Managing Cat Risk: It's All About the Portfolio

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CAS Special Interest Seminar *In Focus: Taming Cats - Managing Natural and Man-Made Catastrophe Risks*
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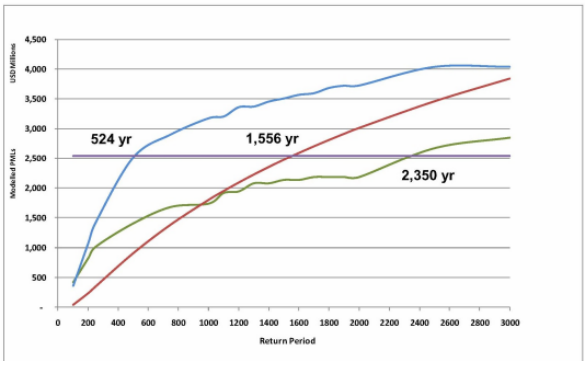
Industry Return Period of Ground Up Limit USD 2.5bn



Prelude

Several of the sessions at this meeting focus on quantifying catastrophe risk.

- Ratemaking / Pricing
- Economic Capital Modeling
- Capital Allocation
- Aggregate Exposure / EP Curves

This session will (try to) focus on applying risk quantification to decision-making, and the interactions between the applications.

Let's unpack this session's description

FACT: Traditional actuarial techniques and standard casualty actuarial training and education rely heavily on the law of large numbers.

CLAIM: Many pricing actuaries focus on expected losses and expenses of a book of business and expect volatility to decrease as the volume of business increases.

Do we all agree with this? Shall we discuss?

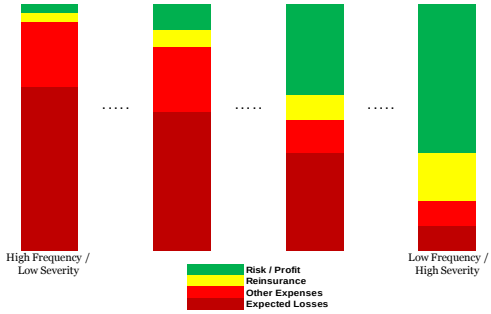
Nature of the risk

Catastrophe risk is a low frequency - high severity risk, and as such *the risk is an increasing function of business volume* - the more business is written, the higher the probability of capital impairment.

Do we all agree with this? Shall we discuss?

Premium adequacy - and purpose

There will never be enough premium to cover the actual losses from a catastrophic event (or any low frequency - high severity event). Premium for catastrophic event coverage is meant to provide an appropriate return on the capital supporting the cover and to pay for any reinsurance or retrocessional purchases.



Exposure data

Granular, accurate data regarding individual risks is critical.

- Location of Property & People
  - Especially challenging for Farm Owners, Inland Marine, Industrial Property, Workers' Compensation, Life, Disability, etc.
- Building characteristics
- Insured values/rebuilding costs
- Coverage details
- Program business
- Assumed Reinsurance

Pricing: is mispricing a "big deal"?

Unlike the standard insurance risk, mispricing of catastrophe risk in and of itself doesn't really cause any problems – unless the mispricing leads to a suboptimal portfolio via underestimating the exposure and accumulating more risk than desired or overestimating the loss potential and turning away profitable business. (Or not covering reinsurance costs!)

Pricing – Let's Discuss…

Pitfalls of overstating loss potential

- Primary business
- Excess / Reinsurance / Retro
- Interactions

Pitfalls of understating are obvious – or are they?

Other Discussion Topics

- Budgeted allocation to peril / region?
- Portfolio pricing – capital allocation – marginal technical pricing tools (against live portfolio?) and underwriters' dashboards
- Upside downside vs ROE
- Experience vs model (regions and perils)
- ERM

Aggregation management

- Pricing and aggregate exposure intimately linked.
- Pricing determines profitability, aggregations determine solvency, capital requirements, ratings, etc.

$$\text{ROE} = \frac{\text{Earnings}}{\text{(Notional) Equity}}$$

Premium, Losses, Expenses

Aggregate Exposure

- Must have clearly defined appetite for aggregate exposure.
- Must monitor aggregate exposure regularly and frequently.
- Mitigating out-of-appetite levels of exposure.