



# The Actuary

The Newsletter of the Society of Actuaries

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## ASSET VALUATION AND FAIR MARKET VALUE

by Miguel A. Ramirez

I have been concerned with the ERISA funding requirement for pension plans that prescribes an asset valuation method which takes reasonable recognition of fair market value. In this article, I would like to discuss three methods in which market values could be averaged to eliminate the detrimental effects of periodic fluctuations in the bond and stock markets.

Generally speaking, I am troubled by using market value as of a particular date to compare with actuarial present values involving long-range assumptions, especially if the comparison is to form the basis of a funding standard determination for the coming year. For actively traded securities, such as common stocks, day to day and even year to year fluctuations may create unreasonable dislocations in the pension expense.

In a period of instability, two funds with comparable numbers and kinds of securities, plans, and covered employees but different valuation dates could be required to adhere to materially different standards. If the market exhibited perceptible seasonal trends, the sponsor could conceivably select a particular valuation date in order to achieve one funding extreme or another without concern for the welfare of the employees covered or the security of their benefits.

The first method of avoiding the fluctuation problem is to value each security at an average of the market values sampled over a period of time surrounding the valuation date, i.e., a month, 6 months, 2½ years. The bigger the averaging period, the more effectively dampened are momentary fluctuations. Unfortunately, the longer the period,

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## OASDI AND ALL THAT

Elmer B. Staats, Comptroller General of the United States, *Financial Problems Confront the Federal OASI and DI Trust Funds*, pp. 21, General Accounting Office, Washington, D. C., July 25, 1974.

by Robert J. Myers

This report by the GAO was prepared at the request of Congressman Wolff and is an excellent summary of the various recent studies on the financial problems confronting the OASDI system. Four of the studies have been recently reviewed in *The Actuary: An Actuarial Audit of the Social Security System* by Kaplan and Weil (April 1975), the 1975 *Trustees Report* (June 1975), *Report of the Panel on Social Security Financing to the Committee on Finance, U.S. Senate* (May 1975), and *Reports of the Quadrennial Advisory Council on Social Security* (October 1975). Also considered in the report are editorial comments by *The Wall Street Journal* which first impelled Congressman Wolff to request the GAO Report.

The GAO Report is essentially a recapitulation and comparison of the conclusions of the several studies and can be recommended to the reader who has not an opportunity to review the original reports.

There are one or two minor technical flaws. For example, on page 8, it states that the Advisory Council made four "benefit" recommendations to solve the financing problems. Actually, only one of these (decoupling) was of any significance in this respect; the other three recommendations (eliminating the monthly earnings test, freezing the minimum benefit, and obtaining universal coverage) were made for other than financing reasons.

Also, at the bottom of page 12, it is incorrectly stated that the maximum tax-

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## FINANCIAL REPORTING FOR LIFE COMPANIES IN CANADA

by Mike Rosenfelder

In Canada, the actuarial considerations involved in developing financial reporting and disclosure principles have for some years been under active study by the Canadian Institute of Actuaries and others, with careful attention being paid to recent pronouncements in this area by the Academy in the United States, and by the Institute and Faculty in the United Kingdom.

There has been in Canada a general desire to avoid a multiplicity of statements, thus leading to a search for a single statement which would satisfy the needs of all the various users, including the regulatory authorities, current and future policyholders, stockholders, and other readers.

In the Spring of 1974, the Council of the Canadian Institute of Actuaries released to its membership a Committee Report which discussed a number of actuarial principles as they might be applied to financial reporting in Canada. Studies were also prepared by the Canadian Institute of Chartered Accountants, and by the Canadian Life Insurance Association.

Later that year, the Federal Superintendent of Insurance formed an "Advisory Committee" involving representatives from the two interested professions, the industry, and the Provincial Insurance Departments, with a view to developing a set of reporting principles which would indeed meet the needs of the various users, and would at the same time reconcile the views put forward by the various interested bodies.

This Committee completed its assignment, and in May of 1975 a written

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# The Actuary

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*The Society is not responsible for statements made or opinions expressed in the articles, criticisms, and discussions in this publication.*

## EDITORIAL

**I**N January we might, at the risk of being called two-faced, follow the example of Janus and look with one head to the past and with the other head to the future.

And we might well consult some of the analyses and limited prophecies of the hard-working seers, including those issued by the Institute of Life Insurance.

For some time now the Institute has had a Trend Analysis Program under which are published regular TAP Reports. Report 12 published in the Fall of 1975 analyzes where we are and where we are going, in terms of the recent past, the present, the near future, and the future horizon twenty years out. The results of the analysis are applied to Questions and Implications for Life Insurance Company Management. We would like to quote one of the comments.

"New concepts of risk-sharing, professional accountability, and equality will put pressures on **actuarial** and **underwriting** departments to abandon or modify some of their traditional approaches to evaluation of risk and equity."

Perhaps the easiest of these to accept is professional accountability because this goes with recognition. Already the profession is several steps along the road of accountability with the new requirement for a signed actuarial opinion in completing the NAIC Annual Statement and in the pension field ERISA requires actuarial certification of reports.

The pressures on actuarial and underwriting departments seem to be asking that these departments substitute equality for equity. Already there are ominous rumblings of distant thunder, some of it not so distant, as some companies are called upon to justify in court the ways of the actuary and the underwriter to the insuring public.

Our readers are well aware of the differences in morbidity and mortality not only between sexes but between individuals of the same sex. The argument for the plaintiffs is based upon the law irrespective of whether or not the law ignores reality. Somehow we are reminded of legislative attempts to define  $\pi$  as 3. This, as has been pointed out, would inhibit the production of a workable wheel. We might be converted to Mr. Bumble's opinion that ". . . the law is a ass — a idiot" but this carries no weight in the courts.

The danger that the doctrine of equality will supplant the doctrine of equity is great and, it seems to us, strikes at the heart of our profession. The court cases will be handled by the lawyers but we should make sure that the lawyers are properly briefed. We might do more to demonstrate from our store of professional knowledge to the public and to the regulatory authorities the facts of life and health but our more important responsibility is to improve our "traditional approaches" and to extend the coverages we can offer to the public, all within the bounds of equity.

A.C.W.

## CHICAGO CORNER

*Editor's Note: We welcome the Executive Director's first column. There will be further columns from time to time wherein he will comment on matters of interest to members of the Society.*

### The New Society Headquarters

The Society has a new headquarters. In early September, the Society's Chicago office was moved into new quarters (but at the same address). Instead of a crowded, dingy, poorly-laid-out office which could best be described as a place not to invite your friends, the office staff now has a bright, cheery, carpeted area which we are proud to call our home. The extra cost has been very little, but the benefits in terms of increased efficiency and a sense of pride in our jobs has been great.

The move took place in the week after Labor Day, and for several weeks thereafter we were cleaning up loose ends, emptying storage closets, and discovering long-lost items, some of which were quite interesting. We took the opportunity to throw away a great deal of long obsolete material which had been hiding in the depths of our storage closets and files. Somehow, during all of this confusion, we managed to get out the unusually large number of mailings to the membership which you received between Labor Day and the Annual Meeting.

The most interesting discovery was a copy (dated 1665) of John Graunt's *Natural and Political Observations Upon the Bills of Mortality*. Graunt constructed a Life Table based on observations dating back into the 1500's. This classic had been lying in the rear of a book case unknown to us who work in the office. It will now occupy a position in the new display case, along with various gifts which the Society received on its 25th anniversary and on other occasions since its founding.

Far too many of our members have, with some embarrassment, admitted to me during the past few months that, although they have been active in Society affairs for years, they have never been in the Society's office. Perhaps these individuals and many others will take a few minutes the next time they are in downtown Chicago to stop in and say "Hello" and see what the office looks like.

P.W.P.

**FACTS AND APPEARANCES**

by Lionel A. Potts

A picture, said the sage, is worth a thousand words and it was left to the Committee for the Chair of Actuarial Science at the University of Nebraska to demonstrate the truth of this maxim in relation to the actuarial profession. This was accomplished at the Bal Harbour meeting when the film *Super Actuary* was shown to a large and enthusiastic audience.

This is a 16mm sound film in color aimed at informing students about the actuarial profession (and, as some of the audience observed, the actuarial science program at the University of Nebraska.) This entertaining, highly instructional film, explains what an actuary does. Animation and interviews combine to provide an exciting introduction to the profession. The cast performed excellently (Hollywood please note!) and practically convinced the audience at Bal Harbour that the actuary is a colorful individual. No longer is there any excuse for anybody believing that an actuary is where dead actors are buried.

The Committee is to be congratulated. The film could well be used by other educational institutions and possibly by Actuarial Clubs in their endeavor to attract recruits to the profession. The running time is approximately 10 minutes. For further information, please get in touch with Cecil Bykerk, F.S.A., Professor of Actuarial Science, 1026 Oldfather Hall, University of Nebraska, Lincoln, Nebraska 68588. □

**Minus Equals A Plus**

There has been a subtle change made in *The Actuary*. As a result of this change, we are now able to include with each mailing of *The Actuary* a single additional sheet. This facility can be used for official announcements by the Board of Governors or by any of the Society committees. With this issue we are including a list of books added to the Society library since the list was last issued in the summer of 1974.

Despite the pleas of the Competition Editor there is no prize to be awarded to any readers guessing what the subtle change is.

**LETTERS**

**Multiple Decrement Probabilities**

Sir:

The article by Walter B. Lowrie in the October issue of *The Actuary* touched on a confusing area in life contingencies which is covered in Chapter 14 of the textbook for Life Contingencies by C. W. Jordan dealing with multiple decrement tables.

The student is confronted with two problems one of which is the converse of the other. In the first problem, he is given a multiple decrement table and is asked to produce the associated single decrement tables. In the converse problem, he is asked to produce the multiple decrement table from the associated single decrement tables.

For the first problem, two solutions are given according to different assumptions. The first solution is

$$q'_x(k) = \frac{q_x(k)}{1 - \frac{1}{2} \cdot q_x^{(-k)}} \quad (14.31b)$$

and is derived by assuming that the force of decrement from cause k is consistent with the Balducci hypothesis and that the decrement for the other decrements combined is uniformly distributed in each year of age. It follows that it would be inconsistent to use the formula in one problem for more than one cause k.

The second solution

$$q'_x(k) = 1 - (p_x(\tau)) \frac{q_x(k)}{q_x^{(\tau)}} \quad (14.35)$$

is derived by assuming that each decrement is uniformly distributed over each year of age. It can also be derived by assuming that each force bears a constant ratio to the total force during each year of age.

For the converse problem, the solutions given in Jordan are internally inconsistent. One of these for the double decrement situation (14.38) was cited by Mr. Lowrie. He and Bruce Macleish have produced an internally consistent formula which happily has the added quality of simplicity. Under their approach, each force is consistent with a uniform distribution of decrements. Their assumptions do not, however,

give as simple a solution to the direct problem of deriving

$$q'_x(k)$$

from the multiple decrement table.

I would like to say a few kind words about formula (14.35) quoted above. First, the formula is internally consistent. Using it for one cause k does not prevent its simultaneous use for another cause k. Secondly, the converse formula has a simple form as well.

Thirdly,

$$q'_x(k) = q_x^{(\tau)} \cdot \frac{\ln p'_x(k)}{\ln p_x(\tau)}$$

its use is not just restricted to double decrement tables.

John A. Mercu

\* \* \* \*

Sir:

It should, perhaps, be put on record that Mr. W. B. Lowrie's formula for  $q_x^{(1)}$  in *The Actuary*, Vol. 9, No. 8 is the standard approximation (e.g., (20.12) of Hooker & Longley-Cook's *Life and Other Contingencies*, Cambridge, 1957) and that it is formula (14.38) of Jordan's *Life Contingencies*, Chicago, 1967 that is at fault. For both formulas are correct only to the term involving a product of two decremental probabilities, and it may be seen, by expanding Jordan's denominator into the numerator of his expression, that if this denominator be dispensed with (as Mr. Lowrie proposes) the neglected quantity is of the order of a product of three decremental probabilities.

Hilary Seal

\* \* \* \*

**Public vs. Scientific Roles**

Sir:

The 1975 Annual Meeting of the Society of Actuaries included a discussion on the Public Role of the Actuary. In that discussion, the question of the actu-

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ary's role in public and social issues was raised. There seems to be underlying much recent discussion an assumption that the science of actuaries can be separated from the public and social questions in which they are involved. This is consistent with the industrial age premise that science is value free.

In the world emerging today, it is, however, being recognized that scientific questions are intertwined with ethical and public questions. It is my contention that the scientific issues facing actuaries are frequently intertwined with public and social questions, and that actuaries are continuously involved in public questions whether or not they recognize that fact. Failure to recognize such involvement may simply mean implicit support for a particular position.

In support of my position, I will cite examples both of recent research which involved scientific and public issues and of current questions which will involve such issues in the future.

### Recent Research

Over the last five years, the Society of Actuaries has undertaken scientific research as follows:

(1) Study of dividend philosophy and cost comparisons (Munson Committee). This study was done in response to a request from the NAIC, a regulatory body.

(2) Study of non-forfeiture values (Unruh Committee). The implementation of the results of this study will affect law. Public policy questions are intertwined with actuarial science in the rationale for such laws.

(3) Development of model for calculating adverse deviations (Joint Committee on Risk). This study was in response to a provision in an AICPA audit guide, and, therefore, in response to a public question.

(4) Mortality and morbidity research. Today rate differentials by sex are being questioned by consumerists. Many states are enacting regulations prohibiting sex discrimination in insurance products.

### Current Issues

A number of issues will be coming up

## Society Examinations Seminars

### GEORGIA STATE UNIVERSITY

Seminars for Parts 2-5 and 7 of the Society Examinations will be held between April 5 and 30, 1976.

Complete information can be obtained from:

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in the next few years which will involve a combination of public and scientific questions. These include:

(1) Study of valuation methods and laws.

(2) Determination of best method for providing for retirement. Questions will be raised as to how much government should do, how the benefit formula should be set up, and how funding should be arranged.

This letter has been written in the hope of starting a dialogue on the relationship between public and scientific questions.

Anna M. Rappaport

\* \* \* \*

### Principles and Dogma

Sir:

Claude Y. Paquin, in a letter in the October issue, contends "that there are no actuarial principles regulating the amortization of expenses or the depreciation of assets, as this is a typical and traditional *accounting* problem." He thus implies that actuarial problems and accounting problems are mutually exclusive. If so, we must withdraw from financial statement matters altogether! Benefit reserves are a typical and traditional actuarial problem. However, they have been and will remain an accounting problem.

The words "accounting" and "actuarial" can refer to subject matter or to occupational groups. The occupational groups are (almost) mutually exclusive. Their dogma-making authorities certainly are. But the subject matter has substantial overlap by almost anyone's definition.

A further confusion (which I sometimes suspect of being intentionally pro-

mulgated by those with a stake in the definition of words) arises in the use of the word "principle" to mean "dogma." Mr. Paquin switches from one to the other as if they were synonymous, e.g. "Since we're still hazy about what is an actuarial *principle*, it is open to question who has the authority to make *such* new actuarial *dogma*." (Emphasis supplied).

The accounting profession, often inclined to use language in its own way, started this practice. (Should I say "principle"? ) But a true (logical or mathematical) principle needs no authority—accounting, actuarial, or other. It is not created, it is discovered. There are no accounting principles or actuarial principles. There are only principles.

Any attempt by the accounting or actuarial professions to limit the areas in which the other can express opinions on principles or create dogma is foredoomed to failure, as it should be. Even if we reached a formal or informal understanding, it need not be respected by third parties. Any voluntary agreements to divide the market would be against public policy. Only the state has the power to regulate. If we want any exclusive rights, the state must grant them. We cannot obtain them merely by defining or redefining words.

Harlow B. Staley

\* \* \* \*

### The Age of Grammar

Sir:

I was sorry to see in the November issue that James P. Larkin has revived the old controversy about the use of the term "nearest". Use of any other term would seem to me to be misplaced pedantry as soon as one makes an examination of the underlying grammatical structure.

The term "near" is clearly seen to be inappropriate; if I am aged 48, I am "near" 50. Anyone who suggested that I should be regarded as age 50 would receive a very hostile reply.

The term "nearer", claimed to be exact, is a much more subtle deceiver. A person will, I hope, have many birthdays and he would not dream of talking about his "happier" birthday and similar expressions. Thus when we say "nearer birthday" we are shortening (as is

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completely permissible in English) the expression "the nearer of the two immediately adjacent birthdays." When we say "nearest birthday" we are shortening the expression "nearest of all birthdays." Since the latter requires fewer words to be understood by the hearer, it is better English.

George F. M. Mayo

\* \* \* \*

Sir:

I take issue with the letter in the November issue which claimed that the phrase "age nearest birthday" is ungrammatical. The contention was that only the last birthday and the next birthday may be considered near and therefore "nearer" is the grammatically correct form.

I claim that any birthday may have the comparative form of the word "near" applied to it. For example, a birthday 10 years from now is nearer than a birthday 11 years from now. The "nearest" birthday is the one birthday of an infinite number of possible birthdays which is nearer than any other.

I have my own complaint about the phrase "age nearest birthday." It does not describe the age which actuarial literature assigns to it. A birthday is an event in time. When an event is described as being "near", the implication is that the event will occur soon, i.e. a short time in the future. A birthday which has already occurred will not occur again and is absolutely not "near". Therefore, "age nearest birthday" is the age at the future birthday which occurs soonest — the same as "age next birthday." Instead of "age nearest birthday," actuaries should learn to say "exact age rounded to nearest integer."

Douglas Doll

\* \* \* \*

Sir:

In nine years, the pages of *The Actuary* have contained their fair share of nonsense, intentional and otherwise, but I believe Mr. Larkin's letter in the November issue is in a class by itself.

Grammatically speaking, the use of the superlative is proper whenever more than two choices are possible, e.g., the nearest tree in a forest, not, in this case,

## Actuarial Meetings

Feb. 5, Actuaries' Club of Winnipeg  
 Feb. 12, Baltimore Actuaries Club  
 Feb. 12, Denver Actuarial Club  
 Feb. 17, San Francisco Actuarial Club  
 Feb. 18, Seattle Actuarial Club  
 Feb. 24, Philadelphia Actuaries Club  
 Feb. 26, Actuaries Club of Des Moines  
 March 11, Baltimore Actuaries Club  
 March 11, Denver Actuarial Club  
 March 17, Seattle Actuarial Club  
 March 24, Actuaries' Club of Hartford

only when more than two are "near". Since it is not uncommon to assign an age other than last birthday or next birthday, unless I'm the only one left who still uses age groups on occasion, it is perfectly proper to designate the method in question as age "nearest" birthday.

(Historically, "grammar" comes from a time when the lower grades were quite properly called "grammar school". The use of the name "elementary school" by modern "educators" is only too accurate a description in most cases. On this ground, I bow to my predecessors).

The suggestion to use age "near" birthday I find to be a tribute to the prescience of the late George Orwell. With this type of language in 1975, *newspeak* should be in universal use by 1984.

Finally, I was reminded of a definition found in Bergen Evans' *A Dictionary of Contemporary American Usage*:

The proper name for the melted cheese dish is *Welsh Rabbit*. *Rarebit* is a corruption due to highbrow folk-etymologizing. Any chef is, of course, free to call any concoction by any name he chooses. But he is not free, among the informed, to overawe others with his own ignorance."

Richard S. Hester, Sr.

*Editor's Note:* This correspondence may now cease.

\* \* \* \*

**Jimmy Connors Beware!**

Sir:

The Annual Meeting of the Society wasn't all work! work! work! Suntanned

faces reporting to work the next day suggested other activities. One such activity involved 48 tennis buffs (24 teams) battling to determine the two teams which would win this first Society of Actuaries Dual Doubles Tennis Tournament. As the man says—"You gotta believe." Actuaries, all 96 hairy legs running after tennis balls—rallying, volleying, even serving aces. The level of play was excellent.

At one point we thought the winner would be the weatherman. Halfway through the second afternoon we were rained out. Only the final matches remained in each division (Advanced and Intermediate). There was thunder and lightning and much rain fell. Eight anxious players were planning their strategies for tomorrow's play. The last opportunity to complete the tournament was early Wednesday morning. By 7:00 A.M. sleepy eyes were peering out of their hotel windows, "ground looks dry, no rain; the tournament seems on!"

The matches were hard fought. Each player on the winning teams received a handsome 17-inch trophy with the Society's logo imprinted. The winners of the A Division were: Harold McCollum and Ed Murphy. The winners of the I Division were: Harland Dyer and Robert Dausman. Runners-up were Richard Hoffman and John Lenser also Chuck Underwood and Dick Garner.

A special note of thanks goes to North American Reassurance Company for supplying tennis balls throughout the tournament.

From the unbiased view of those of us participating this tennis event was a tremendous success. We look forward to similar events at future actuarial meetings.

Gerald A. Levy

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## On Level Premium Loss Ratios

Sir:

As a regulator who has struggled with determining the validity of rate increases justified by loss ratio analysis, I found Mr. Cardinal's article in the October issue of extreme interest. In this article, Mr. Cardinal sets forth three types of loss ratios and arrives at four stated conclusions:

(1) A decrease in pattern of ratios

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indicates the future premiums in relation to past premiums are excessive.

(2) An increase in pattern of ratios indicates the future premiums in relation to the past premiums are deficient.

(3) A level pattern of ratios indicates the future premiums in relation to past premiums are neither deficient or excessive.

(4) A bell or U-shaped pattern indicates that the policy reserve is not representative of the fund which should have been accumulated.

If we denote Mr. Cardinal's first, second, and third class loss ratios by  $L_1$ ,  $L_2$ , and  $L_3$  then one of the following must hold:

$$(a) L_1 = L_2 = L_3 \text{ or}$$

$$(b) L_1 < L_2 < L_3 \text{ or}$$

$$(c) L_1 > L_2 > L_3.$$

The statutory reserve is representative, deficient, or redundant according as (a), (b), or (c) holds.

With a little algebraic manipulation one can show that the second class ratio is a linear combination of the other two and is of the form

$$L_2 = \kappa L_1 + (1 - \kappa) L_3 \\ 0 \leq \kappa \leq 1$$

Thus, the bell shaped or U-shaped pattern of condition 4 never occurs. This, certainly does not mean that reserves are always representative of the funds which should have been accumulated.

If the reserve is perfectly representative, all three loss ratios will be the same. A little reflection would seem to show that if the reserve is deficient, an increase in pattern of loss ratios may be expected; if the reserve is redundant, a decreasing pattern may be expected. All this would be true despite the actual level of gross premiums charged. Thus, such patterns would seem to have significance only to the extent that the assumptions underlying gross premiums resemble those underlying reserves.

## Death

Edward D. Brown, Jr.

It is Mr. Cardinal's second class loss ratio that seems significant, since it is the expected lifetime loss ratio of the plan and is independent of any imperfections in the valuation assumptions. The other two loss ratios are heavily dependent on such imperfections and seem useless as indicators of the sufficiency or deficiency of premiums. Rather, I might suggest that ratios 1 and 3 are possible indicators of sufficiency and deficiency of reserves, while ratio 2 does perform such an indicator for premiums.

As a final note of caution, it must always be remembered that in such analysis, the assumptions regarding future claims and persistency are crucial and must therefore be carefully selected.

Bradford S. Gile

Mr. Cardinal comments as follows: *The perspective presented in the essay has been developed to help a regulator to bridge the gap between a retrospective viewpoint and a total viewpoint. We maintain that the perspective is proper, even though Mr. Gile is unable to accept it. We do accept Mr. Gile's observation that the bell— or U-shape pattern of the three classes of loss ratios cannot occur.*

\* \* \* \*

## Interest Rates and Salary Scales in Pension Valuations

Sir:

In my opinion, Mr. Feay's statement in the November issue did not diminish the validity of Mr. Berin's article in the April issue.

Mr. Feay's demonstration depends upon the statement, "Of course, if a specified number is subject to two different rates of change, the two rates can be combined into one rate." This statement is correct, provided the two compound rates cover the same duration.

In determining the present value of salary related pension benefits, the proviso that both assumptions (compound interest salary scale rate and interest rate) cover the same duration is not satisfied. The salary scale assumption

applies from entry age to retirement age and the interest assumption from entry age to the end of the mortality table. Thus, adding an equal amount for inflation to both the salary and interest assumptions will not have an offsetting effect. This increase in the interest assumption in the period beyond which the salary scale applies (namely, the retired status) will reduce pension costs.

Further, the percent reduction in pension costs will reflect: the absolute level of the interest assumption, the relationship in the present value of benefits of active to retired employees, the degree of funding, etc.

Therefore, I agree with Mr. Berin, that a change in the interest rate is more important than the same change in the salary scale rate and that there is no stability in the difference between the two.

Donald P. Harrington

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## Pay-ola?

Sir:

As a comment regarding the December editorial, I find it amusing that you, as well as so many pension actuaries, object to the government's Form 5434 asking prospective Enrolled Actuaries their salary history. The editorial described this question as both noseay and nonsense. As it is part of the pension actuaries' job to request the salaries of their clients, why do they complain when asked to reveal their own pay?

Michael Pikelny

The December Editor comments as follows:

*It was, and is, the Editor's point of view that the question of professional qualifications could be answered without securing salary histories. As Mr. Pikelny points out, many pension plans cannot be valued without such histories. In this last situation, requesting salary histories is still noseay but it is definitely not nonsense.* □

## Time for Actuaries Lib.?

One woman, who has been in Data Processing for 11 years, said she has encountered a "vast amount" of discrimination and cited her title of "actuary" rather than the higher-ranking "programmer" as just one example.

—Computer World

## Canadian Reporting

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proposal was made by the Federal Superintendent to the Canadian Life Insurance Association outlining in general terms a possible reporting procedure. Discussions are currently proceeding in a number of quarters, but primarily between the Superintendent and the industry, and it is currently expected that new legislation will be introduced very shortly, with implementation probably by the 1978 year-end.

These new proposals have a number of very important implications for actuaries responsible for signing Company Statements, and indeed for the actuarial profession as a whole. The proposals as they now stand involve very substantially increased responsibilities for the actuary. The profession must rise to meet this challenge. The Canadian Institute of Actuaries is studying the various ramifications of these proposals and in due course it is expected that principles will emerge designed to guide the actuary in Canada in discharging these new and increased responsibilities. Some of the principal new concepts are as follows:

(1) The present Department of Insurance Annual Statement requires that the actuary certify that the reserves are not less than those required by the Insurance Companies Act, and that they make "good and sufficient" provision for the company's obligations. This is essentially a one-sided certificate, and especially where a company has adopted a relatively conservative posture in establishing reserves, the judgment element involved in completing this certificate is relatively limited. Under the current proposals, the actuary would be required to state that the reserves are "adequate and appropriate." This poses a large number of additional problems for the actuary, including the need to reconcile the sometimes conflicting requirements of solvency on the one hand, and current income measurement on the other.

(2) The law currently specifies a maximum interest assumption of 3½% for life insurance and 4% for annuities (with a further provision that the Superintendent may at his discretion permit higher rates, a discretion which he has exercised for single premium

annuities and certain specialized contracts). It is envisaged that in the future the company's actuary would determine a valuation basis which, in his opinion, is appropriate to the business being valued and to the circumstances of the company. He then would apply to the Superintendent for approval. It is possible that regulations might from time to time be promulgated indicating the broad range of assumptions for which approval would be more or less automatic.

(3) The use of withdrawal rates in determining the actuarial liability will be permitted, although not mandatory. It is expected that initially very few companies will wish to move to double decrement reserves, although ultimately it is expected that Canadian actuaries will need to develop techniques in order to reflect withdrawal rates.

(4) The audit of invested assets is outside the actuary's defined area of responsibility. However, in giving his opinion with regard to the adequacy of the reserve liability, he will be expected to have considered, and probably also state in his written Opinion that he has considered the nature of the assets in arriving at a valuation interest assumption.

(5) The actuary will be expected to have satisfied himself that appropriate provision has been made for future maintenance expenses.

(6) If, in arriving at the liability for participating business, he has had to assume any major change in current dividend scales, he will be expected to so state in his published Opinion.

(7) It is proposed that the allowance for acquisition expenses continue to be made through a reserve modification, and that the legislation will permit a maximum modification, which, while probably less than actual expenses in the case of most companies, will be somewhat more liberal than the present modification permitted by Canadian law. Again in giving his Opinion the actuary will be expected to have satisfied himself as to the adequacy of the modification to the reserves for deferred acquisition expenses, presumably through tests of incurral and recoverability from loadings on future premium revenue.

All of these areas seem to fall clearly within the competence of the actuary,

and in the sense that they have always entered into pricing considerations and, to a lesser extent, into the determination of reserves, they are certainly not new. However, in developing Statement reserves, the actuary will in future have far greater flexibility and freedom, and there is a clear and urgent need for guidelines, either formal or informal, to be developed by the profession so as properly to equip its members as they undertake these wider and additional responsibilities in connection with Statement reserves. The Canadian Institute of Actuaries is working actively on these problems.

To round out the discussion of proposed statement changes, brief reference should also be made to the treatment of asset values and investment income. For common stocks, and possibly real estate, unrealized gains and losses will be recognized through the income account in a controlled manner, subject to minimum "threshold" levels for appreciation or depreciation. For mortgages and redeemable bonds, book gains or losses on sale will be spread through the income account over the remaining lifetime of the security sold. Investment reserves will be established to provide for possible default on debt securities, and for situations where market values are less than book values.

Finally, of some interest is the role of the external auditor as it relates to the statement as a whole, and in particular to the actuarially determined liabilities. It is proposed that both the Statutory Statement filed with the regulatory authorities and the "Members' Statement," the name used for the Statement presented at the annual meeting, be accompanied by the actuary's Opinion with regard to the actuarially determined items in the statements, and by an auditor's Opinion with regard to the statements as a whole.

It is not however expected that a detailed review of the work of the in-house company actuary would, in normal circumstances, be required. It is further proposed that the reserve liability be the same in both statements, and that, to the extent that other items in the Members' Statement might be different from those in the Statutory Statement, the unappropriated surplus must be ad-

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## Asset Valuation

(Continued from page 1)

the longer the delay in obtaining the current funding standard.

To overcome this delay, the second method would average market values over a period ending on the valuation date, updating the value on the basis of some interim yield assumptions, perhaps even the actuarial interest assumption used for discounting benefits. This method has the disadvantage of postponing, to some valuation date in the future, interest gains or losses from the point of updating to the valuation date.

I would like to specially recommend a third method of valuing assets subject to wide fluctuations in market value and yield (including dividends, and realized and unrealized capital gains and losses). With this method, the positive or negative yield is not directly credited to the asset value held for valuation funding purposes. Valuation assets are, instead, credited with a stabilized yield (which could be the average dollar weighted rate of effective yields over a 5-year period ending on the valuation date, the valuation rate itself, or a blend of the two). The excess (positive) or deficit (negative) yield would consist of the actual yield on assets valued at fair market less this stabilized yield. This excess (or deficit) is deferred by crediting (or charging) it to a special valuation item with records of such transfers kept in separate schedules which are amortized in equal payments over a number of years after the year of credit or charge.

Thus, in a particular year, the amount of yield credited to the asset as valued would equal the sum of two items: (a) the stabilized yield; and (b) credits (charges) to discharge previous excess yield credit (deficit yield charge) deferrals. The maintenance of separate schedules of yield deferral allows the special valuation item to become self-discharging over a selected finite period of, say, 5 years. In times of fair market value fluctuations, excess credits should tend to offset deficit charges, reducing the effect of (b) above on the annual yield recognized for funding purposes. Moreover, a single fluctuation in an otherwise stable period will make the valuation asset deviate appreciably from market for only those 5 years.

Table 1 (right), illustrates this.

## OASDI and All That

(Continued from page 1)

able earnings base in 1990 will definitely be \$31,800, on the basis that this figure was developed at one time by the Social Security Administration (on certain assumptions as to the future trend of wages). The report states that an individual earning \$14,100 in 1975 will, according to the assumptions in the 1975 Trustees Report, be earning \$33,880 in 1990. The latter figure is based on an annual rate of increase in earnings of 6%, but this is the ultimate assumption in the Trustees Report, with higher rates in the short term. Using those assumptions, a person earning \$14,100 in 1975 would earn \$38,305 in 1990 — and thus the earnings base then would be close to this level.

The GAO report did not give a specific reference to the *Wall Street Journal* article which aroused Congressman Wolff's interest. Actually, the newspaper had quite a number of articles and editorials on the subject of Social Security financing (including one of mine in its July 28, 1972 issue). In a later editorial than the one considered, the WSJ changed its position from considering the long-range deficit in terms of dollars from the "closed fund" basis referred to in the GAO report to what I believe is the far more appropriate approach of the "75-year income and outgo" basis.

## Pacific Insurance Conference

Actuaries can find ideas and information in the papers presented at the Seventh Pacific Insurance Conference last September.

The subjects of this meeting were: A Foundation for a Common Understanding; Effects of Inflation, Economic Development and Government Policy on Life Insurance Protection and Pension Programs; Current Developments in the Design and Distribution of Life Insurance and Pension Program Products and Services; A Basis for Improving Public Understanding and Acceptance (of) Life Insurance and Pension Programs in Pacific Rim Countries.

A copy of the papers is available for the mailing cost (approx. \$10.) from E. J. Moorhead at the address in the Society Year Book.

## Canadian Reporting

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justed as necessary to bring it to the same level as in the Statutory Statement.

Both the Statutory Statement and the Members' Statement would be accompanied by an Opinion or Report from the external auditor, including, if he is unable to give an unqualified opinion, an indication of the nature and reasons for such qualifications. However, the supervisory authorities would not regard as a qualification requiring special explanation or action by them, a statement by the auditor that in respect of the actuarially determined liabilities he relied on the actuary's Opinion.

Table 1 †  
Crediting of Investment Yield \*

Year N	(1) Total Current Yield on Market	(2) Stabilized Yield Rate Applied to Market	(3) Deferred Yield (1) - (2)	(4) Credits from Prior Deferrals (Rounded)	(5) Yield on Adjusted Value (2) + (4)
1970	\$ 4.4	\$ 4.0	\$ 0.4	\$ 0.0	\$ 4.0
1971	6.6	5.2	1.4	0.1	5.3
1972	19.7	9.4	10.3	0.4	9.8
1973	-10.6	7.2	-17.8	2.4	9.6
1974	-25.6	-1.7	-23.9	-1.1	-2.8

\* The stabilized rate is the average dollar-weighted rate over the 5 years ending on the valuation date. In every case, yield includes unrealized capital gains and losses.

† This is a condensed version of the tables supporting the article. Copies of these can be obtained on request from the author at Equitable Life, 1285 Avenue of the Americas, New York, N. Y. 10019.