The Actuary

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Unruh

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cash values than those provided by the current law at 3½% interest. It would hardly seem appropriate to make a change in the expense allowance without at least increasing the interest rate so as to more closely approximate the rate used in company asset shares. The Committee makes no specific recommendation for a more modern expense allowance, mortality table, or interest rate; however, these were studied and discussed in detail. It is recommended that a single set of minimum values be defined based on the highest permissible interest rate and that the present linkage between the policy valuation and non-forfeiture interest rates be eliminated. It is recommended that guaranteed paid-up insurance non-forfeiture options should be those purchased by the cash value at a rate as high as that used for cash values. It is also recommended that single premium policy minimum cash values allow an interest rate higher than annual premium policies.

The Committee analyzed numerous other aspects. Various recommendations are made which are designed to simplify the law, to make the law more flexible and consistent, and to eliminate certain technical flaws. These include: (1) expanding the law to include deferred annuities during the buildup period on an accumulation of percentage of premium basis, (2) exemption of accident and health insurance for non-forfeiture purposes (except possibly for plans with return of premium benefits), (3) treatment of term riders as separate policies under a "severability" principle, (4) treatment of renewable and convertible term policies as a series of short term policies, (5) exemption of policies that never give rise to significant values by a direct test for triviality, (6) expansion of exemptions for term plans, (7) an alternate treatment for substandard policies so that the death benefit could be decreased depending on the extra mortality but where minimum cash values would be identical to a standard policy, and (8) removal of anomalies that occur due to the uniform percentage of gross premium requirement.

We are indebted to Mr. Unruh and the members of the Committee for this thorough, comprehensive, and practical report and we hope that its final recommendations will induce appropriate revisions in the Standard Non-forfeiture Law. Especially needed is additional flexibility in developing and marketing new products which provide protection against erosion of insurance coverage due to inflation.

Meantime this reviewer would again urge all members of the Society to read the report and to send their comments and suggestions to:

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1 Madison Avenue
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Income Tax and Reserve Valuation

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Even though the deduction for the "tabular interest" declines as the earnings rate rises above Fraser's "optimal" point of 6½%, the after-tax yield continues to rise until the earnings rate reaches 12%. The marginal tax rate exceeds 50% after the deduction reaches its maximum, but does not exceed 100% until the after-tax yield passes its "optimal" level of 12%. With the "10 for 1" approximation rule, the optimal level for the after-tax yield occurs when the current earnings rate equals 10½% plus one-half of the original assumed reserve interest rate:

Let CER be the current earnings rate

I_r be the original assumed reserve interest rate

$$\text{After-tax gain} = 1.1\,\text{CER} - [1.1\,\text{CER} - \text{CER}\,(1 + 10\,I_r - 10\,\text{CER})]\,\tfrac{1}{2}$$
$$= (1.05 + 5\,I_r)\,\text{CER} - 5\,(\text{CER})^2$$

Taking the partial derivative of the after-tax gain with respect to CER and set to zero,

$$\text{CER} = 10\tfrac{1}{2}\% + \tfrac{1}{2}I_r$$

It would seem that the peaking 'deduction' phenomenon described by Mr. Fraser is only incidental because the marginal tax rate increases at a constant rate. A declining after-tax income occurs for a company only at a much higher earnings rate (above 12% in this illustration). □

Actuarial Notation

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of the Society. Furthermore, the Committee has made it clear that if during the next few months it will become evident that the prevailing opinion amongst the Society's membership is contrary to that already expressed by the Committee, then the I.A.A. Sub-Committee will be so notified.

Thus, the Committee on Standard Notation and Nomenclature would welcome the opinion of any member of the Society on the question of linearization and expansion of the International Actuarial Notation. If you wish to express your opinion, you can do so by writing to me at Confederation Life, 321 Bloor Street East, Toronto, Canada, M4W IHI. □

COMPETITION No. 6

To our dismay we realized that actuaries as a group have *no plans to honor the U.S. Bicentennial.* Our Canadian members have an excuse, of course, but we are shamefaced about the lack of patriotic spirit among our U.S. members. We invite suggestions for something the Society or its members might do to make an actuarial contribution to the Bicentennial celebration.

Examples:

A mortality table ending at age 200.

Full retirement benefits after 13 years of service and attainment of age 50.

Declaration of Actuarial Independence.

Perhaps the Society's motto or emblem could be given a Bicentennial theme. For each of the three submissions we like best we will award a delightful book, "American Journeys", an anthology of travel in the United States (from John Alden to Neil Armstrong).

The usual Rules will obtain and the final mailing date is May 17.

C.E.