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External model responsibility

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Agenda

- What we mean by external models.
- Some irresponsible uses.
- Case study: assessing the suitability of your cat model.
- Summary and suggested actions.

Introduction

- Solvency II would include Cat models and economic scenario generators under external models.
- For today we will include modelling platforms:
 - not external models in the Solvency II sense,
 - but face some of the same risks.
- External data is also an issue – many of the points raised today apply to external data, even if we do not make this link explicit.

External models are useful

- Many external models have had millions spent on their developments, using industry experts.
- Buying a model can be a relatively cheap way of accessing the intellectual capital.
- But models are useful to the extent they are used appropriately.

Model creep

- Is a model fit for purpose? Depends on the purpose!
- What purpose was the model bought for?
- What is it being used for now?
- A risk with all models, but especially for external models as don't have the natural defence of the model developer.
- Example – ESGs designed for short tail business being used for PPOs?

Cost does not necessarily imply quality

- Consider politicians focussing on investment in the NHS, not on measurable outcomes.
- Sometimes need to be able to focus on what comes out, not on what goes in. (Did I fall into this trap earlier?)
- How credible is any model of inflation in 100 years?
- Sometimes we need to “model less, think more”.

Hidden assumptions

- We all know about documenting assumptions.
- But what about the hidden ones that force us to approach problems in a certain way.
- Limited number of external models – group think? Systematic problem?
- How does one assess the importance from within the paradigm?
- For example the approach to dependency in capital modelling platforms.

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Focussing on what we can do, not on what we should do

- Everyone is busy...
- ...so it is easy to convince ourselves that difficult things are unimportant.
- Looking under the bonnet of a complex model can be daunting.
- But value from doing so can be great.

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False dichotomies

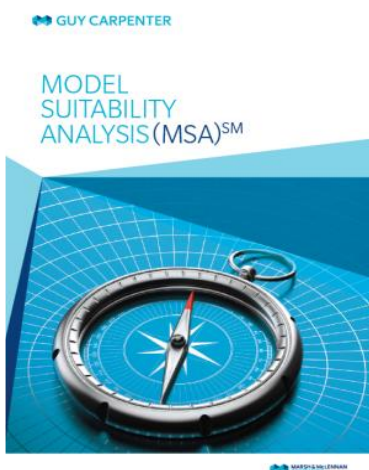
- Often we are presented with what look like either/or decisions.
- Take this model, or that one.
- But are they?
- Blending parts of different models?

There are 10 types of people in the world...
...those who understand binary
...and those with friends.

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Model Suitability Analysis (MSA)[®]

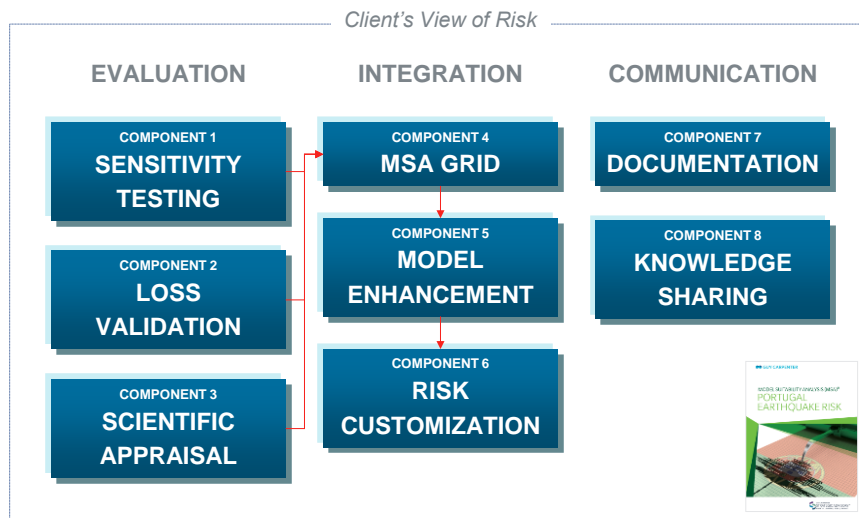


Benefits

- Increased **confidence** in your view of risk
- Better **informed** decisions on your reinsurance purchase and capacity
- Support for **pricing** discussions with reinsurance partners

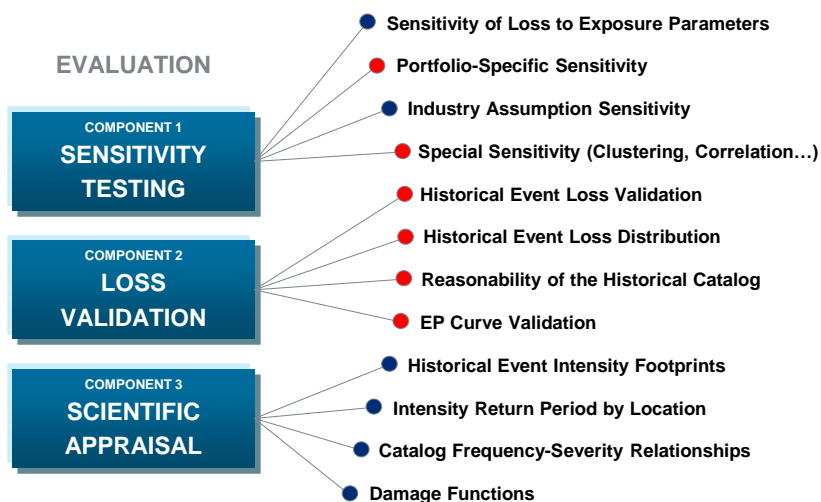
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MSA Framework



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MSA Tests



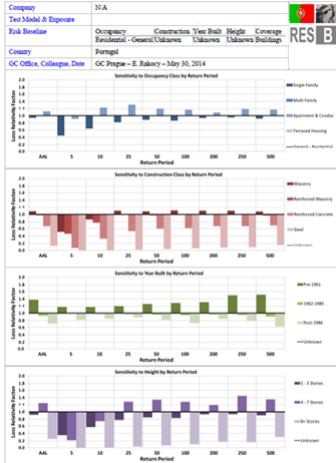
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Test Templates as Stand-Alone Products

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Model Sensitivity Analysis (MSA)

TEST C1 - 1: Residential - Buildings



Standard exhibits,
Standard PROTOCOL

Combined
Sensitivity
Perspective

Construction
Class

Occupancy
Class

Year
Built

Number of
Stories

Source: Guy Carpenter

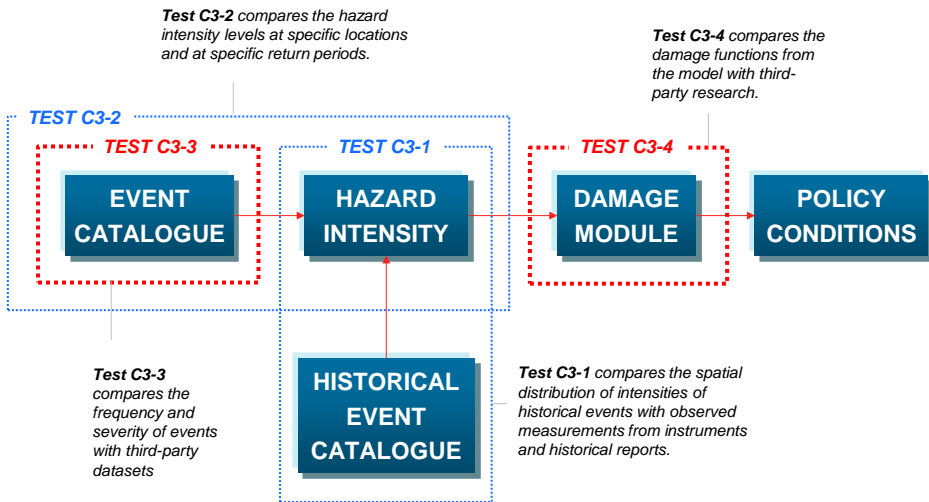


The MSA Test Library contains hundreds of sensitivity test templates for Portugal Earthquake to help clients:

- Identify what traits drive loss
- Improve characterization
- Focus data collection efforts

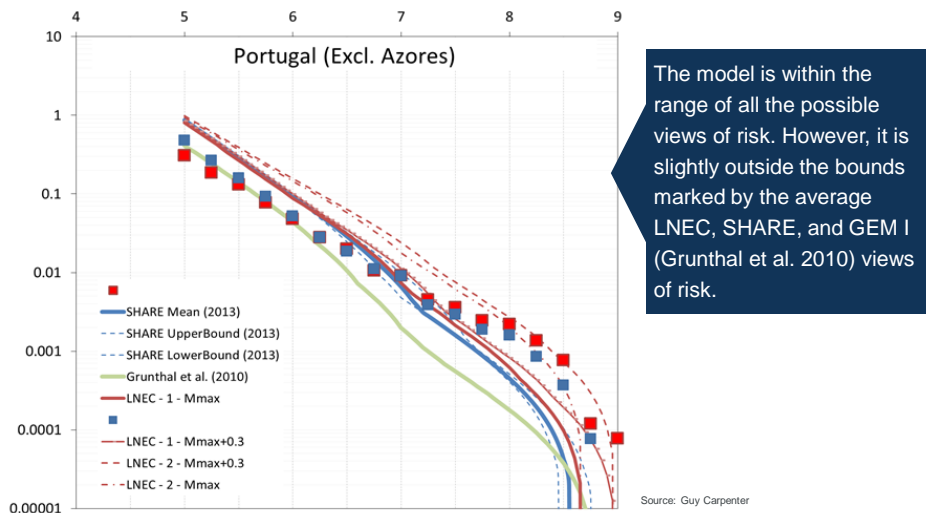
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MSA Scientific Appraisal Testing Scheme



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Perspectives on Existing Views of Risk



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Zone-By-Zone Study

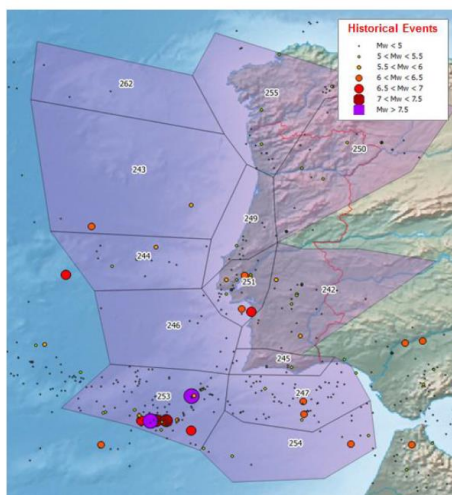
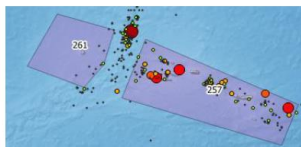
Seismogenic Zones

- 242 – East of Lisbon
- 243 & 244 & 246 & 262 – Western Offshore
- 245 – South Coast
- 247 & 253 & 254 – South Offshore
- 249 & 250 & 255 – North Portugal
- 251 – Lisbon Area
- 257 – Central & Eastern Azores
- 261 – Western Azores

Brief Description of Portugal Seismicity

The largest seismicity affecting Portugal is located offshore, south of mainland (zones 253, 247 and 254) where extremely powerful events can be generated. Some of the Azores islands are also characterized by significant seismicity (zone 257).

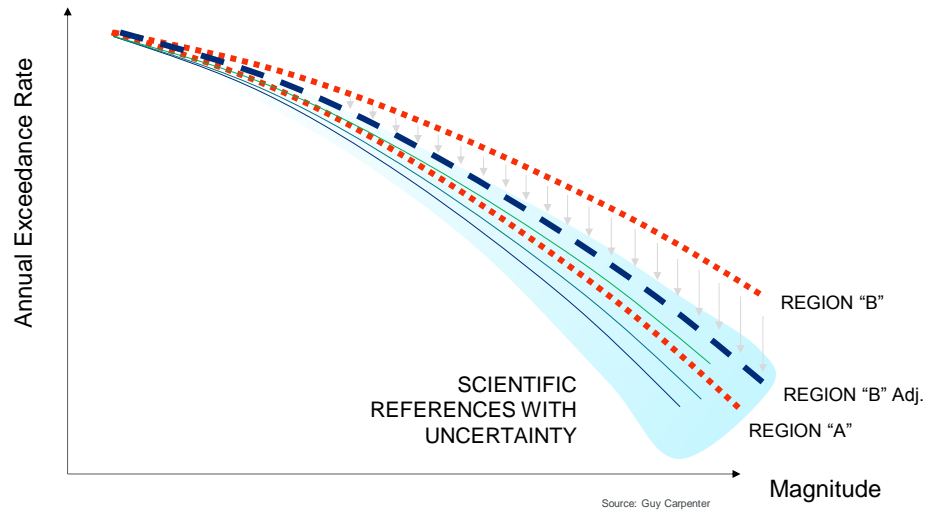
The largest seismicity onshore is located close to Lisbon (zone 251). The seismicity here is less powerful than offshore, but the proximity to the capital makes it very important for risk assessment.



Source: Guy Carpenter

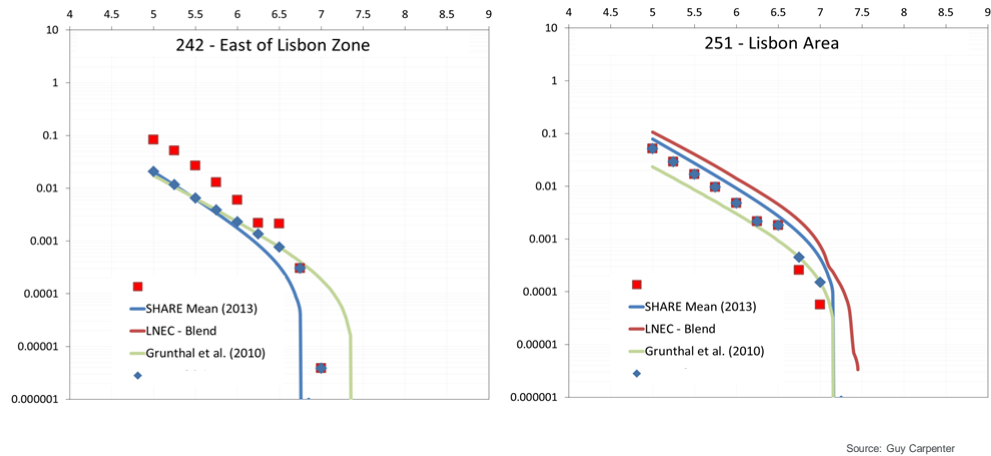
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Minimum Recalibration Concept



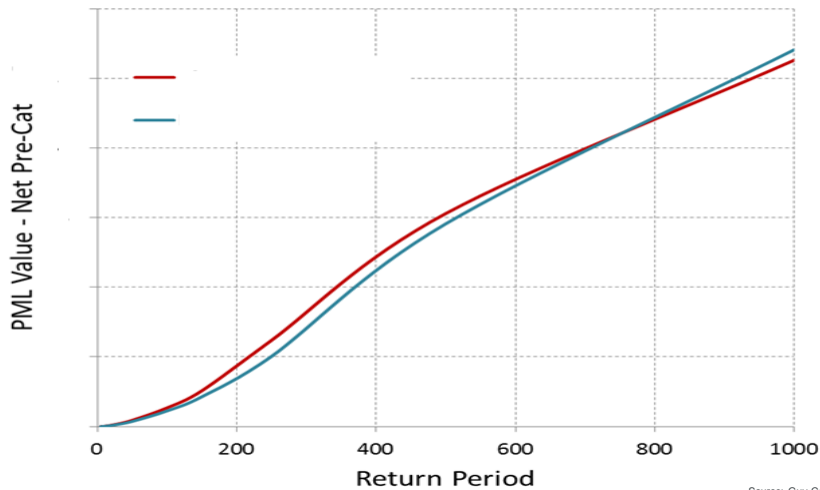
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Lisbon Area Recalibration Effects



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Impact to Losses



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Towards a Complete Picture of CAT Risk

VULNERABILITY

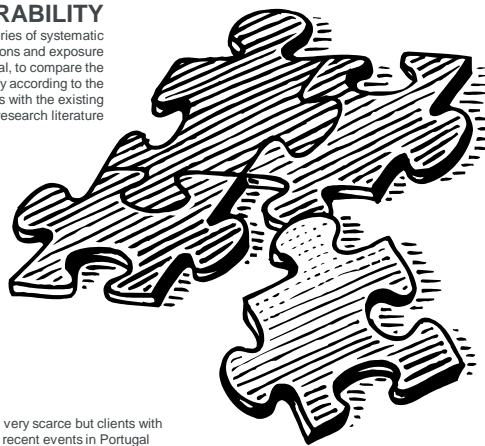
Conducted a series of systematic tests for 60 locations and exposure types in Portugal, to compare the damageability according to the commercial models with the existing research literature

SENSITIVITY

Conducted a series of systematic tests covering the main lines of business and the main exposure characteristics used to represent portfolios in Portugal

LOSSES

Data on loss experience in Portugal is very scarce but clients with loss estimates corresponding to small recent events in Portugal can work with Guy Carpenter to study the response of commercial models to these historical occurrences



HAZARD

Conducted a comparison zone-by-zone of all the seismic areas in Portugal, using reference data from several research centres and projects.

Then proceeded with a market-wide recalibration to implement an alternative view of risk

RESEARCH

Conducted externally through collaborations with scientific entities, but incorporated seamlessly into GC's MSA process



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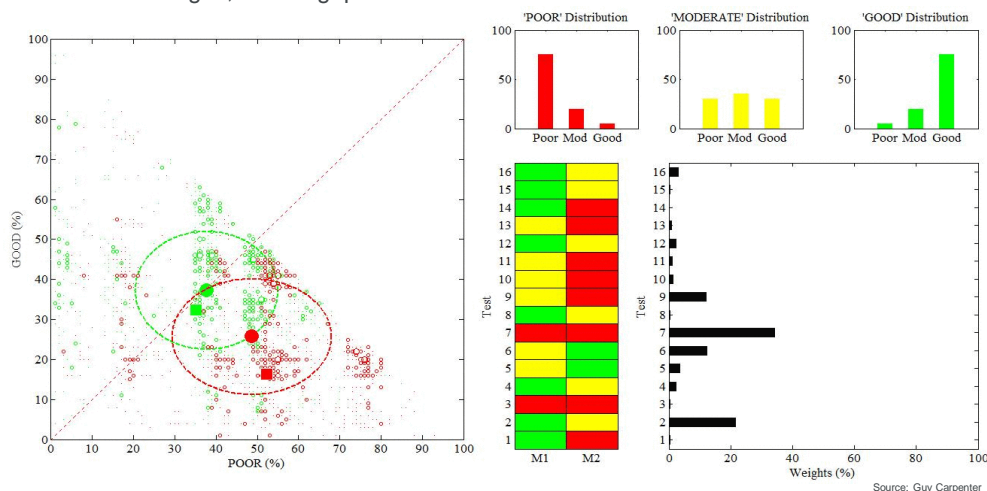


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MSA Decision-Making (SCOR Prize 2014)

With Xinrong Li, GC Singapore



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Summary and actions

- External models are most valuable when their strengths and weaknesses are understood.
- Identify what a model should be used for...
- ...and where its use is inappropriate.
- Take time to understand the hidden assumptions.

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