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-aid 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 π 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.

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.

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-

Tribute from a Young Actuary

Mortimer Spiegelman was a quiet man. He never sought the limelight. He was content to do the necessary jobs other men avoided, to do them well, and to do them without acclaim.

More than any other group, the young actuaries—past, present and future—stand in his debt. It was for them that he wrote his book on demography. Few know the countless hours and painstaking research that went into this work. His craftsmanship is revealed in the ease of style with which he presents the result.

Scores of young actuaries benefitted further from knowing him personally. For them he exemplified the discipline and scientific rigor that are the highest traditions of the actuarial profession. He believed one of the greatest obligations of the profession to be to tutor and encourage the young.

The Society has lost one of its most devoted members. We pause in our labors to honor his memory.

J.B.C.

LETTERS

Consumer Price Index

Sir:

I was pleased to see Dr. Teper's article on the Consumer Price Index in the January *The Actuary*. Not only do actuaries concerned with pensions have to deal with the CPI frequently, but also—and perhaps especially—actuaries will be benefited by articles on subjects not strictly actuarial but in closely allied fields.

This article is a good start on the subject of the CPI and should, I think, be followed by a few more on the same subject either (a) exploring certain areas in depth, (b) developing points of view different from those of the author or both (a) and (b). Some examples of material that would be of value are, as follows:

(1) Indexes are averages and the significance of an average is always affected by the dispersion of the data about the average. What studies have been made of the standard (or other) deviation of the data that make up the CPI? Dr. Teper mentions that th average City Worker's Budget rose by 104%; how many budgets rose by 200%; how many by 10%; how many went down? He also states that output per man-hour increased 3.1% yearly; how many occupations or industries or individuals showed a 50% increase; how many showed a decrease? In other words, how typical are the various averages quoted in the article?

(2) Related to this question of variability is one of simple fact: what are the various items or categories that make up the CPI, and what weight is assigned to each? What per cent is assumed to be spent for food, fuel, automobiles, medical services, recreation? Actuaries should know the facts they are dealing with when they use the CPI.

(3) To what extent, if any, and why does an increase in the average output per man-hour increase the cost-of-living? Why does increased productivity of a husband increase the cost of groceries his wife buys? The classical theory is that efficiency resulting greater production tends to decrease prices but nowadays is also the basis of a union demand for a higher wage. The

Letters

two should not be confused, and Dr. Teper's thesis on this point needs clarification.

(4) What are the full facts on the incomes and budgets of retired couples? Dr. Teper reports that the average budget of a retired couple has been going up at the rate of 5.3% yearly, and that, since the CPI has been increasing at a lesser rate, the couple's scale of living is also increasing. The only comment I ever hear from retired friends of mine is the exact opposite of this: that their pensions and budgets are stationary so that their scale of living is steadily going down, year by year. Of course, most pensioners are drawing fixed-dollar pensions but some have stock investments and many are drawing OASI benefits. So it isn't as simple as my friends say, or as Dr. Teper states. What are the facts?

Other areas that could profitably be developed in depth, or in viewpoint, will occur to every actuary. The happy tone of Dr. Teper's article on the cost-of-living situation is, I am sure, not shared by everyone.

          Wilmer A. Jenkins

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Actuaries and Social Security

Sir:

During 1969, Secretary Finch of H.E.W., as required by Section 706 of the Social Security Act, will be appointing an "Advisory Council on Social Security" which is to make a report not later than Jan. 1, 1971. Such Council may be expected to take note of social security studies and recommendations for change that have appeared in recent years from different sources—the academic field, private foundations, legislative committees, organized private groups, etc. Indeed, there has been a considerable burgeoning of social security examination and probing in recent years.

Economists, seemingly having just discovered the existence of OASDI, have, in increasing numbers, turned their economics-oriented microscopes (or telescopes) on the system. The Joint Economic Committee of the U. S. Congress requested papers on the general

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ACTUARIAL MEETINGS

April 10, Baltimore Actuaries Club

April 16, Actuaries Club of Des Moines

April 16, Seattle Actuarial Club

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theme of Old Age Income Assurance from selected individuals and organizations. The invited individual contributors were predominately college professors. Only one individual was a F.S.A.

Some of the papers contributed by economists relating to OASDI included mathematical and actuarial analysis that did not reflect complete mastery of actuarial techniques and methodology. Here are some of the titles of papers: *Issues in Future Financing of Social Security; Cost-Benefit Ratios Under the Federal Old-Age Insurance Program; Inflation and Productivity in Tax-Benefit Analysis for Social Security; The Real Rate of Interest on Lifetime Contributions Toward Retirement Under Social Security; The Social Insurance Paradox; The Objectives of Social Security.* The last-named paper has since been expanded into a book sponsored by The Brookings Institution entitled *Social Security — Perspectives for Reform* by Pechman-Aaron-Taussig.

Will the 1969 Advisory Council on Social Security have any substantial contributions from the actuarial profession (other than the brilliant work of Robert J. Myers and his staff) to help in its deliberations? (Note Myers' critical appraisal of Aaron's *Social Insurance Paradox* in TSA XX, pp. 147-9.)

Are there members of the actuarial profession, spurred by a sense of commitment and imbued with a passion for objective actuarial revelation and illumination, who will grasp the opportunity and perhaps recognize an obligation to make contributions?

I see two broad areas: (1) a critical appraisal and analysis of the several studies made in very recent years by economists, and (2) a study of *dynamic* models of OASDI benefit and contribution pattern that would develop, among other things, contribution-benefit relationships for different earnings levels and marital and employment circumstances based on alternative assumptions as to type of benefit formula and

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rates (internally consistent) of population growth, productivity increase, interest and inflation.

Modern computers (unavailable to a retired person!) should greatly facilitate the study of a significant number of dynamic models. (This correspondent made some studies of a *static* model in 1959 but feels that *dynamic* models are more realistic since we should expect social security benefits to maintain certain relationships to active earnings levels as a matter of appropriate public policy and not merely as a matter of "politics.") Such studies could be of great value to the 1969 Advisory Council.

Unless significant contributions in this field from the actuarial profession are made, we may find that such profession will be paid a "tribute" similar to the following which, justified or not, was made by the President-Elect of the American Risk and Insurance Association and a member of the American Academy of Actuaries in a recent paper in the *ARIA Journal* that presented *A New Concept of the Economic Life Value and the Human Life Value*:

"The actuaries have been content to serve as technicians without ever raising basic questions about the wisdom or purposes of the insurance business. On rare occasions they may wax philosophical in defense of private insurance vis-a-vis social insurance, but their critical propensities rarely rise to the level of basic differences with the industry. Their treatment of most major issues leads the observer to wonder if there is any such thing as an independent actuarial profession. Perhaps academicians, important producers of scholarly general insurance literature, and largely untrained in actuarial science, are lulled into a false sense of security by the general silence of the actuarial profession."

          Ray M. Peterson

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Integrated Pension Plans

Sir:

The article in the January 1969 issue of *The Actuary* describes certain "modifications . . . in the direction of simplification" in the Final Regulations on integrating qualified pension plans with Social Security.

DR. BELTH'S "PRICE" THEORY

by William Gould

Mrs. Julia Oldenkamp's letter (*The Actuary,* January 1969) refers to the example given at the New York Actuaries Club workshop discussion of the "Belth" price theory (as reported in *The Actuary,* November 1968). She says that the example "is a bit shallow, since Dr. Belth did not propose to use a single year's cost as the sole criterion in comparing policies."

As the author of the example, I would like to explain why I consider it to be quite significant and instructive.

The Washington replacement regulation requires a comparison of the "yearly prices per $1000 of protection" for the old and new policies, for selected individual years ("current policy year," "5 years hence," and "10 years hence"). One of my purposes in concocting my "horrible example" was precisely to demonstrate that such comparisons for selected single years are quite devoid of significance.

About the Example

The example was presented at the workshop as a comparison of the cost figures for two policies for a *single* policy year. There is no warrant for Mrs. Oldenkamp's supposition that the cash values of the two policies differ by a constant amount at all durations. Actually the example compares the cost figures for the 6th policy year for two policies issued on the 10-Year Endowment plan at age 50 (last birthday) with premiums equal to the net premiums based on the 1958 CSO Table at 3% with immediate payment of claims. The policies differ only in their cash values, those for Policy A being equal to the net level premium reserves on the premium basis while the cash values for Policy B are somewhat less.

The true cost per $1000 of protection should be, under the stated assumptions, approximately equal to the tabular rate of mortality increased by half a year's interest at the tabular rate multiplied by $1000, in this case $13.80. The Belth "yearly price per $1000 of protection" is $13.97 for Policy A, which is reasonably accurate, but only $11.84 for Policy B, which is actually less than the tabular cost. The Belth "yearly price of

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APPENDIX 1

Dr. Belth's "yearly price" formulae may be expressed as follows:

"Yearly Price of Protection":

$$KP_t = (_{t-1}CV+GP)(1+i^B) - (D_t+_tCV)$$

where $_tCV$ = Cash Value at end of policy year t

GP = Gross Annual Premium

D_t = Annual Dividend at end of year t

i^B = Some arbitrary rate of interest

"Yearly Amount of Protection":

$$AP_t = 1000 - (_{t-1}CV+GP)(1+\tfrac{1}{2}i^B)$$

"Yearly Price per $1000 of Protection":

$$KPP_t = \frac{KP_t}{(AP_t)(.001)}$$

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protection" is $6.26 for Policy A, and $5.58 for Policy B; the difference between these two figures is equal to the difference in interest on the cash values at the beginning of the policy year. (Note: For reference, these Belth formulae are shown in Appendix 1.)

The further assumption in the example that the two policies would have the same increase in cash values for that policy year was an incidental touch, to show the effects for two policies having the same total net cost for the policy year.

A most significant point brought out by this example is the fact that the Belth "yearly price" formulae, which purport to measure the cost of the protection element in a life insurance policy, produce figures that are different for these two policies. There is no reason for the cost of protection for these two policies to be different. The example points to a major defect in the Belth formulae, namely, that the formulae do not take proper account of significant differences in the savings elements of the two policies.

Another serious defect in the Belth formulae is that the "yearly price of protection" quite arbitrarily includes the entire yearly expense of the policy (plus interest), i.e., the expense on the savings portion of the policy as well as the expense on the risk portion. Since

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the protection element in a policy is inseparable from the savings element in that policy, the Belth "price of protection" formulae are inherently objectionable as providing incomplete comparisons. When "yearly price" figures can be so obviously fallacious, as in this example, it would be irresponsible to accept them as valid or meaningful indices of cost.

In addition to the material on "yearly prices," the published report on the workshop discussion contained a brief reference to Dr. Belth's method of calculating "level prices," which I would like to amplify. The "level price per $1000 of protection" for a period of years is an average of the yearly prices during that period. It is calculated as the present value of the "yearly prices per $1000 of protection" weighted by the yearly amounts of protection, divided by the present value of the yearly amounts of protection, using discount factors involving interest, mortality and lapse. Clearly, the "level price" has no more validity than the "yearly prices" it contains. But even if it were possible to devise a method of calculating valid "yearly prices," it should be recognized that the "level prices" calculated by Dr. Belth's method are very strongly affected by the particular choices of assumed rates of interest, mortality and lapse.

Discounting Operation

The discounting operation involved in Dr. Belth's method of calculating "level prices" in effect assigns relatively greater weights to the "yearly prices" at the early durations and lesser weights at the later durations. Several examples of "level price" calculations for policies differing only in their cash value structure were presented at the workshop. One was a comparison of two policies— 10-Year Endowment for $1000, issue age 50 (nearest birthday), gross annual premium of $95.24 equal to the adjusted annual premium according to the Standard Nonforfeiture Law, based on the 1958 CSO Table at 3%—with the cash values for Policy C equal to the full reserves, and the cash values for Policy D equal to the statutory minimum values. Table 1 shows the results of this comparison.

An examination of Table 1 is instruc-

Belth Theory

tive. It shows that the Belth "yearly price per $1000 of protection" is higher for the policy with the higher cash values (Policy C) for every year except the first. Although Policy C is obviously preferable from the policyholder's viewpoint, since it has higher cash values than Policy D with no difference in premiums, the "level prices" calculated by methods (a), (b) and (c) are *higher* for Policy C than for Policy D.

Method (a) involves weighting the yearly figures by the yearly amounts of protection, without discounting; method (b) involves discounting for interest; method (c) involves discounting for interest and mortality. It is only when lapse rates are also introduced into the calculation by method (d)—which is

Dr. Belth's method—that the "level price" for Policy C becomes less than for Policy D. Thus, although the "level prices" by method (d) are not obviously wrong in this example (i.e. the figure for Policy C is not higher than that for Policy D), this result is merely an accident of arithmetic.

The last sentence of the report on the workshop as published in *The Actuary* stated, in reference to Dr. Belth's method of calculating "level prices," that:

> A "price" reflecting probabilities of survivorship and persistency could be more meaningful than a "price" based on the assumption that the policyholder will survive to the end of the policy year.

This statement is not too clear and differs from the text originally submitted for publication; I am sure that the published statement does not represent the views expressed by the workshop discussants. In my own view, a "level price" involving probabilities of survivorship and persistency is a very technical concept at best and cannot be particularly meaningful to the individual policyholder. I think that a measure of prospective cost that is determined as an average of the prospective costs for different categories of policyholders (e.g., those who will survive to the end of the designated period and those who will not) would surely be less meaningful *to the individual policyholder* than would a measure that pertains directly to the specific category of those who will survive to the end of the period. □

TABLE 1
"Level Price" Calculations per Belth Formulae

10 Year Endowment for $1000, Issue Age 50
Cash Values Based on 1958 CSO Table at 3%
Gross Annual Premium = $95.24

Policy Year	Policy C		Policy D	
	Cash Value (Full Reserve)	"Yearly Price per $1000 Protection"	Cash Value (Statutory Minimum)	"Yearly Price per $1000 Protection"
1	$ 85.04	$ 14.46	$ 44.46	$ 59.38
2	172.71	15.89	136.01	9.18
3	263.20	17.57	230.52	10.02
4	356.75	19.55	328.22	10.92
5	453.60	22.08	429.36	11.93
6	554.06	25.40	534.28	12.96
7	658.48	30.21	643.34	14.04
8	767.27	38.56	756.95	15.14
9	880.92	59.98	875.64	15.70
10	1000.00	591.30	1000.00	0.69

Method	"Level Price per $1000 Protection"	"Level Price per $1000 Protection"
(a) Simple Weighting	$ 22.34	$ 20.09
(b) Discounted, using only interest (3%)	21.65	20.74
(c) Discounted, using Interest and Mortality (1958 CSO)	21.38	20.97
(d) Discounted, using Interest, Mortality and Lapse (½ Linton's A rates)	20.90	21.77

Note: The interest and lapse assumptions indicated above are those specified by Dr. Belth in his book, "The Retail Price Structure in American Life Insurance." The mortality basis specified by Dr. Belth is the X_{18} Table with Buck's select modification, but the basis used above was the 1958 CSO Table, for convenience.

Summer Institutes

portunity to talk with actuaries and actuarial students, to learn something about an actuarial career, and to see inside an insurance company or consulting office: 99% felt that the programs should be continued; 65% were interested in having a speaker visit their high school. Most teachers were surprised to find another career opportunity for their students, and actuaries once again discovered how few have ever heard of their profession.

These programs should have the participation of Society members at all levels. The most important ingredient is the personal contact between individual actuaries and teachers.

The NSFSI Subcommittee has now appointed 10 area Chairmen to implement plans for 1969 and future years. Three to five Institute visits will be made each summer for each region and follow-up contacts with teachers in their home area high schools will be made to answer any questions or to provide an actuary-speaker for student groups.

The present members of the Subcommittee and the actuaries who participated in the pilot program are confident that these meetings can help to attract new recruits to the profession. However, they feel strongly that their ultimate success will depend on the contributions of individual actuaries as they work with the Summer Institutes. □

Letters

They are still sufficiently complex that I would quarrel with E. F. Boynton's analysis in two respects:

(1) He states that "the bend point in a final average excess plan can be $6,000 for employees *retiring* in the period 1972 to 1978, $6,600 for the period 1979 to 1933, et cetera." The Regulations, however, relate these brackets to the years in which the individual employee reaches age 65, not to the year when he retires.

(2) The example in item (3) seems to suggest that the fixed bend point applicable to all employees is dependent on the year when the plan change is made effective. Under the Regulations, this uniform figure cannot exceed (for active employees) the bend point taken from the Table in the Regulations for the oldest current or potential active participant.

Specifically, if the plan in the example covers—or can in the future cover—an active employee who reached age 65 before 1972, the fixed bend point of $6,000 cannot be used without reducing the basic 30% limit.

See how simple the Rules are now?

James F. A. Biggs

* * * *

Which CIA?

Sir:

Last fall I attended the meeting of the Canadian Institute of Actuaries in Quebec City. There I was surprised to hear one of the speakers continually refer to the Institute in abbreviated form. All of a sudden it struck me.

There is a CIA operating in Canada. Worse, it has the following features:

• It is a tightly knit group of professionals and few Canadians are aware of their activities;

• The members exercise substantial control over about twenty billion dollars of funds in Canada;

• Almost all violent deaths and other morbid events in Canada come to the attention of the members sooner or later and they have shown a curious interest in such events;

• Funds have been channeled through the members to Canadian universities and some of these funds have definitely been used to get students involved in the activities of the CIA;

• A number of the members are located in high places in government and they have prime access to much important information;

• The organization maintains a mailing address at 8 King Street East in Toronto, but the address of its hierarchy is changed annually and without public announcement;

• The members have access to personal files kept in secret and outlining the personal affairs of millions of Canadian citizens;

• And Canadians are generally ill-informed about the activities of the CIA.

The average Canadian citizen upon hearing of the existence of this organization might well assume the worst and feel that the organization poses a serious threat to the country and its citizens. As a member of this body I am genuinely concerned. So far we have managed to keep out of the limelight and thus escape the reactions of our citizens. How long can we maintain this innocent pose? Maybe we should change our abbreviated form to something like CANINACT as a matter of disguise. I would appreciate receiving the reaction of your readers and possible solutions to nip this problem in the bud.

E. R. Vogt

* * * *

Federal Income Tax

Sir:

In the article "Federal Income Tax Effect of Reserve Interest Rate Under Phase 1" (*The Actuary,* November 1968), John C. Fraser compares the tax treatment of Company A, a 2½% reserve interest rate company, to Company B, a 3% reserve interest rate company. Company A earns more income because it has larger funds and has higher Phase 1 taxes. Mr. Fraser shows that the Phase 1 tax on Company A's funds in excess of Company B's funds is at a high rate. While this is true, I feel that in the example Company A gets a better tax break than Company B, despite higher Phase 1 tax for Company A.

Phase 1 is only part of the story. Under Phase 2 Company A receive͡ larger reserve increase deductions during the reserve build-up period, as well as larger potential deductions for its A & H, Group, and non-participating life contracts, and in Phase 2 Company A gets more deductions for its income with tax exempt features, such as corporate dividends and Municipal Bond income. Thus Company A comes out better under Phase 2.

Phase 3 also comes into play. Even if both companies were to be in the broad tax position where the tax formula causes the gain from operation to be $250,000 less than the taxable investment income, if all else is the same, since Company A has larger reserve increases, Company B will use more of its special deductions thereby building up its policyholder surplus faster than will Company A. Eventually, when Company B's policyholder surplus reaches its maximum, Company B will pay Phase 3 tax on these special deductions while Company A is still building up its policyholder reserve free of Phase 3 tax. However, since both companies receive different Phase 2 deductions, it is not likely that they will both be in the same tax position, and either Company A's larger Phase 2 deductions will reduce the tax it pays or Company B will pay higher taxes because of smaller special deduction.

Phase 1 does not consider reserve build-up, expenses or dividends; Phases 2 and 3 are for that. Phase 1 considers only the investment yield, assets, and the required interest, adjusted for reserves by the "10 for 1" rule. Using the Annual Statement required interest, Company B requires $25,000 more interest than Company A, yet Company A actually earns $25,000 more interest than Company B. Mr. Fraser's table shows, because of the "10 for 1" rule, Company A has a tax base that is only $25,000 more than Company B's, since under Phase 1 both companies get the same deduction for required interest even though Company A actually requires $25,000 more income from investments for reserve maintenance. Mr. Fraser's illustration, therefore, shows Phase 1 reserve interest deduction bias in favor of Company A, the 2½% interest rate company, of about $25,000

Letters

f 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

ir:

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 publicaton. I would welcome references, comments, and suggestions from your readers.

James L. Clare

University of Iowa

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

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

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

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 $p > o$, 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 $v + a + e - \pi$, 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. ☐

ABOUT SUPPLEMENTARY MEDICAL INSURANCE

by Robert J. Myers

(Editor's Note: At a recent meeting of the Baltimore Actuaries Club, Mr. Myers gave a talk on Medicare and the Supplementary Medical Insurance benefit. He has kindly furnished the following summary of his talk.)

In December 1968, it was again necessary to promulgate the SMI standard premium rate, this time for the period July 1969 through June 1970. Actuarial cost estimates were made under the assumptions that future increases in physician fees and other covered medical services would increase at a lesser rate than in the past and that utilization rates would likewise increase less rapidly. Specifically, it was assumed that from 1969 to 1970, physician fees would increase 4½% and that utilization would increase 1½%.

The actuarial cost estimates based on these assumptions, and also taking into account the lessened effect of the static $50 deductible under circumstances of increasing charges and utilization, showed that a premium rate of at least $4.40 per month was necessary, as compared to the present premium rate of $4.00 (for April 1968 through June 1969). In fact, taking into account the requirement that the premium rate should include a margin for contingencies, a rate of $4.50 was recommended as being preferable.

Cost Controls

Despite this actuarial advice, Wilbur J. Cohen, Secretary of Health, Education and Welfare under the Johnson Administration, promulgated that the premium rate should remain at $4.00. He justified this action on two grounds —that some of the beneficiaries could not afford the higher cost (an irrelevant point in determining "insurance" premium rates) and that physician fees had increased too rapidly in the recent past and should be maintained at their current level.

Secretary Cohen took several actions to hold down the costs. First, he requested all physicians and organizations involved in medical care to maintain the current price level. Second, he instructed the carriers to tighten up the administration of the program, both as to utilization and particularly as to recognizing increases in physician fees.

In certain quarters, the criticism was made that it was against both the spirit and the letter of the law for the federal government, in essence, to freeze physician fees by not recognizing, for benefit purposes, increases that would actually occur. Moreover, under such circumstances, any increases in physician fees would often fall directly on the beneficiaries. It was also noteworthy that the Johnson administration had taken no action in this direction during the 2½ years of operation of the SMI program and then placed the onus of controlling physician fees or raising the premium rate on the new administration.

Chief Actuary's Opinion

The Chief Actuary of the Social Security Administration maintained that a premium rate of $4.40 was still necessary even under the imposed restrictions. Further, he believed that, at most, a 10-cent reduction would be possible under the proposed restrictions on increases in physician fees. It was his opinion that, as in any attempts at price and wage controls, there would be many instances of avoidance or evasion, such as by charging for some services that would otherwise have been included in a package and by increasing utilization.

Amazingly, Secretary Cohen claimed that his action would be beneficial to the Nixon administration, since it would mean a lower cost to the General Fund of the Treasury in the form of matching contributions. The fallacy of this argument is the same as that of asserting that one is saving money by not paying bills, which later fall due with interest and service charges. Actually, the decision places the Nixon administration in a difficult position, because the promulgation that will be made in December 1969 will very likely have to be at a level of $4.80 or more, unless the law is changed in one respect or another before then. The blame for the entire 25% (or more) increase will fall on the new administration.

The argument that physician fees have increased disproportionately since 1965 in relation to wages and prices has little validity. Various statistical analyses can be made on this subject. At the most, they show that, from 1965 to 1967, physician fees had an increase of 2% or 3% greater than the increase in general wages. In 1968, however, the reverse occurred. Over a span of 10 to 15 years, these elements had generally increased at about the same rate. It is inappropriate to draw definite conclusions from a short time period, and there was really little evidence of any significantly greater increase in physician fees than in wages from the beginning of 1965 to the end of 1968.

Actuarial cost estimates for the continued $4.00 premium rate were prepared both on the basis of the experience that would arise if this rate were adequate and on the basis of what would occur if the assumptions in the actuarial cost estimates materialized.

Actuarial Estimates

According to the cost estimates on the latter basis, the balance in the SMI Trust Fund will be $424 million on June 30, 1969, when the new premium period begins. Thereafter, the balance will decline steadily, until it is only $320 million on June 30, 1970. Thus, the system will be able to operate without financial difficulty on a cash basis, so that there will be no problem about making benefit payments.

The law, however, requires that the SMI program be financed so that it is actuarially sound on an accrual basis. Most certainly, this will not be the situation under the premium rate of $4.00 promulgated for fiscal year 1970. At the end of that year, there will be an unfunded accrued liability for claims that have actually been incurred but are as yet unpaid. This means that, under the law, the premium rate to be promulgated in December 1969 must be increased not only to recognize the true benefit-cost level, but also to provide a margin to amortize the deficiency occurring in fiscal year 1970, so as to bring the balance in the trust fund to a reasonable an adequate level. ☐