SOCIETY OF ACTUARIES

Article from:

# Small Talk Newsletter

December 2000 – Issue No. 16

# Tail Risk — A Perspective

*by John O'Sullivan*

As I was reflecting upon some of the sessions that were held at the most recent Valuation Actuary Symposium, it occurred to me that there is a trend toward more concern about events that are not likely to occur, but have a very adverse impact on a company when they occur and an emphasis on reflecting the unique situation of individual companies. How the industry chooses to react to these concerns will have a big impact on the industry over the next decade and especially on the demands placed upon smaller insurance companies. There are three initiatives that illustrate the trend: the revision this year of the C-3 formula for Risk Based Capital, activity underway to address liquidity concerns, and the development of a Unified Valuation System.

The framework for Risk Based Capital (RBC) has been in place for about 10 years with only limited change. This year, the process of evolution has accelerated with the revision of the C 3 formula. Although very few companies are expected to be impacted by this change (primarily larger companies with significant exposure on annuities and single premium life), the C 3 revision is important since it is recognizing that the role of RBC is moving from just identifying weakly capitalized companies to more accurately reflecting the levels of risk being undertaken by an insurance company (for example, a duration mismatch).

Under the new C 3 formula, a company would use cash flow testing on the covered products, but an upper and lower bound is placed on the amount of the new C 3 in terms of the old C 3. A standardized interest rate generator would be used by all companies, producing a set of 12 scenarios or a set of 50 scenarios. A company may use either set of scenarios. For each scenario in the set, the surplus position would be projected for each year in the testing horizon. Each shortfall would be present valued and the largest present value would be the result of the scenario. These are then ranked starting with the worst. If the set of 12 were used, then the C 3 requirement would be the average of the second and third worst, but not less than one-half of the worst scenario. If the set of 50 were used, then different weightings would be applied to the results of each scenario to develop a composite result.

With the set of 50, the 5th and 17th would be weighted by 2%, the 6th and 16th by 4%, and so forth with the 11th receiving a weighting of 16%. Another way of looking at the weighting is that the 9th through 13th scenario would together account for a weighting of 60%.

Conceptually, asset adequacy testing supplemented the formula based reserves while this new C 3 approach is supplementing the factor based RBC. Reserves are meant to cover 80ish percent of the risk, while required capital is meant to cover the 90ish percent of the risk. As products and measurement techniques become more sophisticated, there is a realization that formula reserves and a factor driven RBC do not capture the risk level in many cases. In June, *Moody's Investors Service* wrote a paper (which can be found on their Web site) entitled "One Step in the Right Direction: The New C-3a Risk Based Capital Component."

One of the points made in the paper is that insurers should better understand the risks involved with their products "focusing on understanding adverse tail risks." Among the products mentioned in the paper were Universal Life products with a no-lapse guarantee and variable annuities with secondary guarantees.

A second initiative revolves around the liquidity risk, which has been brought to the forefront with the General American situation. Last year, shortly after the General American incident, New York released its Circular Letter 35, which asked companies operating in New York to supply information on their liquidity situation. Since then, there has been activity at the national level in addition to New York's continued interest in this topic.

The September Report of the Academy Life Liquidity Group describes three types of liquidity needs: day-to-day cash management, operational cash flow over the next one-half to two-year period, and stress liquidity needs (which is the focus of their attention). By its very nature, a liquidity crisis should be a rare event, but can be very devastating when it occurs. It could be caused by a rating downgrade or even from a spillover from another financial institution.

The essence of the solution is for each company to analyze its own liquidity needs along with the sources of liquidity over various time frames. This information along with a Liquidity Plan would be updated periodically. Various regulatory options were discussed, and some were seen as possible options, including: reliance on corporate governance, certification of a liquidity plan, liquidity interrogatories, and certification that the stress risk was manageable on the date of the certification. An RBC approach was rejected, since a factor approach could not handle the complex nature of liquidity.

The third initiative involves the development of a Unified Valuation System. As part of this work, a "viability analysis" is being investigated. A viability analysis is described in an Academy report as "a self-analysis of an insurer's ability to identify, evaluate, and manage its risks in executing a strategic plan." The analysis revolves around a company's abilities and plans with the focus being the identification, analysis, communication, and measurement of risk.

From these three initiatives, it seems like we are moving to a framework in which the uniqueness of each company's operation is being recognized but this flexibility also means that each company is responsible for customizing the answer to its own situation. This will place additional demands on the limited resources of many companies. Perhaps meetings such as the Valuation Actuary Symposium could be used to explore the new most efficient way for smaller companies to meet these additional requirements. Any ideas?

***John O'Sullivan, FSA, MAAA, is a vice president and consulting actuary with ASA. He has served as a Chairperson of the Smaller Insurance Company Section and is currently serving on the Planning Committee for the Valuation Actuary Symposium. He can be reached at* josullivan@asabenefits.com.**