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SOCIETY'S SPECIAL SESSION ON MORTALITY

by James C. Hickman

The study of mortality is a basic concern of actuaries. At the time of the Annual Meeting on November 1, 1967, the Society's Committee on Research, under the chairmanship of E. A. Lew, devoted a special session to Mortality Estimation and Risk Theory Aspects of Mortality. The four papers presented are outlined briefly below.

John Mereu's paper "Measurement of Mortality" was introductory in nature and reviewed the history of actuarial approaches. Much of the earlier literature on this subject was concerned with methods of grouping data into age blocks for use with exposure formulas rather than with the underlying concepts. With modern computers it is now feasible to obtain exposures on a seriatim basis, and actuaries may concentrate on the problem of finding the best way to allow for partial contributions to exposure in the year of termination. In the past, actuaries have used a particular method of counting exposure and have assumed that the probability that a life aged $x + k$ (k<1) will die before age $x + 1$ is proportional to the period remaining.

H. L. Seal has shown that the usual actuarial estimate of the mortality rate has a bias because the exposed to risk depends on the actual mortality of the "existing" or "enders." The correction formula for this bias results in exposing deaths to the earlier of the end of the year of age or the end of their prospective exposure period. Expressions comparable to those developed in discrete form for the correction are also derived for the continuous versions with analagous formulas for the assumptions of uniform distribution of deaths, and of constant force of mortality.

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IN DEFENCE OF CARTER

by Laurence E. Coward

The actuarial profession, so closely linked with the insurance industry, can hardly be expected to welcome with open arms any proposals (such as those in the Carter Report) for additional taxation on insurance companies and their policyholders. However, the present system of life insurance taxation is so indefensible that a major reorganization appears to be inevitable. In such event, actuaries will have the opportunity and responsibility to help develop the new tax system on a sound and constructive basis.

The answer to H. Edward Harland's question "whether any substantial change in taxation is necessary or desirable?" can only be in the affirmative. It is true that "the life insurance industry has made, and is continuing to make, a substantial contribution to Canada's growth and social well-being." But this is no reason why the industry should not bear its proper share of income tax. Tax incentives for social reasons should be directed at specific objectives and not take the form of tax exemption for a major industry.

At present, mutual life insurance companies are exempt from income tax and stock companies are taxed only on amounts paid to or set aside for the shareholders. The Canadian income tax paid by stock insurance companies is about $2 million per year. The interest income of the companies is about $700 million a year, of which roughly one-third will eventually be taxed at a low rate when it comes into the hands of individuals as annuity or pension income. The assets in excess of statutory reserves increase by over $50 million a year and these are untaxed. Canadian companies pay $15 million a year in foreign in-

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TREASURY AIDE VIEWS FUNDING, REINSURANCE OF PRIVATE PENSIONS

by E. F. Boynton

The latest thinking of the Interagency Task Force which is investigating the need for regulation of private pension funds was revealed in a recent speech by William Gibb, Deputy Legislative Counsel for the Treasury Department. The comments were made at a meeting of the American Finance Association as a follow-up to the basic proposals outlined by Assistant Secretary Stanley S. Surrey at the American Pension Conference in May, 1967.

The basic objective of the Task Force proposals is to provide a means to protect vested benefits and, according to Mr. Gibb, this would be accomplished by a two-prong approach: (1) new minimum funding standards, plus (2) participation in a "termination protection fund," heretofore called "reinsurance."

The funding standards now being considered would require that a progressively increasing percentage of the vested liabilities of the plan be funded each year. Specifically, the vesting percentage "target" would increase by 4% per year so that all vested benefits would have to be funded within at least 25 years. The target for existing plans would increase by only 3% per year for the first 5 years as a transitional arrangement, and an unspecified adjustment would be made in the funding target to handle substantive plan amendments.

Assumptions and methods to test the degree of funding of vested liabilities would apparently be prescribed by a Government agency. The contributions to the plan would also have to meet the present normal cost-plus interest minimum now required by the IRS.

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Private Pensions

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To protect the unfunded vested liability before the funding target reaches 100%, there would be created a termination protection fund which would require mandatory participation by any plan having unfunded vested liabilities. However, it is not clear whether multi-employer, area-wide plans would be required to participate in such fund.

In the event of a shutdown of a business or operation, which would presumably include a single plant closing, the termination protection fund would cover the difference between the total vested liability and the funding target. Thus, if the funding target expressed as a percentage of the vested liabilities is not met by the assets in the fund, the gap between the target and the actual fund would not be covered by the termination protection fund.

This potential loss of benefits, which could arise from fluctuations in market value or failure to make required contributions, is apparently one problem that the Interagency Task Force is finding difficult to resolve. Mr. Gibb indicated that one alternative being considered is to make such a deficit a legal liability of the company with the same priority as, say, unpaid wages. In the event the employer failed to make up any funding deficit within 5 years, future benefit accruals under the plan would be suspended until the deficit was made up.

One area of particular interest to actuaries in this termination protection idea is the determination of appropriate premium rates for this unique type of insurance. The Task Force proposals are somewhat vague, except to state the position that a uniform premium rate expressed as a percentage of unfunded vested liabilities would be used for *all* plans, as the complexity of measuring the risk of termination would be too great to make a variable rate practical. A rate determination for each plan covered would be required at least every three years, based on the fund's assets and vested liabilities at that time.

Mr. Gibb did not discuss vesting, but indicated that the Task Force is still working on detailed proposals for minimum vesting standards. □

CURRENCY DEVALUATION

by J. Ross Gray

Every company doing an active business in a foreign country is concerned with the problem of fluctuation in the value of different currencies — because its policies will be payable in the foreign currency and it may well, perhaps is forced to, invest in assets payable in that currency.

The obvious way to prevent a fluctuation in the company's surplus due to a change in the value of any particular currency is to have assets and liabilities equal in the currency. This exact balance may be prevented, or rendered undesirable, by a number of influences, such as,

(1) a requirement of the foreign government that a portion of the surplus be held in foreign assets,
(2) the availability, or lack of availability, of safe, profitable investments,
(3) the availability of bonds payable in two or more currencies,
(4) company anticipation of some change in the value of the currency,
(5) book value of assets different from their market value.

Position of Canadian Companies

Because of the recent devaluation of Sterling, and because of the number of Canadian companies which do business in countries where the currency is Sterling or related to Sterling, it may be of interest to see the position of the Canadian life insurance companies at December 31, 1965, the last year for which the official reports are available.

The following table gives the number of companies where the book value of assets in the currency are certain multiples of the liabilities. Some arbitrary allocation has been made with respect to optionally payable securities.

Multiple of liabilities	U. S. Dollars	Sterling & Irish £	British West Indies, $ & £	Others related to £	Total Sterling types	Other
Over 5 times	6	5	–	–	1	–
3 — 5 "	2	–	–	–	–	–
2 — 3 "	–	–	–	–	–	–
1.50 to 2.00	3	–	–	–	1	–
1.20 to 1.50	2	1	1	–	1	–
1.10 to 1.20	3	2	–	–	–	–
1.00 to 1.10	5	2	1	–	4	–
.90 to 1.00	1	1	–	–	5	2
.80 to .90	–	–	–	–	1	1
.50 to .80	–	2	5	–	1	1
.20 to .50	1	–	6	4	–	2
Under .20	–	–	1	–	1	–
	23	13	14	4	15	6

Two observations might be made. U. S. assets have been regarded as a good investment and a safe currency. Sterling of Great Britain has been regarded as good cover for liabilities in British West Indies and other Sterling-related currencies.

These few comments do not touch on the problems which can arise from devaluation, such as rising costs and inadequate contribution to head office expenses.

BY THE YEAR 2000

The Office of the Actuary, Social Security Administration, estimates that the expectation of life at birth by the year 2000 may fall between 69.1 years and 71.6 years for males and between 75.3 years and 77.5 years for females. The corresponding figures for 1965 were 66.8 years for males and 73.7 years for females. At age 65, the estimate for males ranges from 13.8 to 14.8 years and from 16.7 to 17.6 years for females. For 1965, the comparable figures are 12.9 years and 16.2 years for males and females respectively.