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PHILOSOPHISTRY?

Philosophies in the Computation and Dissemination of Dividend Illustrations. Prepared by the SOA Committee on Cost Comparison Methods and Related Issues, 1974, pp. 85.

by R. G. Boeckner

This is the second report of the Society's Committee on Cost Comparison Methods and Related Issues chaired by Bartley L. Munson. Like the first report (*The Actuary*—March 1975), this was prepared at the request of the NAIC which described the research project as follows:

"For a representative group of participating life insurance policies, each company would be asked to describe its philosophy in the computation and dissemination of dividend illustrations."

On the basis of this the Committee considered that they were being asked to study:

(1) Whether under any method of cost comparison of life insurance the existing methods of handling dividend illustrations are adequate and proper for fair and reasonable comparison, and

(2) Whether the current methods of disclosure and qualification of illustrated dividends are sufficient.

While each company was asked to describe its philosophy regarding dividends, the Committee designed a questionnaire to obtain opinions and information on company practices from individual actuaries including consultants. The areas of the report containing opinions are more interesting than the tables listing current practices, although an actuary involved with dividend determination can find from the tables if he is in the mainstream of actuarial thinking.

Responses were obtained from 111 of the 142 U.S. and Canadian life insurance companies surveyed; only 2 out of 46 consulting firms responded. The low response from the consultants is unfortunate because they may well influence the thinking of many small insurance companies.

The first chapter of the report discusses disclosure of dividend information on new and existing business. While a significant effort is made to provide illustrations to prospective buyers, no company appears to make a full-scale effort to update illustrations held by existing policyholders when dividend scale changes are made, even if dividends are decreased. The main reason given for not doing so is the cost of preparing illustrations for all existing policies on a new scale. However, very few companies would not provide illustrations for a specific existing policy if the policyholder asks for one.

When asked if they believed that the public is sufficiently aware of the non-guaranteed nature of dividends, 71% of mutual company actuaries said "yes" but only 28% of the stock company actuaries agreed. Unfortunately, the questionnaire did not allow the stock company actuaries' responses to be divided into those whose companies write some par business and those whose companies write non-par only. If expenses continue to increase dramatically and interest rates drop from historic highs leading to dividend decreases, public response may well provide an answer.

The report's second chapter on dividend philosophies reveals general consistency among actuaries although there were a few widely divergent opinions. The report attempts to develop a broad composite dividend philosophy which should be required reading for all actuaries involved in dividend determination. The answer to specific questions will not be found but this part of the report does summarize traditional actuarial principles.

There was one rather unusual response: "Dividend scales are produced on the basis of reasonable assumptions at the time a policy is developed. This dividend scale is generally used unchanged thereafter. Little has been done to review existing dividend scales relative to original assumptions and the corresponding appropriate assumptions today."

Despite a general agreement on overall dividend philosophy, when it comes to actual assumptions for dividend scales, there appears to be less consistency. About half the companies responding use current experience, while

(Continued on page 6)

(Continued from page 4)

$$ {}_nMAIC = {}_nIAC + \left(\frac{w}{1-w} \cdot \frac{1}{\ddot{a}_{\overline{n}|}}\right) {}_1IAC $$

For $i = .07$, $w = .10$, the factor-in-parenthesis is about 1.5% for 10 years, and 1% for 20 years. With such an adjustment term, the arguments to include interim and especially first year cash values are ameliorated, and the measure addresses itself to two of the main cost problems: short term cost on early surrender and long term cost over a stated duration. A first year lapse rate of 10% would seem adequately high for MIAC determined using an annual mode of premium payment. Loadings for other modes would adjust to some degree for the higher lapse rates of those modes.

So my conclusions are these:

a) Displaying IAC for durations 10 and 20 as usual, augmented by IAC for duration 1 (or what may be tantamount to that, displaying the first year premium, dividend and cash value) should provide for adequate cost disclosure.

b) If a composite is desired for industry ranking purposes or for the consumer, MIAC for duration 20 would be adequate.

One further thought arises on policies with non-level coverage: IAC could be divided by an "equivalent level amount" taking only interest into account. That is

$$ {}_nIAC = \frac{\sum_{t=1}^{n} {}_tP_x (1+i)^{n-t+1} - \sum_{t=1}^{n} {}_tD_x (1+i)^{n-t} - {}_nCV_x - {}_nTD_x}{\sum_{t=1}^{n} {}_tF_x (1+i)^{n-t+1}} $$

This adjustment gives heavier weight to insurance in the near future compared with insurance in the distant future.

Some additional study would be required to determine if this approach produced reasonable relationships among costs of various plans of insurance. *T. C. Sutton*

(Letters continued on page 6)

Letters

Negative Interest

Sir:

I have recently derived the two compound interest identities given below and am sure that many readers of *The Actuary* can benefit from these formulas. I have found them extremely helpful when one is dealing with a Hewlett-Packard Model 80 (HP-80) electronic calculator.

The identities are as follows:

$$\ddot{s}_{\overline{n}|i} = a_{\overline{n}|-d}$$

$$\ddot{a}_{\overline{n}|i} = s_{\overline{n}|-d} \qquad \text{where } -d = \frac{-i}{1+i}$$

Mathematical derivation:

$$\ddot{s}_{\overline{n}|i} = \frac{(1+i)^n - 1}{d} = \frac{(1-(v_i)^n}{-d} = \frac{1-\left(\frac{1}{1-d}\right)^n}{-d} = \frac{1-v_{-d}^n}{-d} = a_{\overline{n}|-d}$$

$$\ddot{a}_{\overline{n}|i} = \frac{1-v_i^n}{d} = \frac{v_i^n - 1}{-d} = \frac{(1-d)^n - 1}{-d} = s_{\overline{n}|-d}$$

My own realization of these identities was not connected with the above mathematical derivation, however. One day I was working with the pre-programmed immediate annuity and forborne annuity function keys of my HP-80 calculator in the solution of interest-adjusted net costs. I mistakenly pressed the incorrect keys while, at the same time, having entered the wrong data into the calculator.

To my surprise, I had solved for the interest rate of an immediate annuity instead of the related forborne annuity due. This "interest rate" turned out to be the negative *discount rate* corresponding to an interest rate i.

I guess not all discoveries are the result of much consideration of carefully thought out ideas!

Robert K. Clements

Philosophistry?

(*Continued from page* 5)

the remainder generally use current experience altered to reflect possible or probable future changes. A similar split was obtained when the questionnaire asked if identical assumptions were used for new and existing business.

Furthermore, 79% of the respondents indicated that they were satisfied with their companies' current practices. When asked if the actuary has the responsibility to illustrate only those dividends which he or she feels probably can be paid, 25% of the respondents hid behind the regulatory requirement of several states that dividend illustrations must represent current experience. It is to be hoped none of these people is in the group that deviate from current experience when establishing dividend assumptions.

A more acceptable response was: "Likelihood of payment should influence the actuary to cut back illustrations if the future is bleak, but not to improve illustrations if the future is bright. An illustrative dividend scale should be based on current circumstances, adjusted for known adverse changes."

This philosophy might lead to excessive conservatism.

With only two exceptions, the respondents felt that dividends should be included in cost comparisons among participating policies. However, when asked if dividends should be included in cost comparisons between a par policy and a guaranteed cost policy (and if so, on what basis), the answers more nearly reflected the expected biases of the respondents' employers.

Almost everyone agreed that dividend illustrations *could* be manipulated to produce favorable cost comparison results and many people answered the follow-up question "how" in more detail. However, it was reassuring that in practice most actuaries, while giving serious consideration to the comparative cost position at issue, do not generally do so to the detriment of the company's general philosophy regarding equity among classes of policyholders.

A large majority said there was no need to establish a prescribed method to calculate dividends. Principles equity should apply and regulators pr vent abuses through the examination procedure. There was greater support for establishing a prescribed method for use of dividend illustrations to insure uniformity and consistency.

The paper concludes with a brief summary of the results of the questionnaire. Those who read only the summary will miss the flavor of individual responses and may not appreciate the diversity of opinion that exists within the profession on a rather fundamental subject.

While the report contains seven chapters and two appendices, it is only 85 pages and the reading time is not very lengthy. I found quite useful the 12-page appendix summarizing the existing statutes and regulations. There were a few points of which I was unaware despite a conscientious effort to keep up-to-date on the legal constraints.

This report is interesting and informative. Perhaps it is unfortunate that the Society of Actuaries carried out such a survey only after the idea was fir proposed by the National Association of Insurance Commissioners.

Note: The Report is available from the Chicago office at a cost of $5.00. □