

To: Capital Adequacy (E) Task Force
From: C-3 Phase II Results Sub-group
Date: December, 4, 2006
Subject: Initial Report on C-3 Phase II Analysis
CC: Life Risk-Based Capital (E) Working Group

Introduction

The Analysis sub-group has completed its initial review of the C-3 Phase 2 methodology for calculating market, interest rate and expense recovery risk for variable annuities. The sub-group selected five companies for review. The items reviewed for the five companies included:

- 1) Risk Based Capital Filings for 2004 and 2005
- 2) Actuarial Certification that required capital followed NAIC RBC Instructions
- 3) Supporting Actuarial Memorandum

The sub-group's review, however, substantially focused on the supporting actuarial memorandum that documented the methodology, assumptions and sensitivity testing used by each company to determine the required capital. The reviews were conducted by holding 5 separate 2 hour conference calls.

Initial Summary Results

There was a wide variation among companies in assumptions used in the stochastic modeling process, the degree of sensitivity testing that was done, the quality of the documentation process and the summary of results. It would be expected there would be less variation over time especially with regard to the assumption setting process where little or no credible experience exists.

With regard to liability assumptions, including policyholder behavior assumptions, some companies included in the documentation excerpts from an experience study. One company disclosed part of a mortality study showing actual results to expected results, with a description of how the experience study results were used in setting the mortality assumption. There was not a single company that was reviewed, however, that included in their documentation excerpts from experience studies for all assumptions that were used in the model or an indication in all cases if experience studies were even available and if not available, how the prudent best estimate assumptions were determined. It is expected that

the memorandum would include a formal written report of every experience study and include such as an attachment or alternatively the memorandum should reference the experience study by name and indicate that the experience study report is available upon request. Only two companies provided any analysis of the credibility of the experience data and this credibility analysis usually applied to a single assumption, for example, mortality. For these two companies, credibility analysis of other experience data used in setting assumptions such as lapses, company expenses and option election rates was either not documented or not completed. Other companies just documented the assumptions and made no reference to experience studies or the credibility of such studies.

In general, there was insufficient discussion from all companies on how margins were established on each assumption or in aggregate if done in aggregate. Margins are to be added to an assumption when there is uncertainty in the assumption due to lack of experience data or lack of credible experience data. There was little or no discussion in the memorandums addressing this lack of uncertainty and the level of margins added due to this uncertainty. In addition, the sub-group expected that the memorandum would detail the sensitivity testing that was done and that the memorandum would disclose the results of the sensitivity testing. For companies that did sensitivity testing there was little or no discussion of how the results were used to determine the most important assumptions and assist in setting the margins for each assumption or in aggregate. Without experience data disclosed and an analysis of the credibility of such data, the sub-group could not evaluate the appropriateness of the margins used in the assumptions.

With regard to the asset modeling assumptions, some companies did a good job in describing the fund mapping process used in assigning their variable annuity separate account funds into either broad market indices that were modeled internally or into asset classes for which the Academy provided 10,000 prepackaged scenarios. When internal models were used, there was generally sufficient documentation on the calibration criteria being met, however, some companies that used a subset of the prepackaged scenarios did not verify that the scenario calibration criteria were met on all asset classes used in the mapping process. None of the companies reviewed addressed the issue of whether the number of scenarios used in the modeling provided an acceptable level of precision. All companies reviewed appeared to accept as fact that 1,000 scenarios are sufficient.

With regard to modeling of the liabilities, most companies described the characteristics that were used in determining the liability model points. What was generally lacking was disclosure of the reduction factor. The analysis sub-group expected to see the absolute number of liability contracts, the associated number of liability model points and a discussion of how the aggregation was done, along with a demonstration that the aggregation process does not materially affect the underlying risks. In one case, the sub-

group felt that the liability modeling data did not replicate the in force data to a sufficient degree, however, the company did not address this discrepancy.

There was wide variation in the degree of the sensitivity testing that was done. One company did not disclose any sensitivity testing. For companies that disclosed sensitivity testing, the assumptions tested varied. In general, the sub-group felt that the delta of the test was too small. There were also differences in how the sensitivity tests were run. Some companies used the full scenario set while others used a reduced scenario set for the sensitivity tests. Based on the documentation, for companies that did sensitivity testing, the results of the sensitivity tests were not used to take any action in adjusting margins in assumptions. There was one case where the sensitivity test indicated results were highly sensitive to a change in an assumption that had little underlying experience, yet there was no discussion on how that result was used in setting the margin for that assumption.

There were also wide variations in the quality of documentation. As stated earlier some companies included in the documentation excerpts from an experience study or a reference to a company experience study, while others stated the assumptions with no excerpt or reference. There was little or no discussion that the model output generated was consistent with company experience. The sub-group expected to see a table of results showing that model deaths, lapses, expenses etc. generated in the first projection year were close to actual experience reported in the most recent financial statement. The sub-group found documents with parenthetical references such as “(to be determined or filled in later)” and such sections were never completed or filled in. The general lack of quality documentation or incomplete documentation resulted in reports that were difficult to audit with an appropriate degree of rigor.

Finally, the sub-group had an expectation that, after reading the actuarial memorandum, the reader would have a good understanding of the risks and the magnitude of the risks that are embedded in a company’s variable annuity block of business. Generally that was not the case. It appeared from the documentation that this effort was just a regulatory exercise that had to be completed and documented, instead of an opportunity for the company to really understand and disclose the material risks embedded within their contracts. The sub-group expected to see, for example, an executive summary that describes each key material risk, the magnitude of that risk and how the company expects to manage and mitigate such risk. Such a document would greatly assist the regulator in completing a risk focused financial examination and audit. The sub-group appreciates that this was the first year that the methodology went into effect and that the methodology is quite complex. It is hoped that the process will improve as we move forward.

Next Steps

The sub-group plans on meeting with the actuary of each company to attempt to resolve some outstanding questions that were noted in the review and provide some feedback. The sub-group may also need to expand the sample of companies to review in order to determine if changes are needed to the standard scenario. Based on the sample of 5 companies reviewed, we were not able to come to any conclusions on the standard scenario. We would ask the Task Force to allow us to continue our work so we could get to a point of making some final recommendations on any changes to the methodology, instructions or documentation. We would anticipate on having some recommendations by the Spring 2007 NAIC meeting.