

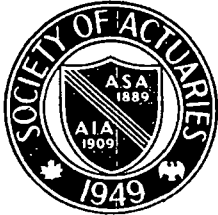


SOCIETY OF ACTUARIES

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# The Actuary

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## SOME VIEWS ABOUT ADJUSTMENT OF EARNINGS

by Robert S. Espie

The following thought has occurred to me in connection with recent discussions as to adjustment of earnings of a life insurance company. I offer it in the hope that I can be enlightened by your readers if I am in error.

My thesis is, simply, that the distortion of earnings is caused by the establishment of a statutory reserve in the annual statement which differs from a realistic evaluation of the future liability. As a corollary, the concept of pre-paid acquisition expense as a basis of adjustment will be seen to be inappropriate.

For simplicity of algebraic manipulation I assume a one-year term policy (or block of policies) in which (1) the interest element has been omitted for simplicity; (2) the premium is paid in advance (and is therefore "annual" or "single" as you choose); (3) the expenses of issue are all disbursed at date of issue and can be analyzed into "acquisition" expenses which, under some accounting theories, should be amortized over the period of the contract, and other issue expense which should not be; (4) all other expenses and the benefit payment itself are spread evenly throughout the policy period and can be measured on a realistic basis.

Let  $\pi$  be the gross premium  
a be the acquisition expenses  
e be the other issue expenses  
r be the realistic value of benefits and on-going expenses  
p be the profit margin  
v be the initial reserve set up in the annual statement to cover the benefits and on-going expenses realistically valued at r.

(Continued on page 7)

## 1901.. Mortimer Spiegelman .. 1969

It is with deep regret that we report the death of Mortimer Spiegelman on March 25. Mort's contribution to the success of *The Actuary* has been great. His wide experience in both writing and publishing was "a very present help in trouble" to an otherwise neophyte Editorial Board, and perhaps of even greater help to his colleagues were his patience and good humor.

It was both a privilege and a delight to work with Mort Spiegelman, a modest gentleman who made light of his own great talents in his willingness to help others. He will be greatly missed.

A.C.W.

## ACTUARIAL SCIENCE AT UNIVERSITY OF IOWA

by James C. Hickman

In grade school geography class students learn to associate Iowa with the production of corn and livestock. They do not learn that for over 50 years Iowa has also been associated with the production of actuaries.

Courses related to actuarial topics were given at the University of Iowa, Iowa City, before 1918. In that year H. L. Rietz came to the University as head of the Department of Mathematics. Mr. Rietz had become interested in actuarial science and statistics while he served on the faculty of the University of Illinois. At Iowa, he directed the building of strong academic programs in actuarial science and statistics.

At present work in actuarial science at Iowa is centered in the Department of Statistics, College of Liberal Arts. The Department of Statistics along with the Departments of Mathematics and Computer Science make up the Division of Mathematical Sciences.

(Continued on page 7)

## NATIONAL SCIENCE FOUNDATION SUMMER INSTITUTES

by Herbert J. Boothroyd

The National Science Foundation conducts Summer Institutes in science and mathematics all over the United States. These Institutes are conducted for the benefit of high school teachers in these subjects to keep them abreast of current developments in each area.

In the summer of 1967 Bartley L. Munson invited the teachers attending an Institute at Lawrence College to visit the Home Office of the Aid Association for Lutherans in Appleton, Wisc. On the basis of his experience, he suggested that these Institutes would offer an excellent opportunity to reach mathematics students through their teachers. The Public Relations Committee set up a Subcommittee to look into the matter and their preliminary study led to a pilot program this past summer.

For its first effort the NSFSI Subcommittee, with the assistance of the Subcommittee for Relations with Colleges and Universities, selected two appropriate Institutes in each of eight areas and appointed an Actuarial Representative to work with each Institute Director. The basic idea was to allow the teachers to have informal discussions with actuaries and their associates on topics such as the nature of actuarial work, the background and training required, computer utilization, and an overall view of the actuary's role either in the operations of a life insurance company or as a consultant. In 14 programs the teachers visited the office of a life insurance company or actuarial consulting firm. Three programs were conducted by actuaries at the colleges.

Reactions to the initial visits were enthusiastically favorable. Teachers and Institute Directors appreciated the op-

(Continued on page 5)

**Letters**

*(Continued from page 6)*

required income.

Mr. Fraser used a 5% adjusted reserve of \$6,000,000 in his hypothetical companies. This, and the "10 for 1" rule, resulted in a 2½% reserve of \$8,000,000, and a 3% reserve of \$7,500,000. The difference in tax arising from a change in the interest assumption would depend on the actual 2½% or 3% reserve that would apply for that company's mixture of plans, the reserve modification method used and the company's federal income tax position. As the business matures, and the public's choice of products changes, it is certain that the characteristics will vary.

The advantage that either a 2½% reserve or a 3% reserve has, if such advantage can be determined, is a function of a company's business. It could go either way, depending on the characteristics of that business now and in the future.

Arthur E. Teiler

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**Help Wanted**

Public references to a "guaranteed minimum income" are currently mushrooming in Canada and I am writing an article on the subject for coast-to-coast publication. I would welcome references, comments, and suggestions from your readers.

James L. Clare

**University of Iowa**

*(Continued from page 1)*

The three departments offer a single undergraduate major in mathematical sciences. This broad organization gives undergraduate students a great deal of flexibility in planning a program which fits their interests and abilities. A student who elects early in his college career to concentrate in actuarial science can complete most of the professional actuarial courses while still an undergraduate. On the other hand, a student who initially has more general goals can also design a program to fit his needs.

On the graduate level the Department of Statistics offers two programs leading to the M.S. degree in statistics with emphasis in actuarial science. The non-thesis program requires the completion

of at least 30 semester hours of graduate work and specifies that certain prescribed courses be included in the program. These courses cover, among other things, the subjects on the first five examinations of the Society of Actuaries. The thesis program allows a student seeking the M.S. degree more flexibility in earning the required 30 semester hours and provides him with the valuable experience of writing a technical actuarial paper.

Programs leading to the Ph.D. degree with research in the area of common interest of statistics and actuarial science have also been planned for qualified students. Graduate students participate in an active program of seminars in which current actuarial literature is studied.

Students interested in actuarial science almost invariably elect courses in the College of Business Administration. Because of their relevance to the fellowship examinations and to actuarial practice, courses in money and banking, social insurance and data processing, are currently the courses most frequently taken.

A limited number of scholarships and fellowships for outstanding actuarial students, both undergraduate and graduate, are available. The funds to provide these scholarships and fellowships come from those interested in furthering actuarial education, comprising insurance companies, consulting actuarial firms, and individual actuaries. Graduate students may also find part-time employment with the university as teaching assistants or computer programmers. Further information and application forms may be obtained from: Chairman, Department of Statistics, University of Iowa, Iowa City, Iowa 52240. □

**Adjustment of Earnings**

*(Continued from page 1)*

Let us further assume that r and v can be calculated as of the instant after issue, when π has been received and a and e have been spent.

Then  $\pi = a + e + r + p$ , and  $\pi - a - e - v$  is the "statutory" profit.

The problem now is: What adjustment should be made to statutory profit to give adjusted earnings according to generally accepted accounting principles?

By definition

$$\begin{aligned} p &= \pi - a - e - r \\ &= \pi - a - e - v + v - r \\ &= \text{statutory profit} + v - r \end{aligned}$$

Thus an additive adjustment of v - r will transform the statutory profit into a "true" profit.

However, the recording of such a profit at the instant after issue is not conservative in that it anticipates a profit which in fact is highly contingent. Therefore our rule is modified to state that if p > 0, the adjustment to statutory earnings should be v - r - p, and adjusted earnings at point of issue  $(\pi - a - e - v) + (v - r - p)$ , equalling zero.

Since v - r - p equals v + a + e - π, we are saying that where p is positive the additive adjustment should be algebraically equal to the excess of reserve set up and cash outflow over premiums. And we also say that no profit should be recognized at the point of sale.

Where p is negative, the additive adjustment should be limited to v - r. By doing so, the adjusted profit becomes  $\pi - a - e - v + v - r = \pi - a - e - r$  which in turn will be negative and equal to p. That is, the adjusted earnings will give immediate recognition to the loss expected.

**Further Notes**

It will be noted that the appropriate adjustment is not equal to "a" (except by coincidence), as it would be if the adjusted earnings philosophy consisted solely of adding back the unamortized acquisition costs.

It will further be noted that the introduction of an interest element complicates the algebra but does not change the principle.

For a policy extending beyond one year the calculation of the realistic liability and the comparison of it with the reserve held in the statement will be made annually, and the difference between successive annual calculations will be the annual earnings adjustment, suitably modified by test so that a probable loss position is immediately recognized and a probable future profit position is not.

In addition to being independent of the distinction between acquisition and other expenses, it will be seen that the general principle holds good regardless of the pattern of acquisition expenses over a period of years and regardless of the reserve valuation method. □