Testing the ORSA to extreme events
The ORSA

“The ORSA is the beating heart of Solvency II”
This session is …

- Not another “Introduction to ORSA”
- In two parts:
  - How modelling companies work and learn post event
  - What the ORSA process might look like in practice
- Disappointingly thin on Physics
Harrowing disasters make good news..

http://japantsunami2011.wordpress.com/
What challenges do you face?

- Email from CEO “Hi John, bad news, when will we know what our loss estimate is?”
- Press releases from modelling agencies:

  “....... estimates total insured losses at $12 - 25 Billion USD........”

  or

  “.. this translates to a range of between 15 billion USD and 35 billion USD .......”

This section will focus on the modelled loss estimates, use the Tohoku EQ to show the tools from modellers and uncertainties + MI and post-event world
Sources of loss estimates vary with time

**Vendor models** with modelling parameters provided by vendor

*Pros/Cons:*
Immediate answer
Incomplete model scope
Multiple sources of modelling uncertainty

**Benchmarking to market losses** through market share, local insurance association experts

*Pros/Cons:*
Can be poor comparison to own book
Does not identify “private catastrophe”

**Own estimate** from underwriting judgement, early accumulation of own exposure and claims development patterns

*Pros/Cons:*
Better for small number of locations
No local presence?
No loss experience, emerging market?
Cat models are for probabilistic loss estimates

But components can be used for single events:

1. Event footprint (i.e. How large/strong is the event)
   - EQ: USGS, local agencies
   - Wind: MeteoFrance, Met Office, Japan Met Agency, some mobile wind stations in US
2. Pick similar events from the model stochastic event set
3. Share selected events with users (often weighted)
4. Apply industry and own company exposure
5. Loss range (+ unmodelled losses)
Model scope is probabilistic loss estimates

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“Continuous cycle of validation”

Data from field

Update parameters and estimates
Take uniqueness out with field data

- Tsunami/flood is large challenge
- From the field
  - Reconnaissance teams
  - Disaster agency data
  - .. phone-ins on local radio

Galle, Sri Lanka, Jan 2005

Kao Lak Resort, N. Phuket  Source: EEFIT
Geospatial data has made great leaps

- Tsunami accumulation maps
- Derive accumulations zones for flooded areas
- Kmz files direct on Google Earth
Extrapolate from Japan Disaster Agency Data

- Drill into the model assumptions to update aggregate losses
- Find granular benchmarks to past experience
Still lessons to be learnt

- Earthquakes, as do storms, kick up surprises
- Take example of New Zealand, Sept 3\textsuperscript{rd} 2010

http://mceer.buffalo.edu/research/reconnai
reports_steel.asp

www.tonkin.co.nz/canterbury-land.../T&T-Stage\%20Report
Loss estimate uncertainties (partial list)

You are responsible for:
- Completeness of data
- Accuracy of data (JP multi-location policies)
- Data appropriate to model
- Non-modelled endorsements (CBI)
- Using your past experience

You rely on modellers for:
- Completeness of event footprint
- Sub perils? (flood/surge)
- Non-modelled factors? (tree fall, power outage)
- Loss amplification (political/societal)
When to go public?

Industry and Company Losses Normalised To Market Share (e.g. 0.5%)
Post event ORSA world

Phil will mostly pick this up ...

• Modellers response
  – Incremental learning – things we knew but were difficult to model – physical (flood/ surge/ tsunami), economical/ financial (CBI, BI, Political response)
  – Time lag to change in models. What is proportionate?

• Change in model use in management/ ORSA
  – Change in confidence/use of models?
  – Do I have to update my RDS/ stress scenarios? Aggregations for emerging risks?
Now come forward a few years

- Solvency II implementation is a warm, happy memory
- Let’s look inside a good London Market operation

- ORSA process is proportional to risks
  - Quite big risks, so quite big process(!)
- Owned by Board and used in decisions
- Clear organisational responsibility (… you, the CRO say)
- Integral to strategy
- Considers both short and long term (out to 3-5 years)
The PONI tale

• Our “PONI” process is well established
  – Intentionally never called “ORSA”
• Quarterly dashboard suite with KRI, KPI, RAG, CAFC
  – Large parts are automated
  – Core elements, seasonal additions, bespoke items
  – Reported to Board for decision making
• Plus planned “In case of emergency break seal” version
  – Generic planning and guidance documents
  – Help to ensure swift, comprehensive approach
Day 1 (1) – Our people

Our people

• Are any staff directly affected?
  – Permanently based in the area
  – Visiting (business or holidays)
  – Agents

• If so, are we doing all we can?
Day 1 (2) – Size of loss

• Initial guess of likely impact
  – Class(es) affected
  – Coverages, perils, wordings, … uncertainties?
  – Unexpected clash potential?
  – Zonal aggregates and underwriting limits
  – Largest contracts exposed
  – Plausible PML percentages

• Worst plausible case

• Range of possible “central estimates”
Day 1 (3) – Solvency Position

- Need to demonstrate continuous solvency
  - Big picture liability position, given size of loss guess
  - Immediate asset impact?
  - Impact of/on reinsurance
- Do we need to talk to regulators?
- Can we continue to underwrite as expected?
- Do we need other immediate changes:
  - reduce asset risk?
  - seek additional reinsurance?
  - request parental or shareholder support?
Day 1 (4) – Investment Position

- Quantify immediate impact on our assets
- Consider investment risk appetite, given
  - Own position on solvency, etc
  - Investment market reaction (over-reaction?)
  - Likely government responses
- Stochastic models with various sensitivities
- And scenario based models
  - Including reinsurer delays or failures
- Liquidity & matching more a focus than normal
Day 1 (5) – Communication

- Consider need to communicate
  - In house, to key staff
  - To significant market counterparties
  - To shareholders and other stakeholders
- Unlikely to need to put anything out this early
  - But assess the need, and be prepared to
Anything we may have missed so far?
Possible examples:

• Impact of event on prospective reinsurance,
  – e.g. if our main cover is blown, then future RDS events are higher net unless we buy more R/I
  – e.g. if we’ve an inner aggregate and lots of sideways cover then future RDS events are now lower net

• Others …
Week 1

- Revisit all of the above
- As information emerges
  - Reports from Cat model companies
  - Information from insureds and cedants
    - Especially pro-rata covers in the case of Japan
  - Own analyses of underwriting portfolio
  - Preliminary intelligence from competitors
  - Possible calls on reinsurers
- Continuous solvency plus impacts on reserving, market & liquidity risk
Weeks 2 & 3

- Revisit all of the above
- As information emerges
  - Reports from Cat model companies
  - Information from insureds and cedants
    - Especially pro-rata covers in the case of Japan
  - Own analyses of underwriting portfolio
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ASAP – Strategy

- A big loss may cause us to change our risk appetite
- And have significant impacts on our business plan
  - Potentially all aspects (i.e. whole strategy)
  - Both short term
  - And long term

- The sooner we start to consider strategic implications the better
A *strategy checklist* might start ...

- **Underwriting**
  - Quantum of underwriting
  - Mix of account
  - Limits / aggregations
  - Individuals involved
  - Cat model usage
  - Expected cat model changes
  - Etc, etc

- **Reinsurance**
  - Form
  - Retention
  - Limit
  - Quantum
  - Counterparties
  - Collateral / Cash loss clause
  - Etc, etc

Everything impacts on everything – iterate as required
When the dust starts to settle

- Validation & back testing
  - Process
    - Monitoring plans, templates, “lead” indicators, …
  - Operational aspects
  - Impact on SCR and stress tests
  - RDS assessments realistic?
  - Cat models effective, well understood?
  - Was the PONI process effective?
    - Doing the right things, in the right way, at the right time?
    - Evolution should be expected, especially when “run in anger”
But isn’t this just ERM … and aren’t the best insurers doing this anyway

• Yes … and yes (in part)

I hope this response looks
• Comprehensive, Organised, Strategic, Holistic, Useful,
• Planned, Evidenced, Documented, etc,

And I know it’s not rocket science
(though I would love us to talk to about rocket science sometime)

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An ORSA song  
_c/o friends at RBS_

First we were afraid, we were petrified,  
Kept thinking we could never live with ORSA by our side,  
But we spent oh so many nights  
Just thinking how this could go wrong  
Then we grew strong and we learned how to carry on!

Oh no not us, we will survive (Oh yeah!)

…