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# The Actuary

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## THE STATE OF STATE TAXES

by Marvin Weisbrod

*Editor's Note: The subject of State Taxation was discussed at the October meeting of the Actuarial Club of the Pacific States and we are pleased to present the discussion given by Mr. Weisbrod who is Second Vice President and Tax Officer with the Occidental Life of California.*

There are seven objectives to be sought by a tax structure:

- (1) Consistency with economic growth, avoiding dependence on taxes which deter or distort desirable economic activity or depress consumption of legitimate goods and services;
- (2) Uniformity (rather than selectivity) of application to portions of the tax base upon which it falls;
- (3) Equitable distribution between taxpayers;
- (4) Effective administration at a reasonable cost;
- (5) A minimum of compliance cost and inconvenience to taxpayer;
- (6) The capability to grow as the economy of the state grows;
- (7) Provision of an adequate source of revenue.

Four elements enter into premium tax:

- (1) The tax *rate*; it varies by state from 0% to 4% and even within a state may vary by line of business.
- (2) The taxable *base*; that is the definition of premiums and the deductions such as dividends which may be allowed in arriving at the base. The allowance or disallowance of dividends as a deduction can cause distortions as between stock and mutual companies.

(3) *Offsets*, credits or other reductions, e.g. the deduction for real estate

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## TIME MARCHES ON

A conference on Time Series Analysis and Actuarial Applications, sponsored jointly by the Department of Statistics of the University of Waterloo and the Committee on Research of the Society of Actuaries, will be held at the University of Waterloo, Waterloo, Ontario, on September 28-30, 1972.

The aims of the conference are (1) to provide an overview of Time Series Analysis; (2) to explore applications of time series analysis to actuarial problems; (3) to gain insight into research work on models of capital markets and stock price series. Applications of time series analysis to insurance operation data such as claim numbers, claim costs, policies issued, investment value changes, cash flow, policy loans, surrenders, etc. will be made.

The invited lecturers in each of the three areas indicated above are (1) George C. Tiao, University of Wisconsin; (2) Robert B. Miller, University of Wisconsin; (3) Eugene F. Fama, University of Chicago. These individuals are eminently qualified by their past and present work in the areas indicated, and the conference will provide a thorough indication of the use of time series analysis in actuarial work.

All members of the Society of Actuaries have received a registration form for this meeting with the mailing for the spring meetings. However, if this form has been mislaid, copies may be obtained from Dave Halmstad, Area 22-Z, Metropolitan Life, One Madison Ave., New York, N. Y. 10010. □

## PENSIONS AND FUTURE CHANGE

by E. Allen Arnold

*Editor's Note: We are pleased to publish this excerpt from a talk given at the New Orleans meeting.*

The economic forces which affect the development of pensions are those which affect nearly all economic activity. The principal factor which determines a nation's ability to support an adequate, comprehensive pension system is its productivity. The rates of inflation and the amplitude of the swings in the business cycle affect both the pace and the form of the system's development.

Rather than explore these economic factors affecting pensions separately, let us create in our minds a hypothetical situation—not a prediction, but more of a "for instance"—to see what our economic system might have to come up with to finance one kind of full-scale retirement system.

We have to start with some assumptions, and the assumptions selected are improbable enough to dispel the idea of prophecy. They do have the advantage of producing results which relate to present-day scales of magnitude. Let us assume:

- U.S. population stabilized at 1970 level
- No immigration
- Mortality according to the 1971 Group Annuity Table
- Investment earnings of 6% annually
- All employees hired at age 25 and retired at age 60
- 95% of the population (both male and female) working between these ages and obtaining benefits at age 60
- No inflation
- Social Security benefits of \$3,000 annually (at age 60)
- Social Security on a pay-as-you-go basis

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# The Actuary

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## EDITORIAL

HENRY FORD heard so many quips (mostly disparaging) about his Model T that he collected and published them. He prospered afterwards, as all the world knows. Perhaps our own professional standing could be improved by setting forth "How Others See Us."

The personality of the actuary is evidently deficient. The older school observes that ". . . the typical actuary is a man past middle age, spare, wrinkled, intelligent, passive, noncommittal, with eyes like codfish . . ." In his Presidential Address to the Institute of Actuaries, Sir Andrew Rowell noted the existence ". . . as an echo of the past, the suggestion that the actuary is a remote, academic, and altogether superior person; a cross between a high priest, performing mysterious rites, and a Delphic Oracle, speaking Greek, in riddles, and, even then, only upon receipt of a large fee."

Some observations are rather cruel: An Actuary is ". . . human petrification with a heart of feldspar." Some of the insults are two-faceted: "He wanted to be an accountant, but didn't have the personality." Modern business has given us that "an IBM computer is an actuary, with a personality." Modern medical science, with its heart transplant operations, has this: "I want an actuary's heart", said the patient when offered his choice from the heart bank, "because then I know I am getting one that's never been used."

We are, at any rate, not simplistic. An actuary is a man "who immediately sees the difficult way of doing something." The consulting actuary, who is hyperactuarial in all respects, is "a man who, when asked what time it is, tells you how to build a watch."

But the unkindest cuts of all portray us as charlatans armed with bogus techniques. "A man who uses highly precise methods to go from unwarranted assumptions to foregone conclusions." "A man whose main object is to justify by reason a course of action adopted in error." Or, more simply: "A man who can reach any conclusion you give him." And why not? After all, "the work of actuarial science is to demonstrate impressions." The result of all this is "a man who never makes a little mistake." He is flexible, though, for "an actuary is either right or can prove he is." He is skeptical, too, where others are involved: "Give an actuary an inch, and he'll measure it."

Straight man: "Look at those black cows in the meadow."

Actuary: "They're black on this side anyway."

Negative, too, especially if an underwriter: "The Abominable No-Man." And stubborn! "You can always tell an actuary, but not much." He "expects everyone to be dead on time."

On that happy note we end another session of *The Actuary* and wish all our readers a Happy Summer. See you in the fall.

K.T.C.

## State Taxes

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taxes paid on company-occupied building within the state.

(4) Possible substitution of the premium tax for other taxes.

By varying one or more of these four elements approximately three-fourths of the states utilize techniques to achieve an effective rate differential between domestic and foreign insurers. They may be as simple as not imposing a premium tax on domestic companies (Illinois) or more complex as determining the amount of assets invested in the state compared with total assets to get a reduced rate (Alabama). The results are two-fold: out-of-state companies are compelled to compete with insurers enjoying a tax subsidy, and the inequitable cost must be borne by either the policyholders or the stockholders of the out-of-state companies.

Not only is there discrimination between domestic and foreign insurers but also discrimination between policyholders because the premium tax is regressive. Older entering policyholders pay a larger tax than younger policyholders since the premium is a function of age. There is also a tax on savings since the large savings element plans have higher premiums.

What is the tax burden of the life insurance industry vis-a-vis other financial institutions? Other financial institutions are normally taxed on a net income basis which allow as one of the deductions a bad debt reserve. In California, the tax rate applied to net income is 11% and the financial institutions pay this tax in lieu of other taxes (just as the insurance companies' premium tax is an "in lieu of" tax). The insurance industry has less than one-third of the assets of banks and savings and loan companies combined yet insurance companies pay more than two and one-half times as much in state taxes in California.

In California, using the Federal Income Tax taxable income as a tax base and allocating by direct premiums to the State of California, the tax rate necessary in 1970 to produce the amount of tax equal to the California premium tax on life insurance companies net of real estate offset for principal office was 26.9%. The total net premium tax paid

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## State Taxes

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by life insurance companies in California in 1970 was \$62,100,000. If the life insurance industry had been paying at a rate of 11% on a Federal "piggy-back", the amount of taxes paid in California would be \$25,400,000 which would have been a loss of revenue to the State of California of about \$36,700,000. If the life insurance industry is carrying such a heavy tax burden at a state level why haven't there been proposals to go to a state income tax basis?

There are many advantages of premium tax from the viewpoint of legislators and tax administrators:

1. Insurance companies project an image of being a huge reservoir of liquid funds.
2. The premium tax is sufficiently indirect to avoid political repercussion to the general consuming public.
3. It is relatively easy to collect and administer.
4. It provides stable and growing source of revenue.
5. It is readily adjusted to help meet revenue needs of the State.

Many in the insurance industry have felt that from our viewpoint it has some advantages:

1. It is relatively easy to compute.
2. Its stability renders it readily susceptible to actuarial treatment.
3. Companies have learned to live with it.
4. Many believe a portion can be passed on to the policyholder.
5. It avoids the distorted picture involved in an annual accounting for net income.
6. Whatever the inherent defects, there are no practical alternatives.

Points 5 and 6 are the ones which the industry people would mention most strongly when questioned but these are

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## GENERAL PURPOSE FINANCIAL STATEMENTS

by Clayton A. Cardinal

The current examinations of the proper life insurance reserve to be taken into a general purpose financial statement presented in conformity with generally accepted accounting principles (GAAP) have resulted in much controversy. This article sets forth the writer's opinion of that which constitutes a proper insurance reserve for a general purpose financial statement. This reserve is presented as comprised of three elements: an "expected value" element, an "insurance risk" element, and a "catastrophe" element.

The essence of the controversy involves the resolution of the question of what constitutes a proper definition of *expenses* of a life insurance company and the *matching* of those expenses to revenue. The philosophy that life insurance represents a service contract and, therefore, should be accounted for under GAAP by matching profits to "services" performed is rejected.

Premium and investment income together is considered by the writer to be a theoretically correct definition of revenue. Premium alone, however, is recognized as an acceptable definition of revenue for the purpose of matching.

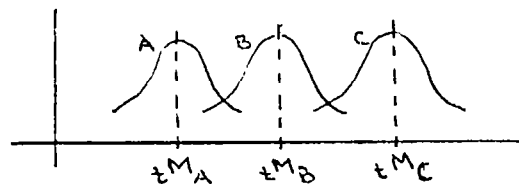
The typical method of funding life insurance expenses is the level premium method. The pattern of premium revenue is known well by life insurance actuaries. Thus it remains necessary only to identify the insurance expenses and to match such expenses to revenue.

The expenses considered in pricing an insurance product examined in this article are:

- (1) the universe defined by expected values including acquisition, maintenance and benefit costs;
- (2) statistical fluctuations to be expected in the manifestation of the universe as defined by the expected values;
- (3) expenses not considered in the definition of this universe.

Any advanced funding of expected expenses requires that an appropriate reserve be established. This reserve, an expected value reserve, is identical to the natural reserve defined in the 1970 December exposure draft of Audits of Life Insurance Companies, which is based on "realistic" assumptions. The basis of this identity is one of pragmatism inasmuch as these "realistic" assumptions do in fact define a universe and are, in the common construction of that exposure draft, identical to those expected values used in pricing the insurance product. The expected value reserve results in a proper matching of the expected expenses and the related expected value revenue.

Some observations are now made about the effects produced by the natural reserve method of accounting for a universe defined by the expected values. Consider the following graph:



Each of the three curves defines for sake of illustration the distribution of expected values in some year  $t$  for universes A, B, and C, respectively, with  ${}_tM_A$ ,  ${}_tM_B$ , and  ${}_tM_C$  representing the related expected mean values. Let B represent the universe contemplated by the natural reserve method and  ${}_tM_B$  the related "realistic" assumption for year  $t$ . What accounting effect results if universe A or C represents in fact the true universe? That is, what happens when  ${}_tM_B$  does not represent a proper definition of the universe that shall manifest itself? Does a proper matching of expenses to revenue result?

Inasmuch as the expected value revenue has been based on  ${}_tM_B$  rather than  ${}_tM_A$  or  ${}_tM_C$  and the accumulation and release of expected value reserves are thus also based on  ${}_tM_B$  in part, a mismatch results. Is this improper? Some hold that the

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effect of the mismatch should flow through the intraperiod general purpose income statement and that this is what is contemplated by the exposure draft. Others hold that such an intraperiod accounting of the mismatch is not contemplated by the exposure draft and that only statistical fluctuation of an accurately defined universe should receive intraperiod accounting. This latter position is subscribed to by the writer and is based again on pragmatism. Consider the following.

No universe can be properly defined by a given set of expected values. All that can be said is that the actual values evolving with the passage of time should in aggregate define a universe which is closely approximated by the assumed universes. If a preponderance of C-type universes manifest themselves when B-type universes have been assumed in the determination of the gross premium, a solvency question may arise. If a preponderance of A-type universes manifest themselves, a company may theoretically experience difficulties in selling its products. In either case, mismatching of revenue and expense does result for any intraperiod accounting. How should the intraperiod mismatch be accounted for? Should it be within the period as mentioned or does some other method produce a better and more appropriate matching?

Those who hold to the release from risk reserve method feel that this method produces a proper matching. Except for experimental forms of insurance the expected differences between the  $M_C$ 's and the  $M_B$ 's may not be large, and accordingly the expense curve over time as represented by the release from risk reserve method should closely follow the expense curve over time represented by the  $M_C$ 's. The release from risk reserve method has been elsewhere demonstrated to be sensitive in part to the values of the universe evolving. Reserves are built up and reserves are released, depending on the "total" persistency of the policies making up the universe. This dependency of the release from risk method on "total" persistency and the fact that the resulting pattern of expenses produced thereby may not represent the actual pattern to be expected is viewed by the writer as a possible weakness in the release from risk reserve method. Furthermore, this method is designed to produce reserves more conservative than that required by the expected values, thus ignoring in part the balancing effect of manifesting A-type universes. These facts lead the writer to consider another approach.

It is necessary to determine an insurance risk reserve, in addition to an expected value reserve, based on statistical measures of the difference in the universe actually manifesting itself during an intraperiod and that which has been assumed. Under this approach when A-type universes are manifested in an intraperiod the reserve is appropriately written up and when the C-type universes are manifested the reserve is appropriately written down. The theory is:

- (1) The going-concern philosophy holds that, over the long run, values equal to the expected values of the assumed universes will manifest themselves.
- (2) The expected value revenue has been determined on the basis of the expected values of the assumed universe.
- (3) The operation of the insurance risk reserve produces in an intraperiod a value more closely represented by the expected value reserve which, in turn, results in a better matching of expected value revenue and expected expenses and of actual revenue and actual expenses including reserves for future deferred expenses.
- (4) The ultimate value of the insurance risk reserve theoretically is zero.

If in fact the universes have been improperly defined and if the expected expenses have been underestimated, the insurance risk reserve would of course deplete.

The second item of consideration of concern in determining premiums is the statistical fluctuations which can be expected to occur in the expected values. In pricing an insurance product a surcharge must be included in the determination of premiums in order to minimize the possibility of corporate insolvency as a result of any "pure" statistical fluctuation in the expected values. That part of premium necessary to fund the surcharge, herein called the surcharge premium, has the same expected revenue pattern as does the expected value revenue since it is related

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## State Taxes

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no longer valid. Until recently there was no generally accepted net income tax for life insurance companies. The life insurance industry has now lived with the Federal 1959 Revenue Act and seen that it works. There have been no indications that this act has caused any unfair advantage to accrue to a particular segment of the life insurance industry. The Federal tax base would seem to be a reasonable base for state purposes.

We can look at the present state income tax laws applying to regular corporations to see how the income tax would work. Approximately 40 states have entered into a compact to use the three factor formula for allocating income by state for tax purposes. The three factors are payroll, property, and gross receipts, and the arithmetic average of the separate percentage for each of these three factors is the allocation percentage used. The use of these three factors for life insurance companies would, I believe, cause some serious problems. The payroll factor might be difficult to define so that there is no unfair discrimination between those companies operating on branch system and those operating on general agency system.

The property factor might also cause some difficulty since the life insurance companies have intangible property in the form of bonds and equity investments. The state of domicile of the issuing corporation would not be a satisfactory plan of allocation. If the property factor were used, the equitable way of allocating property would seem to be in the same proportion as insurance liabilities. It would be possible to allocate life reserves, dividend accumulations, coupon accumulations, and the like with a little effort. Claim liabilities, particularly incurred and unreported claims, might pose an interesting problem. The receipts factor would not be too hard with regard to direct premiums but probably the income from property would have to be allocated in proportion to the property allocation factor. It would seem that over the long term, using direct premiums as a single factor would give the least distorted results. □