



AMERICAN ACADEMY *of* ACTUARIES

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February 20, 2007

Ms. Anne Kelly, Chair  
Property Risk-Based Capital Working Group  
Capital Adequacy (E) Task Force  
National Association of Insurance Commissioners  
2301 McGee Street, Suite 800  
Kansas City, MO 64108-2604

**Re: Catastrophe Risk Charge**

Dear Ms. Kelly:

The P/C Risk-Based Capital Committee of the American Academy of Actuaries was asked to assist the Property Risk-Based Capital (RBC) Working Group of the National Association of Insurance Commissioners (NAIC) with the following two tasks:

1. Report to the RBC Working Group on the catastrophic risk charges included in capital requirements in other countries and also as calculated by rating agencies.
2. Recommend a procedure to extract the catastrophe (CAT) loss and premium out of the RBC calculation today, keeping in mind that the factors are modified already and not based strictly on the data, so that there would be no double counting of CAT exposure in the RBC calculation.

Our findings are summarized below.

**1. Catastrophe risk charges included in capital requirements in other countries and also those calculated by rating agencies**

Requirements to ensure capital adequacy are usually established in one of the following three ways:

1. Restricting certain activities or situations (e.g., NAIC model investment laws)
2. Establishing conservative valuation approaches (e.g., NAIC valuation rules for agents' balances and collectibility risk)
3. Requiring statutory capital levels sufficient to cover the possibility of certain situations (e.g., NAIC RBC requirements)

Historically, instead of adding specific catastrophe risk to the capital requirement, some countries have added an equalization reserve or catastrophe reserve requirement. With regard to catastrophe risk, the equalization reserves utilization option is, in essence, a form of the second method described above. Over the past 10 years, many large overseas companies have converted to US Generally Accepted Accounting Principles (GAAP) accounting standards, which preclude the use of equalization reserves.

In general, catastrophe risk is not explicitly included in any formula-based capital requirement in other countries but rather is reflected in implicit charges for catastrophes as part of the “principles-based” approach that allows the company actuary significant latitude in establishing reserves and deciding on appropriate ways to determine sufficient capital for the company. This approach is fundamentally different from the formula-based P/C Risk-Based Capital calculation currently used by the NAIC.

The Solvency Subcommittee of the International Actuarial Association concluded in its initial report that including a risk charge for catastrophes based on publicly-available financial information would not be appropriate or possible. Instead, it is suggested that the charge be a separate loading based on catastrophe modeling and other internal company models. The Solvency Subcommittee is currently working on a paper that discusses various ways to develop internal company models to aid in determining global solvency standards. The internal company models would be used in considering catastrophe risk and in considering all elements of the company-wide risk that threaten a company’s solvency, including the focused catastrophe risk model.

Rating agencies such as AM Best, S&P’s, Moody’s, and Fitch generally request that companies provide them with results of catastrophe exposure modeling based on whatever modeling tools are used by the companies. Rating agencies have the ability to request additional information from companies on a confidential basis and adjust ratings based on that information. In many cases, the information is of a qualitative nature and cannot be incorporated into a formula. For companies that either do not use modeling tools or do not provide modeling information to rating agencies, adjustments are made to incorporate catastrophe exposure in the ratings. These adjustments could be based on industry data, information on comparable (in the opinion of a rating analyst) companies, or other factors. Rating agencies have accumulated a wealth of information and could make certain adjustments based on their knowledge of what type of modeling software is used by a particular company, what release (version) of the software is utilized, and the degree of confidence that rating agencies put in the ability of the company to use the models appropriately.

In the aftermath of the 2005 hurricane season, rating agencies have made and continue to make changes to their rating methodologies, in particular in the way they quantify catastrophe risk. One example is the general move to using 1-in-250 year events as a reasonable stress scenario (probable maximum loss) as opposed to 1-in-100 year events.

Rating agencies could also consider gross versus net reinsurance, and issues of reinsurance collectibility in the event of a major catastrophe event.

Overall, the judgment component plays an important role in the analysis done by rating agencies. Such an approach cannot be easily utilized by regulators, who require having “unbiased” results based on a fixed formula.

**2. Procedure to extract the CAT loss and premium out of the RBC calculation today keeping in mind that factors are modified already and not based strictly on the data so that there would be no double counting of CAT exposure in the RBC calculation.**

Currently, catastrophe risk is partly taken into account in the RBC formula in the Premium Charge (Underwriting Risk – Net Written Premiums). The loss exposure-related component is based on the following ratio:

*Company RBC Loss & Expense Ratio =*

$$50\% * \frac{\text{Company Average Loss \& Expense Ratio}}{\text{Industry Average Loss \& Expense Ratio}} * \text{Industry Loss \& Expense Ratio} + 50\% * \text{Industry Loss \& Expense Ratio}$$

All of the Loss & Expense Ratios in the formula take into account catastrophe risks *as far as they are incorporated in historical data* reported in the company annual statement as well as the consolidated data for the industry.

One way to avoid double counting would be to *reduce* the Loss & Expense Ratios by excluding losses attributable to hurricanes and earthquakes. This could be done, for example, by using data obtained from Property Claims Services (PCS), a subsidiary of ISO, which maintains a detailed database of catastrophe losses. In utilizing this approach, two data issues have to be resolved. First, additional assumptions have to be made to map the PCS data to Schedule P lines of business. Second, each company has to have historical data at the level of detail needed to exclude catastrophe losses. Presumably, such data is readily available.

Note: Some have argued that a charge for catastrophes is incorporated in the premiums in the pricing process. While true, that by itself would not lead to double counting, since the current RBC Premium Charge is based on Loss & Expense Ratios and eliminates the need to extract the catastrophe component from the premiums.

Note: Currently, the Industry Average Loss & Expense Ratio and the Industry Loss & Expense Ratio are based on line of business but not on state. Consequently, the catastrophe component of the Premium Charge in the RBC formula is largely the same for coastal states and for those with a low probability of a coastal-type

catastrophe. Explicit exclusion of the catastrophe element from the RBC Premium Charge will serve to bring greater equity in this regard.

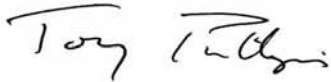
To some degree, catastrophe losses could also affect the Reserve Charge in the RBC formula. In particular, catastrophe losses could introduce short-term volatility for property lines and distort charges related to commercial multiple peril (CMP) lines of business. However, the P/C Risk-Based Capital Committee does not believe an adjustment to the Reserve Charge is necessary or practical. A catastrophe could also result in an increased reinsurance charge, but we do not believe this increase would warrant an adjustment to the formula.

It is generally concluded that incorporating catastrophe risk charges based upon publicly-available financial data would not be sufficient or accurate in reflecting catastrophe risk in RBC formulas. Instead, it is generally suggested that catastrophe charges be calculated considering:

- Exposure to catastrophes
- Catastrophe reinsurance structure
- Internal/external catastrophe risk models containing a verification process

The P/C Risk-Based Capital Committee hopes that its comments are useful to the Working Group. Please feel free to contact me if you have any questions or would like further information from our Committee. Thank you for the opportunity to comment.

Sincerely,



Tony Phillips, Chair



Alex Krutov, Chair

P/C Risk-Based Capital Committee  
American Academy of Actuaries