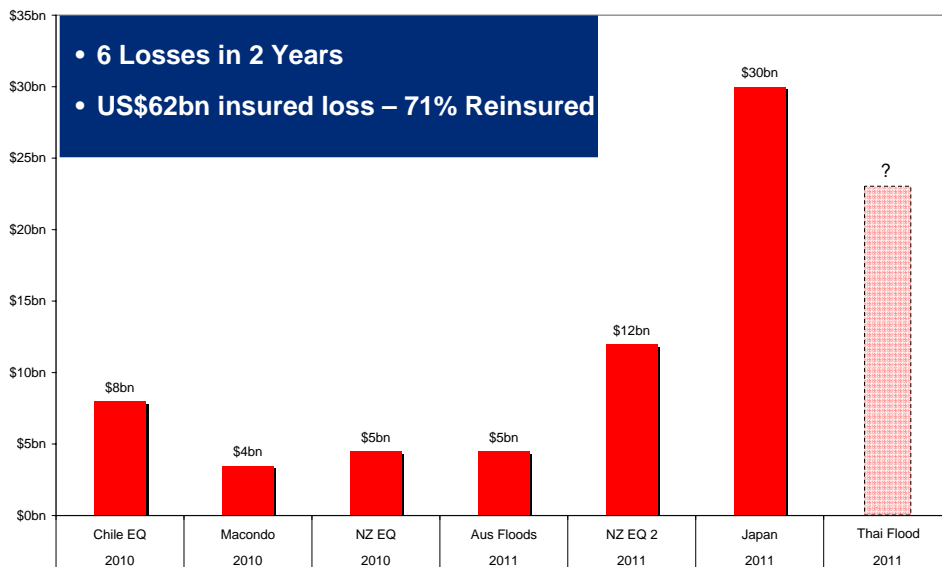
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2008 / 9 New fears, new lows, new hopes



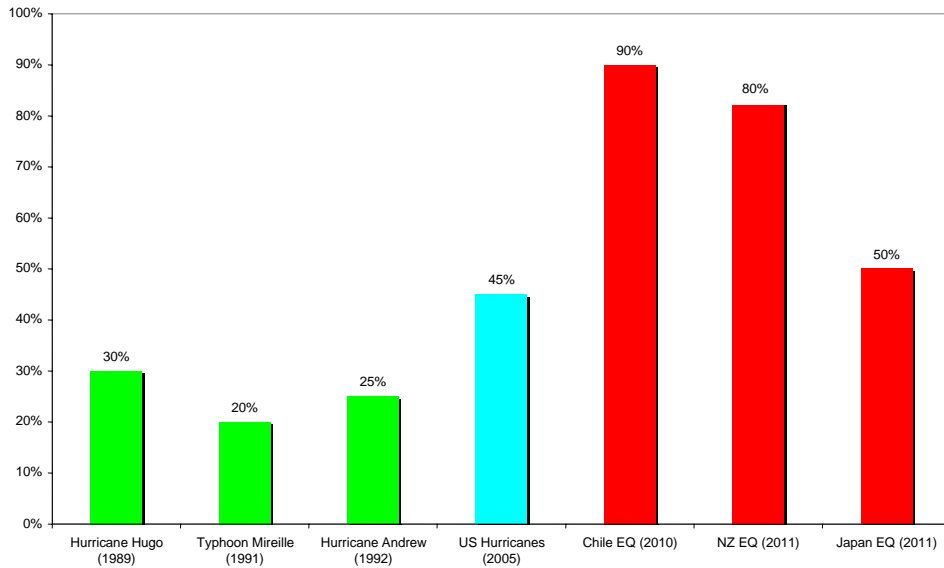
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2010 / 2011 Cat Frequency



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2010 / 2011 Reinsured share of Major Losses



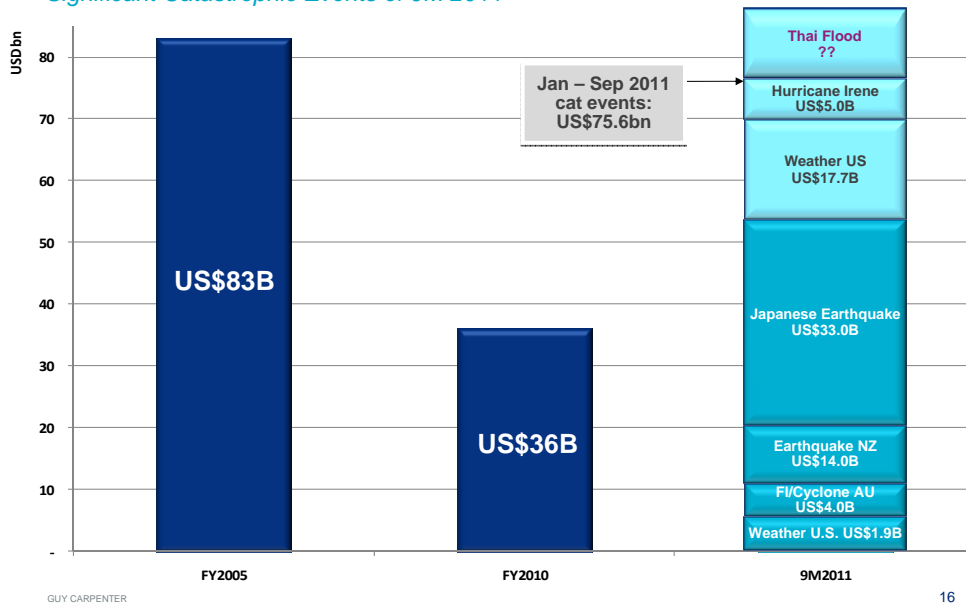
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Global Reinsurance Market Update



Loss Activity

Significant Catastrophic Events of 9M 2011



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Loss Activity

Global Cat Loss Ratio

- ➔ Global Cat Loss Ratio: 168%
- ➔ ANZ Cat Loss Ratio: 2,125%
- ➔ Japan Cat Loss Ratio: 900%
- ➔ Asia Pac Cat Loss Ratio: 1,067% (excluding Thai Flood)

Loss Activity

Reinsurer Combined Ratios

Reinsurers	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	6M 2011
Multi-Line	Everest Re Group	132.0%	152.0%	95.2%	98.9%	120.2%	89.7%	91.6%	95.6%	89.6%	124.7%
	Hannover Re Group	107.8%	94.8%	100.8%	97.2%	112.8%	100.8%	99.7%	95.4%	97.3%	110.3%
	Munich Re Group	135.1%	122.4%	96.6%	98.9%	111.7%	92.6%	96.4%	99.5%	95.7%	102.6%
	Partner Re	130.2%	97.9%	93.2%	94.6%	116.3%	84.4%	80.4%	94.1%	85.3%	92.9%
	SCOR Group					107.1%	97.0%	98.3%	99.8%	99.6%	98.7%
	Swiss Re Group	124.0%	104.0%	98.3%	97.0%	108.7%	90.4%	90.1%	97.9%	93.2%	93.9%
	XL Re	145.3%	103.9%	119.0%	95.0%	127.0%	83.4%	83.9%	90.4%	93.6%	77.5%
	Lloyd's	140.0%	98.6%	90.7%	96.6%	111.8%	83.1%	84.0%	91.3%	85.7%	93.3%
	Ariel Holdings						44.8%	41.6%	107.9%	65.0%	73.8%
Cat Specialist	Validus Holdings						56.6%	62.4%	92.2%	68.9%	79.6%
	Montpelier Re Holdings		67.4%	50.3%	77.8%	200.7%	60.3%	61.3%	91.0%	62.2%	72.4%
	Renaissance Re Holdings	62.2%	61.5%	47.6%	104.4%	139.7%	54.7%	59.3%	79.0%	46.4%	35.2%
	Average	122.1%	100.3%	88.0%	95.6%	125.6%	78.2%	79.1%	94.5%	81.9%	84.8%

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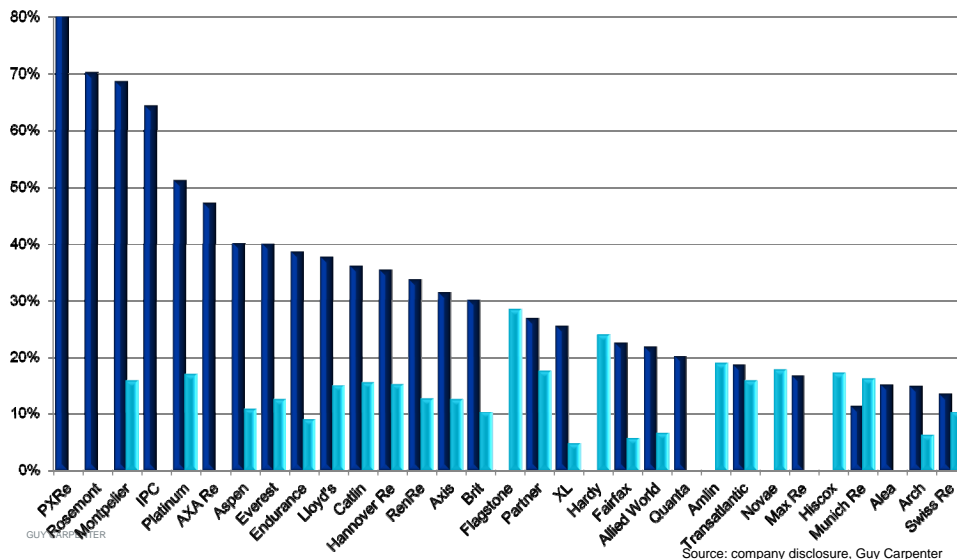
Source: market disclosure, Guy Carpenter

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Loss Activity

Catastrophe Losses as % of Prior YE Shareholders' Funds

■ FY2005 ■ 1H2011



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Source: company disclosure, Guy Carpenter

Latent Catalysts for Change

→ **Man Made Cat**

RMS Version Change – New U.S. hurricane model release v.11

→ **PIIGS Sovereign Debt**

Secondary risk exposure may be substantial for European (re)insurers

→ **Low Interest Rates**

Historic lows for much of the world

Investment returns are lower, impacting bottom line

Reinsurers' earnings are sensitive to investments

→ **Loss Reserve Releases**

Loss reserve redundancies are declining

(Re)insurers can no longer rely on reserve releases to support calendar year profitability

Latent Catalysts for Change

→ **Inflation**

Uncertainty around future purchasing power diminishes capital flows by lowering savings and investment

Increase in forward interest rates

→ **Solvency II**

Regulatory pressure on insurance capital

Higher risk-based capital requirements

Heavy regulatory and compliance costs to the industry

→ **(Re)Insurers' Costs of Capital (WACC)**

Generally higher than in 2005, up from 2009

→ **(Re)Insurance Sector Relative Valuations**

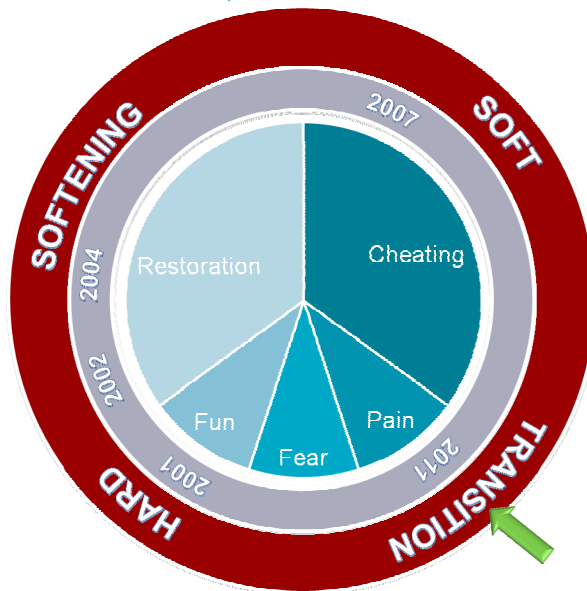
(Re)Insurer valuations are driving consolidation

Majority of the sectors below book value driving consolidation

Additional M&A could slow sector capital growth, restricting supply of reinsurance

Cycle – Where Are We Now?

Soft Market is the Norm, with Occasional Hard Periods



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Cycle Drivers

- Capital
- Economic Climate
- External Forces

Source: Dowling & Partners, Guy Carpenter ²²

A Quick Overview of Asia Pacific CAT Risks



Asia Pacific Catastrophe

→ Significant exposure to wide variety of CAT perils

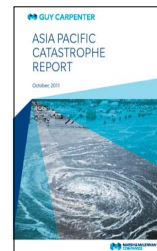
- Events of past 18 months have turned world's focus on Asia Pac
- Asia Pac losses (excluding Thai flood) = 67% of 2011 global estimate

→ CAT reinsurance demand expanded rapidly & significantly

- Rapid growth of economies
- Increasing sophistication in insurance organization
- Increased recognition of reinsurance in risk management

→ Oversupply of reinsurance capacity

- Diversification strategies of international reinsurers
- Future growth potential
- Pricing considered inadequate

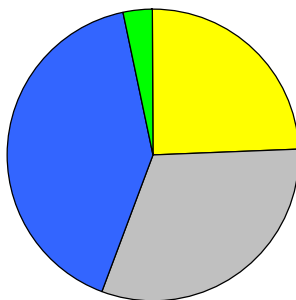


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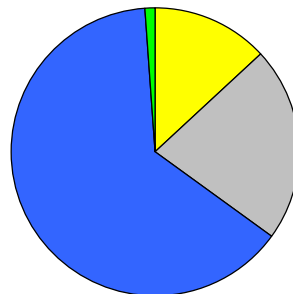
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Asia Pacific Catastrophe

Share of Global Cat Limit



Share of Global Cat Premium



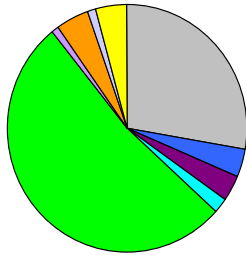
- Asia Pacific
- Europe
- North America
- Latin America

- Significant growth of Asia Pac Cat Limit since 2007
- 2011 Asia Pac Cat Premium Share = Double of 2007

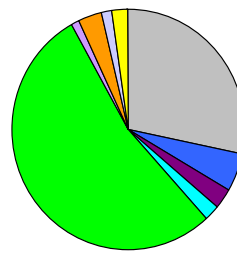
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Asia Pacific Catastrophe

Share of Asia Pac Cat Limit



Share of Asia Pac Premium



Australia
 China
 India
 Indonesia
 Japan
 Korea
 New Zealand
 Philippines
 Taiwan

- Asia Pac Cat Limit and Premium are heavily dominated by mature markets (Japan & Australia)

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Top Ten Costliest Earthquake Events (1980 – 2011)

Period	Event	Affected Area	Overall Losses (\$US M)	Insured Losses (\$US M)	Fatalities
11.03.2011	Earthquake, Tsunami	Japan -Tohoku	210,000	~30,000	15,500
17.01.1994	Earthquake	USA – Northridge	44,000	15,300	60
22.02.2011	Earthquake	New Zealand – Christchurch	20,000	>10,000	181
27.02.2010	Earthquake, Tsunami	Chile	30,000	8,000	520
3.09.2010	Earthquake	New Zealand - Canterbury	6,500	5,000	
17.01.1995	Earthquake	Japan – Kobe	100,000	3,000	6,430
26.12.2004	Earthquake, Tsunami	Southeast Asia	10,000	1,000	220,000
17.10.1989	Earthquake	USA – Lomo Prieta	10,000	960	70
23.10.2004	Earthquake	Japan - Niigata	28,000	760	45
21.9.1999	Earthquake	Taiwan	14,000	750	2,400

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Source: Munich Re - NatCatSERVICE, July 2011

Thailand Flood

→ Worst Flood Loss

- Affected 64 of Thailand's 77 provinces
- High degree of uncertainty
- Man made or act of god?
- Greatest damage in 7 industrial estates
- Loss estimate ranging US\$5-6Bn to US\$19.5Bn (OCI Nov 8)

→ Impact to (Re)Insurance Market

- 90% flood losses are reinsured
- Significant losses incurred by both local & international insurers
- Regional reinsurance capacity adversely affected
- Impact to Japanese HO & regional treaties

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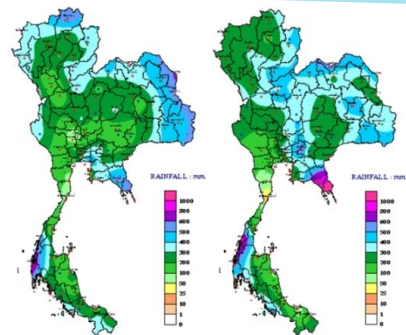


Thailand Flood

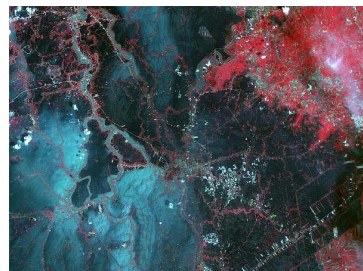
→ Issues

- Thailand used to be considered as non Cat prone market
- Flood losses outsized market
2010 non-life premium: US\$3.4Bn
- Concentration of industrial park risks
- BI, CBI coverage (semi-con, motor)
- Reinsurers to re-address top layer Cat with low rate-on-line
- Hours Clause for Flood Coverage

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Source: Thailand Meteorological Department



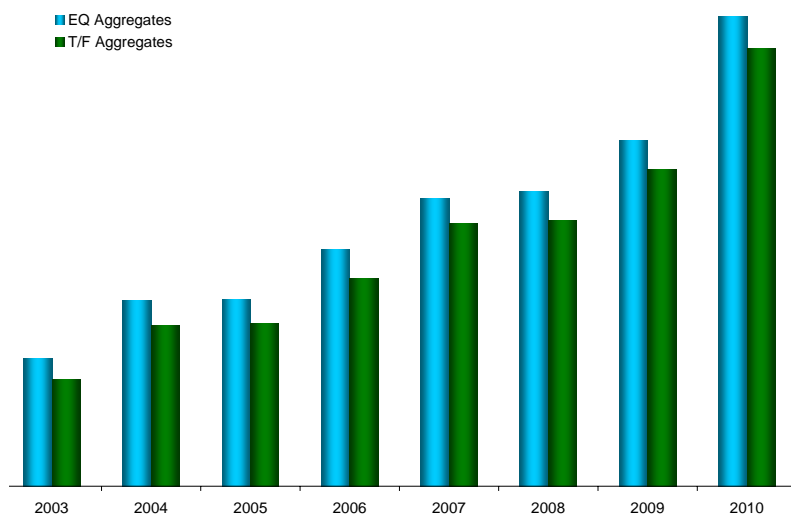
Source: Nasa, ASTER

A Quick Overview of Taiwan Property CAT



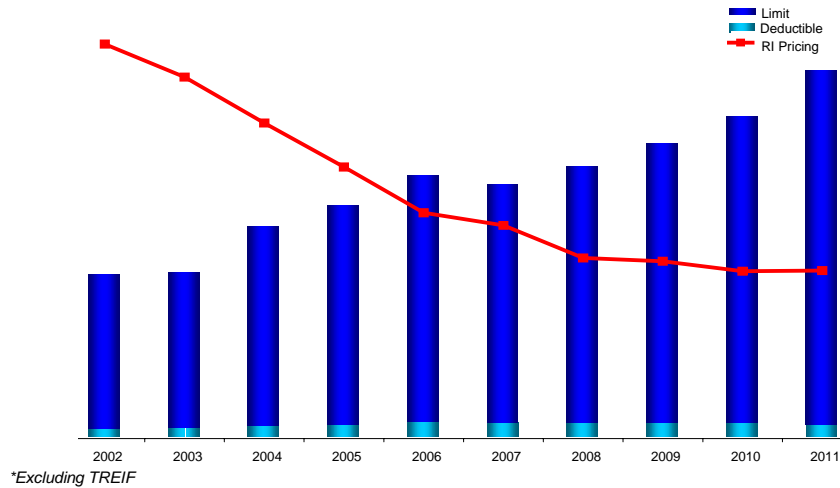
Taiwan Property CAT
Net Retained Aggregates

2010 = 4.5 x 2003 Aggregates



Taiwan Property CAT Limit and ROL Index

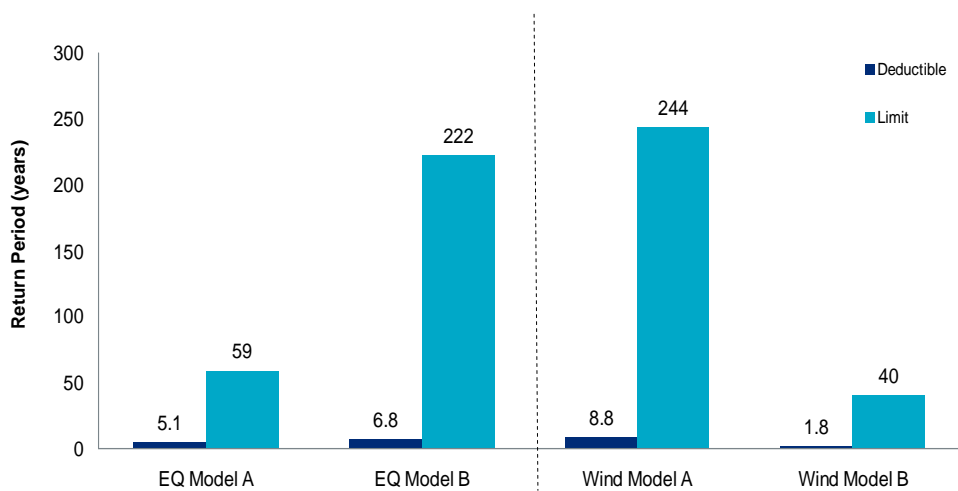
2011 = 2 times of 2002 Limit



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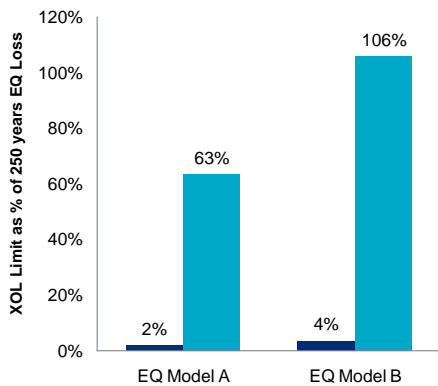
Taiwan Property CAT CAT XOL Average Return Periods



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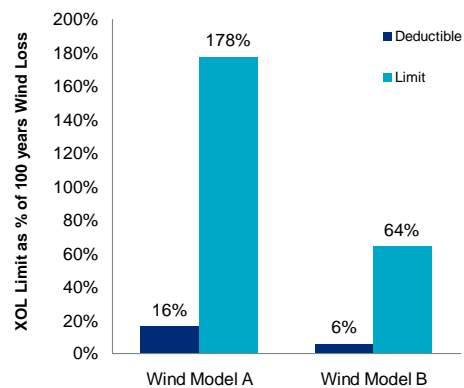
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Taiwan Property CAT CAT XOL Capacity as % of Modelled Loss



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16 November 2011



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Cat Modeling

- Special attention should be given when reviewing Cat modelling output
- *Example:*
 - Loss estimates do **NOT** reflect:
 - Losses from non-modelled perils, including landslide and fire following
 - Losses to motor
 - Business interruption losses
 - Loss adjustment expenses
 - Demand surge
 - Losses to uninsured properties
 - Losses to land
 - Losses to casualty and life lines
 - Losses to infrastructures
 - And more.....

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Cat Modeling Manage Cat Model Uncertainty



“Companies that understand the vagaries of model uncertainty and take disciplined, holistic approach... are well positioned to adapt and outperform the competition.”

John Major, Director of Actuarial Research, GC Analytics

- **Vast difference in vendor reported uncertainty bands**
- **Not all models are created equal**
- **More data leads to less uncertainty**

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Cat Modeling

- Cat models are developing in Taiwan therefore caution must be taken with regard to their results in reinsurance program design.
- As evidenced in recent major earthquake events in Japan and New Zealand, it is imperative to take unmodelled risks, such as tsunamis, liquefaction and fire following earthquake, into consideration when reviewing cat modelling outputs for reinsurance program structure.
- **“ALL CAT MODELS ARE WRONG BUT SOME ARE USEFUL”**
- **“Do not believe the cat models too much but do not believe them too little either”**
- **Better quality data and underwriting information will influence cat model results and reinsurance pricing**
- Guy Carpenter advocates that insurance companies review the results of multiple models when considering their program design.

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Review the Risk Lessons from Recent Events

Guy Carpenter has reviewed with local advisors in Taiwan:

1. Tsunami
2. Liquefaction
3. Fire following Earthquake
4. Multiple Earthquakes
5. Potential Dam Failure

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Review the Risk Tsunami

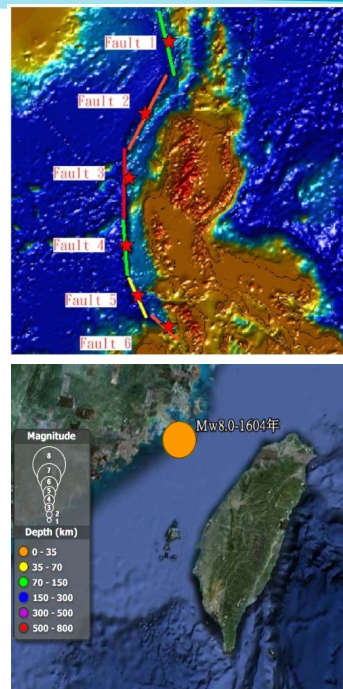
→ Local Advisors

- COMCOT + GEBCO

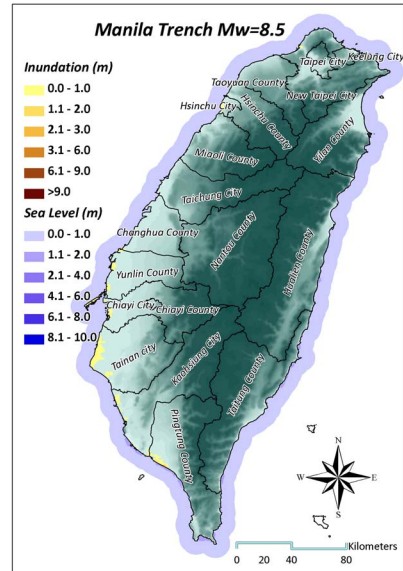
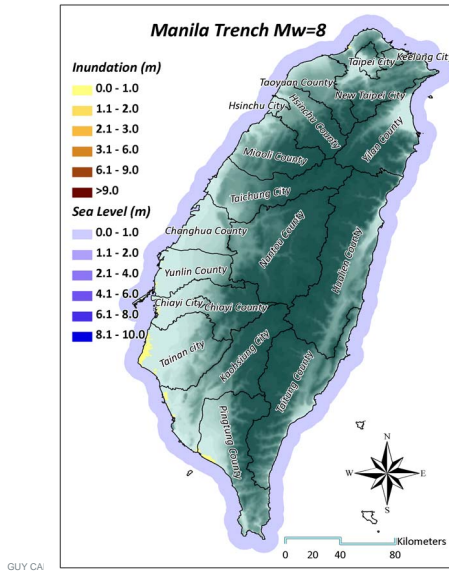
→ Scenario Analysis

- Manila Trench
Mw 8.0, 8.5, 9.0, 9.4
- Quanzhou
Mw 8.0, 8.5

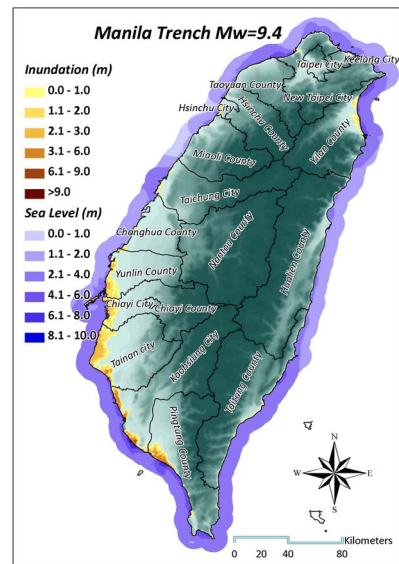
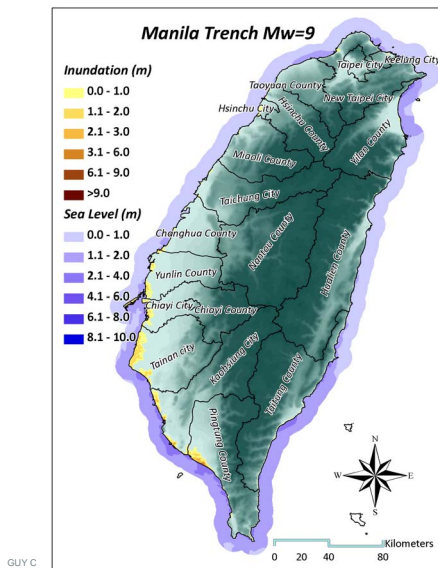
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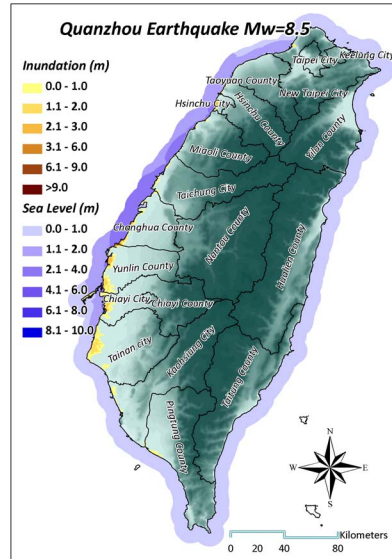
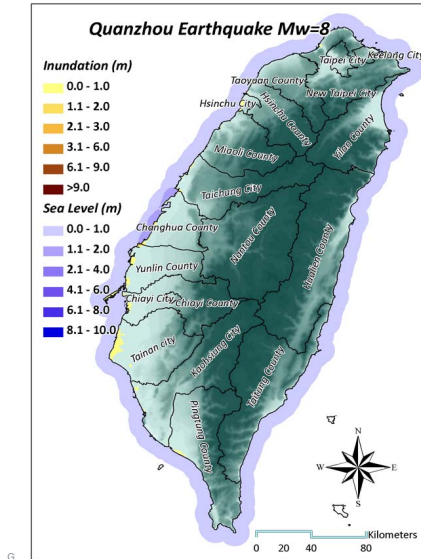
Review the Risk Tsunami



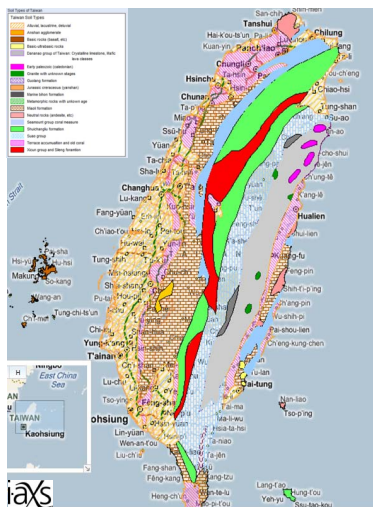
Review the Risk Tsunami



Review the Risk Tsunami



Review the Risk Soil Liquefaction



- GC conducted analysis in Taipei basin with local advisors
- GC i-aXs soil map for Taiwan similar to RMS and local advisors
- Estimated loss increased by **10%** for 250 years return period and **15%** for 400 years return period

Review the Risk Fire Following EQ

- No CAT models can analyze Fire Following EQ in Taiwan
- Consulted model vendors:
 - LA & Osaka:
20% - 30% of EQ direct losses for fire following at 1-250 year return period
 - Taiwan
Less vulnerable as majority buildings are reinforced concrete



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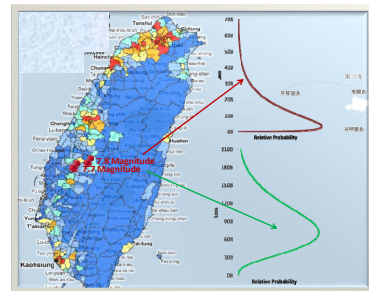
Review the Risk Multiple Earthquakes

Christchurch Type Event

Multiple Trigger Earthquake Event

Chelungpu Mw7.7 + Changhua Mw7.8

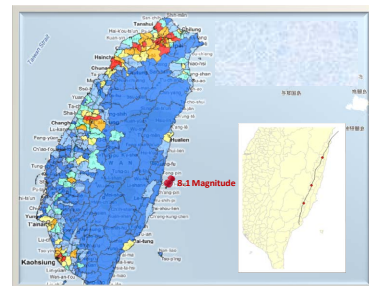
The stress caused by Chelungpu EQ could transfer and trigger Changhua EQ Fault activity



Tohoku Type Event

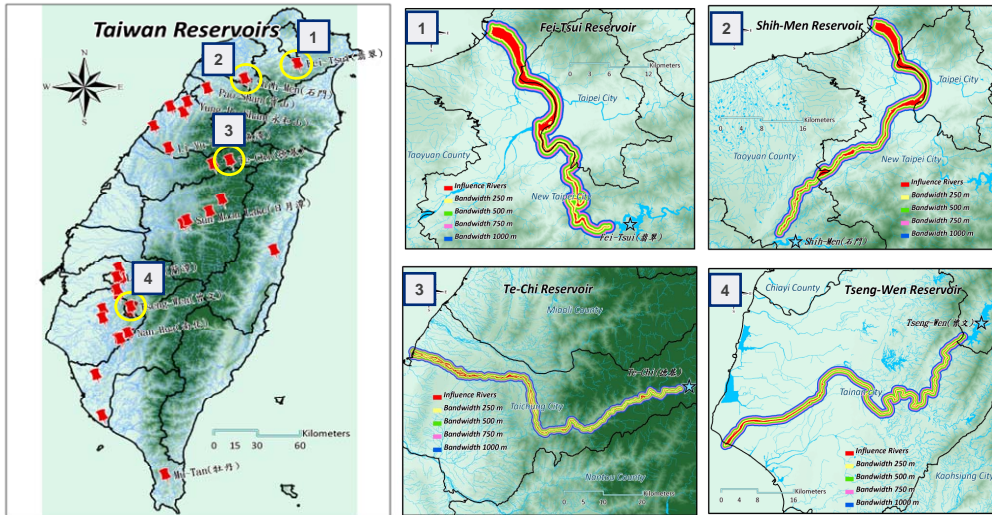
Multiple Rupture Cascading Event

Mw8.1 EQ occurs from 3 different ruptures on the same fault in east of Taiwan



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Review the Risk Dam Failure



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Perspective

2012 and beyond

Impact on Pricing

Rate on Line Changes in 2011

→ January 1

- Global rate average: -7.5%

→ April 1

- Japan: +25% to +50%

→ July 1

- Australia / NZ: +50% to +100%
- US: + 5% to + 10%

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Source: Guy Carpenter

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1/1 Renewal Season Expectation

→ Latest Renewals

French Mutual (MAAF / Covea)

- 1/10 renewal
- Pricing flat in line with income growth (+5% EPI, +5% reinsurance spend)

Turkey Large EQ Prog

- 1/11 renewal
- Currently being negotiated with leading reinsurers
- Expectation risk adjusted flat to -5%

→ 1/1 Expectations (Risk Adjusted)

USA:	+0% to +15%
Europe:	-5% to flat (if loss free)
UK:	-5% to flat
Asia:	Flat to +20%
Australia / NZ:	+50% to +100% (depends on layer experience)
Retro:	+5% to +10% (if loss free)

→ Caveat

Rate movement will depend on catastrophe exposure, model change, losses and supply and demand in different markets

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1/1 Renewal Season Expectation

- **Coverage**

- Flood Coverage
 - Hours Clause
 - Insurable or Uninsurable?
- Overseas Exposure
 - Accumulation Control
 - Transparent Information
- Contingent Business Interruption
 - Need transparency & certainty
 - Interconnected global supply chain
 - *“No one can afford to have uncalculated exposures any more.”*

- **Underwriting / Pricing**

- Less flexibility
- Rethink business strategies for Cat business
- Re-address top Cat layer with low rate-on-line

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Summary

Dislocated Market

- **Capital**

- Capital position remains healthy

- **Other Factors**

- All other indicators are negative

- **Diversification**

- Reinsurers are reviewing diversification strategies which may influence minimum rates on line for non peak zones

- **Major Reinsurers**

- A disproportionate amount of loss has fallen on key European reinsurers. This may influence small markets with catastrophe exposure where they have a dominant position for example Indonesia and Taiwan

- **Pricing**

- Reinsurers will be more sensitive to exposure movement. Rate reductions may not equal premium reductions

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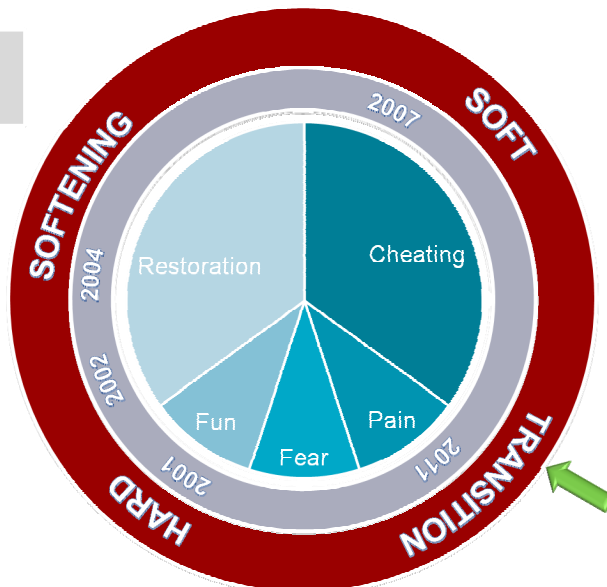
Source: Company disclosure, Guy Carpenter

Conclusion

Buyer Beware in transition markets

Strategies

- **Be Prepared**
 - Develop strategies to minimise uncertainty
- **Risk Management**
 - Don't depend on one model
- **Reinsurers**
 - Diversify panel of reinsurers



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Source: Dowling & Partners, Guy Carpenter ⁵²

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