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Part II of II

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Introduction

This is a follow-up to an article included in the April newsletter. At that time, the AAA Practice Note was about to be released and the article presented a case study intended to simulate the environment and issues associated with preparing an initial LTCI rate filing under the 2000 LTCI Model Regulation certification requirements. The case study was to then be the focus of a session at the SOA Spring Meeting in Vancouver in June. Although the discussion was interesting, many questions were unresolved and some new issues were raised. Unfortunately, the case study did not prove particularly helpful in focusing the discussion or providing examples of realistic issues. On the other hand, the discussion was quite interesting and well worthwhile. This article summarizes some of the key aspects of the discussion and reiterates a few outstanding issues.

Vancouver SOA Meeting

At Session 9CS of the June Vancouver meeting, Amy Pahl, Darrell Spell and I conducted a discussion of the issues associated with applying the AAA Practice Note to the problem of preparing the initial rate filing certification. As expected, much of the discussion related to making provision for Moderately Adverse Experience (MAE). On balance, the discussion uncovered more questions than answers. Some additional concerns that arose included:

- How do you define conditions under which management would seek a rate increase, especially when a portion of adverse experience may be covered by "other" sources?
- What are the proper interpretations of the various assumption sets referenced in the regulation and the Practice Note (e.g., "best estimate" versus "pricing" versus "best estimate plus provision for MAE" versus "sensitivity testing assumptions" versus "experience prompting rate increases")?
- How is provision for MAE defined in the context of pricing cell subsidization?
- How should provision for MAE take into account the level of comfort with the best estimate assumptions?
- How should provision for MAE take into account the lack of experience of new entrants to the LTCI market?
- Can the mechanics of the net-to-gross test be clarified when dealing with conservative valuation assumptions?
- In the net-to-gross comparison, how many pricing cells can "fail" the test and by how much?
- How is proper consideration given to constraints on loss ratios associated with future in-force rate increases when testing experience scenarios for initial pricing?
- What constitutes "management agreement" and will it be binding if in-force rate increases are required in the future?
- Despite the uncertainty in the definition of MAE, how can the actuary clearly present his/her provision for MAE in the filed rates?
- What role should pricing assumptions on prior successful filings play as a comparison base for the reasonableness of future filings?
- How can "gaming" of the filing process be avoided if too much clarity is provided by

regulators regarding filing procedures and standards?

Three major issues were scheduled for discussion at the session—how to make provision for moderately adverse experience, how to interpret the net-to-gross premium comparison and (if necessary) how to measure the likelihood of MAE scenarios. While some of what follows can be attributed to the session discussion, I would characterize most of the following as my own musings on these issues.

Provision for Moderately Adverse Experience

Section 10.B(2) of the 2000 LTCI Model Regulation requires that the actuary must provide:

> "…an actuarial certification consisting of at least the following:…(a) statement that the initial premium rate schedule is sufficient to cover anticipated costs under moderately adverse experience and that the premium rate schedule is reasonably expected to be sustainable over the life of the form with no future premium increases anticipated;…"

A strict reading of this language might lead to the following conclusions:

- The first portion, "sufficient to cover anticipated costs under moderately adverse experience," makes no mention of the need to provide for a profit acceptable to management. In the extreme, this might imply that this condition will be satisfied if the provision for MAE (expressed as a premium loading) is less than the profit margin anticipated under best-estimate assumptions.

- The second portion, "premium schedule is reasonably expected to be sustainable," makes no mention of MAE, but alludes to reasonable expectations. We might interpret "sustainable" to mean not requiring an in-force rate increase. This might imply that this condition will be satisfied if the profit margin under best-estimate (reasonable) assumptions is sufficient to avoid future management requests for rate increases.

- Given the lack of a clear definition, if the MAE is "conveniently" selected to be less than the best-estimate profit margin, it would seem that both conditions are satisied. In this extreme interpretation, the actuary makes no certification that rate increases will not be sought if experience is less than moderately adverse.

Of course, it is unreasonable to assume that this narrow interpretation was what regulators had in mind when they worded the model regulation. Those at the session seemed to agree that this was not in keeping with the intent of the regulation. On the other hand, the fact that the wording is subject to this kind of unintended interpretation would seem, by itself, to call for additional clarification of intent by the authors.

The Q&A within the Practice Note indicates that provision for MAE usually will vary by the actuary's "interpretation," "confidence" and "judgment," as well as the company's "tolerance." All of these terms are difficult to define, but seem to indicate again that there may be room for significant differences in how actuaries might reasonably interpret the requirement.

Regardless of the range of possible interpretations of the MAE certification requirement, the implications of the model regulation for actuaries and insurers seeking "unexceptional" inforce premium rate increases are much clearer. Even those who adopt a minimalist attitude with regard to the initial filing certification requirements will agree that a pricing strategy which admits a significant probability for future in-force rate increases is unlikely to be financially viable in the light of the constraints placed on such increases.

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Role of the Net-to-Gross Premium Comparison

Section 10.B.(2)(d)(iv) of the 2000 LTCI Model Regulation requires:

> "A statement that the difference between the gross premium and the net valuation premium for renewal years is sufficient to cover expected renewal expenses; or if such a statement cannot be made, a complete description of the situations where this does not occur;"

The model regulation language does not explicitly indicate that the comparison must be satisfied. The regulation simply states that additional information may be required if it is not satisfied. Of course, this additional information may lead the regulator to question the appropriateness of the pricing assumptions and, therefore, to question the certification of the provision for adverse experience, but the comparison itself is not an explicit lower bound on gross premiums (on average or by pricing cell).

continued on page 10

The Practice Note provides additional guidance on the interpretation of this regulation. The first discussion of this section of the regulation occurs in the "Documentation" section of the Practice Note (page 8), indicating that,

> "In those situations where the actuary cannot make the statement required in the first part of Section 10.B.(2)(d)(iv) of the 2000 Model Regulation, the actuary may want to include a description of the adjustments to the reserving assumptions necessary to modify the net valuation premiums for testing purposes (e.g., an increase in the interest rate from 4 percent to 7 percent for issue ages under 60)."

The Practice Note again discusses this part of the regulation in the Q&A section on page 10:

> **"How might the actuary address very conservative reserves that do not meet the 2000 Model Regulation's criteria for comparison of gross and net premiums?**

"Some companies may decide to establish conservative reserves, (e.g., with a 0 percent voluntary lapse assumption) such that the comparison required by the 2000 Model Regulation is not directly passed. The 2000 Model Regulation (further amplified in the guidance manual) allows the actuary to adjust any or all of the reserve assumptions to reduce the difference between the reserve assumption(s) and the pricing assumption(s) that include the margin until the comparison is met. Under this approach, the actuary then usually documents the changes along with the reserve assumptions. Regulators may then review the adjusted assumptions as a surrogate for pricing with margins. In the event that the difference produces an assumption that appears too aggressive to the regulator, the actuary may be called upon to supply the detailed work behind the actuarial certification."

This implies again that the role of the net-to-gross premium comparison is to provide additional information to assist the regulator in evaluating the appropriateness of the pricing assumptions, and the comparison is not an additional requirement that must be met even if the certification requirement in Section 10.B(2)(a) is otherwise satisfied.

Measuring MAE Likelihood

If we argue that a 2 percent drop in interest is a "very" adverse deviation because it will require repricing, can we then characterize a 1 percent drop in rates as "moderately" adverse because management will not seek a rate increase in that event? Does the required provision for MAE require the actuary to measure the probability of the adverse scenario occurring? Can we state that a 1 percent change in interest rates is moderately adverse without assessing the likelihood of such a change?

Step 3 of the Practice Note calls for testing the margin for MAE using "volatility measures on" … "probability distribution functions" or "using Monte Carlo simulation." This seems to imply that frequency measurement is at least appropriate, if not recommended.

In Example C of the Practice Note, "the actuary determines the margin sufficient to cover 90 percent of all scenarios tested." This is another indication that the frequency of the adverse deviation is a significant factor.

Suppose then, for the sake of this discussion, that we must consider the frequency of an adverse deviation and that it cannot be considered moderately adverse unless the probability of its occurrence (or something more adverse) is less than or equal, say, to 20 percent. What tools does the actuary have to make such an assessment?

Having spent the past many years in stochastic model-building efforts, I believe efforts to set explicit definitions for "moderate" deviations expressed in terms of probability thresholds will be very difficult to apply consistently. Consider claim cost assumptions pieced together from various general population studies and subjective adjustments for induced demand. How can we estimate the 80th percentile of the claim cost from these data sources?

We might build a micro-simulation model which claims to summarize the risk that actual results will differ from expected results, but how do we factor in uncertainty with regard to the expected claim levels? How do we incorporate provision in the claim cost distribution for lurking trends that may not be apparent in short historical study periods? While I am definitely a fan of continuing to study and model such processes, the current state of actuarial technology will leave much room for reasonable differences in the estimates of these probabilities or distribution percentiles. So, we should not expect much greater clarity or consistency in the definition of MAE merely by posing the question in a probability framework.

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I hope this article has been at least interesting, if not thought-provoking. As an LTCI Section Council member, I would be very interested in your thoughts on these and other issues.

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