



GIRO conference and exhibition 2010
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Relying On Others

The Cat Modelling Agency Perspective

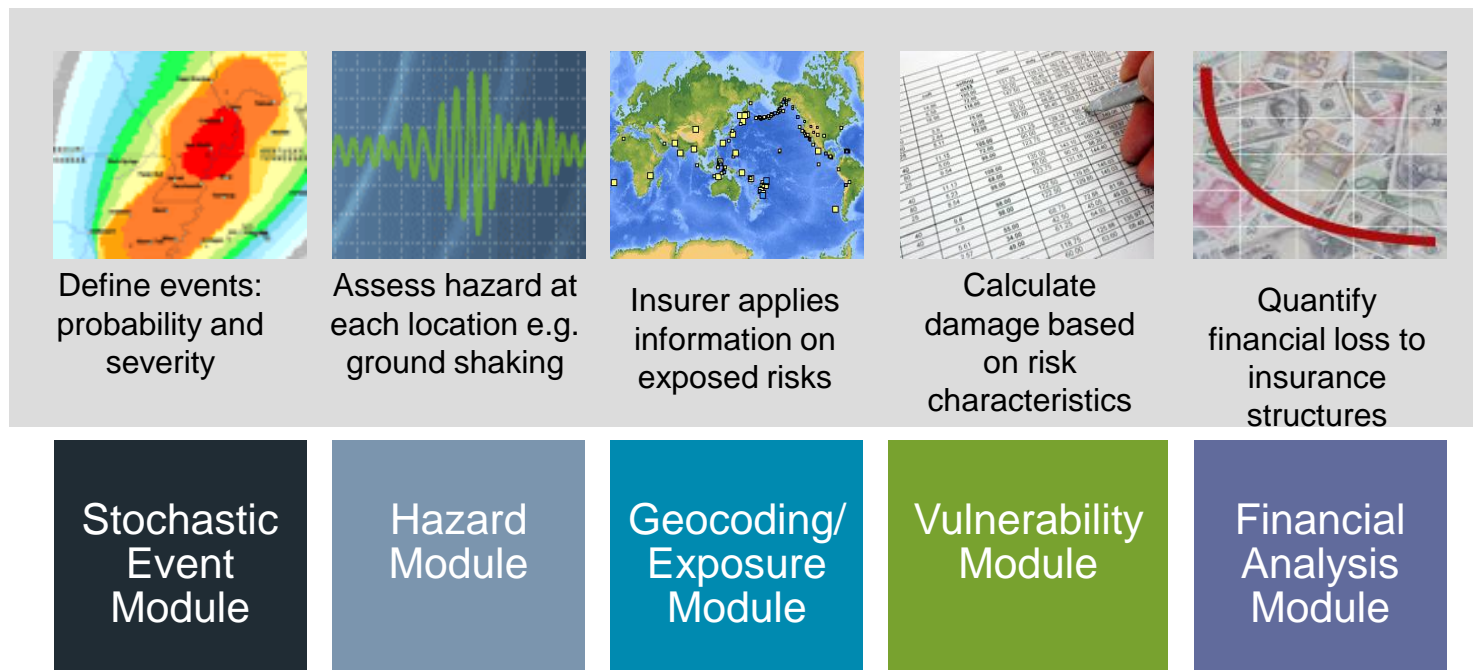
12-15 October 2010

Cat Models Are An Integral Part of Risk Management

- Cat Models are widely used in internal capital models and risk management within the insurance industry today
 - Widely adopted over the past several years as a critical tool
- Will be used extensively for SCR calculations for Solvency II within Internal Models
 - Standardized scenarios unlikely to be used (or even acceptable) by any company with material cat risk
- Cat Models allow far better assessment of any undertaking's risk than the standard formula will:
 - Granular risk assessment for many types of business/property
 - Higher-resolution modelling to capture changes in risk e.g up to 50m resolution in high-risk flood zones
- What are the challenges in gaining approval of SCR calculations that utilise cat models, and where do we stand today?

Cat Modelling 101

- Cat Models start from scientific first principles to estimate the probability of frequency and severity of cat events, and the damage that would be caused to a very large range of different building types, ages, and business uses.
- Peril and Country Specific - but fundamental building blocks consistent
- Large uncertainties: and non-modelled losses
- Black Box perception - needs changing by the model developers!



What Are the Particular Challenges for Cat Model Usage in Internal Models?

- Exposure Data on the risks the companies insure – must be “Complete, Accurate, Appropriate”
 - QIS4 Report: “...only 33% of respondents stated that their data is sufficiently accurate, complete and appropriate for non-life catastrophe risk”
- SII will require demonstration of “In-depth knowledge” of methodologies, capabilities and limitations of external models.
 - “In-house expertise” to be developed and retained by insurance companies
 - A typical cat model takes 10+ PhDs/MSc 2+ years to build!
- Documentation – Document and explain the role of External models and the extent to which they are used within their internal model processes
- Cat Modelling Process – Must be consistent with the standards and requirements for internal models

Use of External models in Solvency II

- Will Have to Comply with the 6 standards for internal models:
 1. Use Test
 2. Statistical Quality Standards
 3. Calibration Standards
 4. Profit & Loss Attribution
 5. Validation Standards
 6. Documentation Standards
- Additional external model requirements as per section 10 of CP56

RMS has asked CEIOPS / FSA whether they can pre-approve our model. FSA has said that they will not pre-approve any software: they are focused on how well the undertakings understand them and use them throughout their business

Example: CP 56 CEIOPS L2 Advice “Tests and Standards for Internal Model Approval”

“Undertakings should be able to:

- Document and explain the role of external models and data and the extent to which they are used within internal model processes
- Explain the reasons for preferring external models or data to internal ones
- Demonstrate a detailed understanding of external models and data used in internal model processes and be aware of their limitations
- Demonstrate that the use of external models and data is appropriate to the nature and complexity of the risks incorporated within the business
- Demonstrate that internal model requirements are met to the fullest extent possible
- Have in place articulated strategies for validating and regularly reviewing the performance of external models results and integrity of external data used in their internal risk quantification processes
- Recognise and document the risks arising from the use of external data and models and take them into account in the SCR calculation”

What Does Meeting the Use Test on External Models Actually Mean in Reality ?

- Still being thought through by CEIOPS and EU Commission, as to how much knowledge will be needed on cat model methodologies etc.
 - Final L2 implementing guidelines won't be ready until next Spring (delayed from Autumn 2010 target)
 - FSA will be starting L3 “informal consultation” sometime after November, including on external models
 - Pre-application process over next several months is the real testing ground and will be iterative, as implementing guidance gets clearer

Big Issues

- Need clarification from CEIOPS on requirements for use-test and documentation etc. on external models to pass the Regulator's use-tests: Level 2 and Level 3 guidance is being delayed
 - Pre-application process starting before final L2 guidance issued
- Changes to capital requirements, adds complexity to cat model upgrades
 - Not a change in the internal model per se, but would result in change in capital requirements across the industry
 - How will the regulators react to a significant market-wide change?
- Degree of harmonisation between different regulators; eg BAFIN, UK FSA, and other insurance markets
- Systemic Risk? Regulators are OK with one model being used, as long as firm demonstrates sufficient understanding of that model
- Black Box perception of Cat Models?

How are We Preparing for SII?

- We are in close dialogue with the regulators: FSA, CEIOPS etc, and have participated in CEIOPS working group
 - Offering training to regulators across Europe on cat models
- Our primary focus is to support our clients and other end-users of cat model output to meet Internal Model approval requirements, for example:
 - Documentation - on model validation, non-modelled losses and key areas of uncertainty
 - Education and training programs - on modelling best practices for cat managers and board-level
 - Cat modelling process reviews and best practices
- More transparency in general
- Expanding model suite in next 3 years, to meet demand
- Exposure data quality assessment tools for more countries
 - US Exposure data quality analyses services and toolkit successfully being used since 2006, expanding to Europe

Transparency Is The New Black: Exposing Model Uncertainty

- Market is grasping model uncertainty: challenge is maintaining a “gold standard” mean loss (e.g. for reinsurance pricing), while focusing on key sources of uncertainty
 - More focus from us on demonstrating calibration and validation and uncertainties at different return period's and data used vs expert judgement
 - Educating end-users to understand and use insights appropriately
- Developing new analytical capability to provide model users insights into uncertainty and sensitivity testing
 - e.g more sensitivity tests on key drivers of model uncertainty such as vulnerability in regions with few historical events
- Technology advances to facilitate much faster model execution and increase in analytical cycles
- Challenge for the model builders to get comfortable that revealing uncertainty increases value not decreases value

Summary

- Solvency II is underway
- Cat Models will be widely used
- Model users have to take responsibility for understanding and using the models appropriately for their business
 - Still not clear what the regulators will actually require on the “use test” and documentation for external models
- We are part of the dialogue with the regulators
- We are gearing up to provide users the support they need for internal model approval
 - Including training programs for board level, as well as technical users
 - More focus on validation, calibration and key areas of uncertainty