

Using data analysis to meet the catastrophe underwriting challenge

Accurate exposure information is critical to competitive pricing and to understanding overall exposure, yet insurers still have critical gaps in their property catastrophe risk data



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Data quality is one of the industry's most intractable problems. Critical errors and omissions can include some very significant risk factors, including the precise property location, building attributes such as type of construction or number of stories, and rebuilding costs.

Knowing this, underwriters will load the premium to offset the uncertainty in their exposure data. This uncertainty also diminishes the value of the catastrophe model output. Calculating an average annual loss or exceedance probability to multiple decimal points will not remedy an underlying problem with data quality.

Until now, it has been difficult for underwriters in the London market to get a good view of their risks on the ground. They need to see where gaps and errors lie in their exposure data, and how they affect the risk profile and subsequent pricing and capital allocation. Catastrophe models offer a seductive simplification but all sorts of uncertainties lurk under their output. Nor do users always know what sensitivities drive change in the output, so it is difficult to relate them to pricing.

Risk profile

Another challenge for underwriters is a change in the risk profile as the business diversifies into new classes of business or moves into emerging markets. The board takes the strategic decision; it is then up to the underwriting department to develop an understanding of these markets, their associated risks and exposures, and price the business accordingly.

Again, catastrophe models do not offer a simple, cost-effective

Flooding in Bangkok: the 2011 Thai floods highlighted the importance of considering businesses supply chains in assessing business interruption risk

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Inset: Illustration of the output of CatInhance



solution, as they are not always at a high resolution nor do they offer global coverage. Even in developed territories, business interruption (BI) is notoriously difficult to model but can be responsible for significant elements of a catastrophe loss.

To assess the BI risk you need to know what the business is, where it is and what could affect its recovery. As we know from examples like the 2011 Thailand floods, the latter includes the company's supply chain. For commercial risks, understanding the location of the company's principle suppliers also increases the confidence of calculating possible BI losses. It is not much help to know the address of a supplier's head office if the manufacturing plant is 100 km away in a high-risk floodplain.

New tools

Today, it is possible for underwriters to get a realistic understanding of the risk on the ground, even in the absence of a detailed catastrophe model. This is thanks

to the development of much-improved global data sets and hazard maps, such as JBA's global flood map, which are then made available in analytical platforms.

Underwriters can have more confidence in the selection and pricing of risks because these tools enable them to visualise property exposure data in terms of its completeness, accuracy and appropriateness. They can isolate incomplete or poor quality data for properties of material value in high-hazard locations for improvement and analysis.

Better visibility of catastrophe exposures will also allow the insurer to adjust its reinsurance programme more closely to its risk appetite. It can reduce the uncertainty element of the calculation and so feed that saving back into the original pricing.

Incorrect geocoding is the main data risk to catastrophe underwriting. If property appears to be in the wrong place, everything else will be skewed from pricing to the

appropriateness of the reinsurance or retrocession programme.

The potential degree of impact depends on the peril. Underwriting terrorism needs very precise geocoding, right down to the specific building. Flood also requires a high level of granularity as postcodes can be misleading for large sites with varying elevations.

For example, many London market insurers include large Caribbean properties within their US and Canada books. They have significant windstorm exposures but have not been geocoded well.

Logical rules can be used to trap suspicious data combinations – such as 17-storey hotels made out of wood on the Florida coast or nine-storey masonry buildings in a high-risk seismic zone. Using such heuristics is cost efficient, because it standardises the application of company data policies and risk appetite across multiple accounts and offices.

Such analysis can also provide improved risk management for other location-specific classes of business, such as fine art, specie, construction energy and cargo.

Valuation errors

Getting correct insured values based on rebuilding costs is a major hurdle in underwriting property and becomes a serious issue in catastrophe risks. Although one or two anomalies in the data are likely to even out over large numbers, a systemic issue with the account or portfolio can result in a material level of under- or over-insurance – without the underwriter necessarily realising it. We think only around 10% of insured properties are correctly valued. The majority are under-insured, many by as much as 30% to 40%.

If an insurer is covering a large power plant or industrial facility, for example, it can send a professional valuer. For a whole portfolio, this is neither economical nor practical, but using objective

building cost data from a provider, such as Marshall & Swift, within an analytical platform allows the insurer to check the valuations in its portfolio and take remedial measures if necessary.

Insurance data chain

Information on property risks usually comes from intermediaries such as agents, brokers and coverholders. As the information gets aggregated up the insurance and reinsurance chain level, any errors are compounded by the aggregation.

Ideally, therefore, data verification should take place close to the risk, at the start of the insurance supply chain, rather than an excess-of-loss underwriter running a check across an entire book of business, although this is possible.

With an annual review of their portfolio, underwriters can also see identify which producers are providing good quality data and reward them, while offering incentives to others to improve their performance. Finally the review can segment the portfolio, so it is clear:

- Which business is well priced and produces a good return;
- What risks justify investing time and effort to develop; and
- Which business is consistently loss making and should be repriced or declined.

Good quality, fit-for-purpose data is an essential part of meeting the challenge of underwriting in the London market today. The combination of ever-more data sets from public and private sources and hazard maps used in a platform such as Inhance is a powerful tool. It supports competitiveness, increases confidence in underwriting in new markets and helps reduced exposure to unmodelled perils. With greater visibility of the risks on the ground, the insurer can more closely match its exposure to its risk appetite. ■

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