

**1989 VALUATION ACTUARY
SYMPOSIUM PROCEEDINGS**

STANDARDS FOR DYNAMIC SOLVENCY TESTING

DR. ALLAN BRENDER: My task is to discuss the current state of our proposal for dynamic solvency testing by all Canadian life insurance companies. For the past three years, the CIA's Committee on Solvency Standards for Financial Institutions has been developing this proposal; we have reported regularly on our progress at CIA meetings and past Valuation Actuary Symposia. At the last symposium in Toronto, we presented a detailed example of dynamic solvency testing for a fictitious company. At the annual meeting of the CIA in June 1989, we distributed a preliminary version of a primer on dynamic solvency testing. The primer has since been translated into French and has been distributed in both languages to all those on the Institute's valuation actuary mailing list.

We are now considering a proposed standard of practice for CIA members who carry out dynamic solvency testing. I remind you that the Institute committed itself to having a solvency standard in place when GAAP reporting, and the Policy Premium Method (PPM) in particular, is implemented. The Institute's interim standards for adopting standards of practice call for three stages: (1) a discussion draft prepared by the relevant practice committee and distributed to the membership for discussion; (2) an exposure draft prepared by the Committee on Standards of Practice in the normal form for CIA standards; and (3) a

final version adopted by Council, which is then binding on members. We hope to circulate a discussion draft in fall 1989.

In a sense, we shall have two discussion drafts in circulation. When we first prepared our primer, we drew from material which we expected would form our future standard of practice. Since dynamic solvency testing is a new activity for our members, our committee has an educational role as well as a standard setting role. We thought that education must precede the setting of standards of practice and that preparation of a primer was the more appropriate first step. Bearing in mind the origin of the primer, you should also regard it as a preliminary discussion draft of the content of a mature full-blown standard of practice.

Because the practice is so new, it is reasonable to expect our profession's view of the task and its requirements will evolve with time. The standard of practice will also evolve. It makes sense to keep the initial standard as simple as possible and to rely on the primer as a set of explanatory notes. Over time, some of the more important ideas in the primer will probably migrate into the standard of practice. It follows that we would appreciate your comments on the primer as well as on the discussion draft which we shall soon be circulating. To date, we have received few comments on the primer; I want to share our reactions to these a bit later in this session.

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Let us turn to the forthcoming discussion draft. The first section is entitled "Investigation of Solvency is Required." It requires an annual investigation, taking into consideration the company's present and expected future financial condition, the risks of insolvency, the sensitivities of surplus to various experience factors and levels of new business, and the likely impact of the company's current business plan.

The second section is entitled "Method for the Investigation." A review of recent financial results and surplus levels as well as five-year projections under a variety of scenarios are required. The base scenario is described as well as the ten prescribed scenarios which are listed in an appendix. The draft goes on to say that additional scenarios should be tested. It is emphasized that the additional scenarios chosen by the actuary are particularly important because they allow the actuary to develop a thorough understanding of his own company and to recommend corrective action if necessary. The actuary must conduct sufficient additional investigation, or study sufficiently many additional scenarios, to achieve four goals: (1) to explore the impact of significant adverse trends not covered by the prescribed scenarios; (2) to determine the potential impact of more than one adverse trend occurring during the five-year projection period; (3) to become more knowledgeable about those adverse trends that are considered more likely to occur or are more significant for the company; and (4) to test how changes in the business plan may correct or mitigate certain adverse trends.

The draft goes on to say that the solvency investigation will normally involve modeling. The exact type of modeling is left to the actuary, although mention is made that in investigating lines of business where asset/liability mismatch is a particular risk, full-blown cash-flow projections will be required. Also contained here is a description of conditions under which more limited dynamic solvency testing might be carried out either less frequently than annually or annually but with a limited amount of testing. This lessened requirement only applies to blocks of business which are of relatively small size, exhibit stable experience, have little or no new business, and for which the most recent complete solvency investigation has shown the lack of significant threats to solvency. In addition, such a more limited solvency investigation is justified only when the company has a record of comfortable historic surplus levels. I must stress that these conditions apply with respect to certain blocks of business only and are not intended to provide an escape hatch which will relieve the actuary of the obligation to carry out an annual investigation.

The third and final section is entitled "Reporting." It requires a report by the actuary to the company's board of directors, properly documented and in conformity with professional standards. The report should summarize the important results of the projection work, interpret the significance of those findings, and provide recommendations regarding possible future actions to safeguard the solvency position, or reduce the exposure to risks of adverse trends. Special attention must be given to pending or possible events in the immediate

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future, which the actuary feels may be likely to significantly affect the company's ability to meet minimum regulatory standards for available capital and surplus.

The current draft of our proposed standard ends with section three and makes no mention of the valuation actuary's signed opinion on the company's financial statements. However, there is very strong sentiment within our committee to add a reference to the actuary's opinion. We are concerned that under GAAP financial reporting, the traditional "good and sufficient" language may not apply to reserves which are calculated primarily so as to be appropriate for income determination, and not as a solvency safeguard. We see some sort of "good and sufficient" statement as being required and think it should be linked to appropriated surplus.

Once more, we expect to issue the discussion draft of the dynamic solvency testing standard very soon, in the expectation that it, and the primer, will be discussed at the November 1989 meeting of the CIA in Montreal.

I would like to turn to some of the comments we have received, either in writing or orally. Again I remind you that we welcome and await your comments.

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Perhaps the most frequent comment we have received has been to the effect that perhaps in the early years it would be best if one had to investigate only the prescribed scenarios; the assumption seems to be that the work required increases directly with the number of scenarios tested. This assumption is not correct. The most difficult parts in the modeling process are two: construction of the necessary software, and choosing a representative set of cells of appropriate products with in-force policies, and cells of assets, in short, a model office, which represents your company appropriately. Once the models, office and software, have been constructed, running an additional scenario involves only a few changes in the program input; the rest is a matter of computing time, and this does not seem to be a formidable obstacle.

There appears to be a further misconception about the role of the prescribed scenarios. These are intended to provide a standardized starting point for each company's investigation. This standardization is useful to our profession since the task is new, and it is useful at this time to fix a starting point for each company's investigation, to give all actuaries a uniform frame of reference. Each prescribed scenario is meant to highlight a particular possible source of difficulty. The collection of the prescribed scenarios therefore provides the actuary with a minimal list of possible sources of difficulty which should be taken into consideration. None of the prescribed scenarios is necessarily meant to be within the range of the actuary's expectations; all should be plausible. If any seem

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implausible to the actuary, he can point this out in his interpretation of the results in his report to management.

However, I believe our scenarios are plausible. Our interest rate scenarios, which are among those mentioned by New York in its Regulation 126, call for shifts in interest rates of 3 percent over five years; during this decade, we have experienced much more dramatic shifts than this. The experience, particularly in the U.S., with disintermediation shows our lapse scenario to be plausible as well. Similarly, our mortality scenarios, of which there are two, are consistent with figures now being discussed with respect to AIDS, and with the possible effects of a sudden but short-lived epidemic.

Some members have commented that the experience levels in the prescribed scenarios may not be credible to management. Again, these scenarios are exploratory; this being the case, it is perhaps better that they be more dramatic than might be expected, so that attention will be paid to their results and the factors being considered will be more fully investigated. It should also be recalled that these scenarios, in fact the entire dynamic solvency testing process, have no necessary effect on the current financial statement. The direct impact for management of prescribed scenarios is far less than the impact of, for example, prescribed valuation assumptions or provisions for adverse deviations which directly affect annual profits.

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I referred earlier to the difficulty in constructing an appropriate model office which is depictive of the company. We have received one comment from a member who, I believe, accurately appreciates the magnitude of the task, and expects that for any reasonably dynamic company a new model office would have to be constructed for each year's test. He therefore suggests that the solvency investigation be triennial instead of annual. This is a valuable suggestion which we shall have to consider further.

We realize that a full-blown dynamic solvency test of an actual company is a tremendous undertaking. The members of the committee on solvency standards have been working on this project for the past four years. We think we have developed a reasonable and sound approach to the problem of continuing solvency. But we do need outside input, especially from those who will be doing the job -- all of you. Please, read our forthcoming discussion draft, and the primer which is now in your hands, discuss them with your peers, and let us have the benefit of your considered opinion. Dynamic solvency testing represents a real expansion of the valuation actuary's role. You can influence how this job evolves, what the timetable will be, and what the relevant standard of practice should be. The time to let your opinion be known is when the process is in its infancy and has not yet taken its final mature form. Let us hear from you soon.

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There are two recent developments related to solvency testing which I would like to touch on briefly.

The first concerns the Minimum Continuing Capital Surplus Requirement (MCCSR) test formula. There are two aspects to this item. First there is the computation of the requirement. The Canadian Life and Health Insurance Association (CLHIA) has recently released a new version of the test formula in which a number of the risk factors which determine the MCCSR calculation have been changed. For the most part, the changes appear to reduce the MCCSR. It seems likely that we are in for another round of test calculations by all companies sometime early in the next year. Also, the last test was jointly sponsored by the CLHIA and Office of the Superintendent of Financial Institutions (OSFI) to see whether the CLHIA formula could also serve as the statutory required surplus calculation. Now that the factors have been changed, I imagine OSFI will again have to consider the acceptability of the CLHIA formula for its needs. Things are far from settled. The second aspect relates to the items which can be used to satisfy the MCCSR. There have been significant developments here, too. First, OSFI released its version of the Basle formula for capital requirements for banks. In the quest for the proverbial level playing field, this can be expected to affect the definition of the MCCSR, particularly the definition of available capital and surplus. Second, OSFI has broadened the categories of available surplus it is willing to consider. For the first time, non-booked assets, in particular

unamortized realized and to a limited extent, unrealized, capital gains on stocks and real estate can be used to satisfy the MCCR. Third, the CLHA has recast and expanded its definition of available capital and surplus, in light of the Basle rules. Again, we have not yet heard the final version of all this.

What does this have to do with dynamic solvency testing? Well, our test is to ask whether, according to a particular scenario of future experience, the company will be able to satisfy the MCCR. The developments I've been discussing will fix the calculation of the MCCR and determine which of the company's resources are available to satisfy the requirement. Both the formula and the available surplus number are relatively simple calculations which can be done once results of simulation under a scenario are at hand. We may have to change these calculations as these matters are finally resolved. However, the greater part of the work in dynamic solvency testing is in building the necessary models, both the software and the model office. This can and should be done even if the final form of the MCCR is not yet known. Uncertainty about the MCCR formula is not a reason to delay your work on dynamic solvency testing.

Turning to my final topic, as many of you know, the Province of Quebec commissioned from the Sobeco Group a report on solvency standards and the treatment of subsidiaries. This is an important study which could influence the development of solvency standards not

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only in Quebec but also in the rest of Canada. The report is generally supportive of the type of solvency testing our committee is advocating. The question of subsidiaries, and in particular the matter of double counting of surplus, is particularly important in Quebec where an insurer is permitted to invest a much greater portion of its assets, 50 percent, in subsidiaries than is permitted to federally registered companies. This is a very difficult problem with no obvious simple solution, as the authors of the report recognize.

The CIA has been asked to comment on the Sobeco report. The committee on solvency standards has been charged with preparing an initial draft of the Institute's response. Again, we seek your input, your timely input. Please communicate any insights you would like to share on the report, as soon as possible, to our chairman, Trevor Howes, at his yearbook address.

(Following Al Brender's remarks)

The committee clearly feels that dynamic solvency testing not only will be a major undertaking, but also that it will be an important tool for the valuation actuary in dealing with solvency concerns. In our view, though, it is only one half of a dual role related to solvency, that the actuary should aspire to fill.

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Dynamic solvency testing is concerned with the trends of surplus in the period immediately following the statement date, and over the longer term, using both best estimates of future experience and all plausible deviations from those estimates. This allows the actuary to advise management as to the significance of various risks to the company, and the projected impact of its business plans on surplus.

Static solvency assessment, on the other hand, concentrates on the static view of a company embodied in a balance sheet presentation. While it doesn't ignore future risks, and possible changes in circumstances, its primary concern is with the actual solvency position of the company at the statement date, for the purpose of financial reporting, and prudential regulation.

It is this second aspect of our solvency role which is very relevant to the second short term objective mentioned earlier -- the proposal for a transitional solvency provision upon the initial implementation of the new combined GAAP and statutory reporting.