INSURANCE DAY

From the archive: an interview with Karen Clark

The modern-day founder of modelling, Karen Clark, tells GREG DOBIE what the industry needs to do to develop in the future

IN 2005, hurricane Katrina demonstrated only too clearly that catastrophe models are not perfect predictors of future loss potential but just one step in the catastrophe risk assessment and management process.

This event also made it clear that a catastrophe model is a tool that must be used in conjunction with high quality exposure data, a process for checking model output, and other information on losses not covered by the model.

Yet two years later, many companies still rely too heavily on the models alone and on a few point estimates selected from the model results. While there is a lot of talk about model uncertainty, most companies do not understand the uncertainty inherent in the models and how to use the model results in light of this uncertainty.

Our 'unknowledge' is what scientists don't know about these events and it's at least as great as what we do know. For example, no-one knows what the exact probability is of a category 4 hurricane striking the north-east. It could be one per cent, 0.5% or 0.2%. It's probably not greater than one per cent or less than 0.2% - it's most likely somewhere in that range. No amount of model updating is going to change the fact that scientists just don't know these probabilities with certainty. This is why companies cannot rely too heavily on point estimates from the model EP curves.

Vulnerability components

Where the models can continue to be improved the most is with respect to the vulnerability components. We learn more about building damageability, building codes and code enforcement with each actual event. The Northridge earthquake showed that wood-frame residential structures are much more vulnerable to ground motion than engineers in California believed before this event. This earthquake prompted dozens of new studies on wood-frame structures and led to the development of the first shake table built to test life- size buildings.

Meanwhile, the hurricanes that took place in 2004 and 2005 provided a lot of claims data confirming the effectiveness of the new Florida building codes and the relative vulnerabilities of the different construction and occupancy types. Business interruption losses were a significant proportion of the total losses from hurricane Katrina and so provided a lot of data for model refinement.

Capturing the loss

Although there is no systematic problem with modelling methodology, current models do not capture all sources of loss, particularly for major events. As losses get larger, less of the loss will be captured explicitly by the models. Even moderate hurricanes can cause significant inland flooding, the damage from which is not captured explicitly by the hurricane models.

Companies need to think outside the modelling box about what exposure to loss they might have that is not captured by the models. This additional loss potential needs to be added to the model-generated loss estimates.

Data quality

However, a systematic problem with data quality remains. There is a lack of accurate and complete information on what's being insured with respect to structures, contents and additional living/business interruption. The systematic bias is to underestimate the exposure and therefore the loss potential.

The complication is that all companies are not equal with respect to data quality. Some companies actually have very good data and for some companies data quality is not good. All of the other companies fit somewhere in the range.

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