SOCIETY OF ACTUARIES

Article From:

The Actuary

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Letters

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Premiums For The Waiver Benefit

Sir:

When recently I sought a formula for calculating gross premiums for the disability waiver benefit, I began by doing a literature search which, although yielding Cueto's paper and Shelley's part 10 study note, offered no satisfactory formula for a disabled lives annuity that I could either use or modify.

Hence, I derived a formula, applicable to a varying premium scale, from first principles. Even though it covers a specific set of assumptions, it can easily be generalized.

I would be happy to send a copy of the memo in which I reported my findings to any reader requesting it to my Yearbook address.

John W. C. Stark

Social Security Triggers

Sir:

My note (March issue) on Social Security Triggering Devices needs a small further explanation on just how the OASDI trust fund ratio is used in the case of the December 1984 COLA.

As an exception, this particular fund ratio is based on the estimated fund balance at the end, rather than at the beginning, of the year. For the permanent ongoing case, the fund balance, logically enough, is net of loans from the HI Trust Fund to the OASDI Trust Funds. But, through a drafting oversight, the language on the special treatment for the December 1984 COLA didn't mention subtracting the amount of such loans from the total assets.

Thus, a literal reading of the law produces a fund ratio 7 percentage points higher than on the intended net assets basis. Under the former circumstances, there is no possibility that the trigger will "go off", hence the December 1984 COLA will be based on the CPI alone. On the other hand, if the ongoing net assets basis is used, there is a small possibility, i.e., if economic conditions are very adverse, that the trigger will go off. Even so, I believe there will be no effect, because the CPI increase used will be lower than the wage increase used (probably 3½ to 4% vs. 4½%), and thus will prevail.

How this special December 1984 provision will be interpreted has not yet been officially decided.

Robert J. Myers

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Up in the World

Sir:

I was impressed by the optimal relation between height and weight ("Hale-&-Hearty Heft", Sept. issue). Since I am not tall enough for my weight, I have bought a pair of stilts.

Hans U. Gerber

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An Identity Crisis

Sir:

An envelope I received from a systems vendor designates me as FSA,MAAAmC-KYMFKNU, which might have embroiled me in a professional conduct problem before the Society's Opinions were absorbed into our new Guides (1984 Yearbook, pp. 35-36). It's tough enough to explain what an FSA is; MAAAmCKYMFKNU will be a tremendous challenge.

I've also had problems with my name and titles:

Reuter becomes Rooter, as in the sewer-drain service.

Assistant, in Assistant Actuary, has been abbreviated to its first three letters, unpunctuated.

Vice President-Corporate Research and Planning was shortened to the first letter of each word. Embarrassment was avoided by having the title changed to Corporate Planning and Research.

And Rodney Dangerfield says he gets no respect!

Robert E. Reuter

The Annual Research Conference of the Committee on Research, Society of Actuaries

will be held at

University of California, Berkeley, October 8th & 9th, 1984.

Topic: CREDIBILITY THEORY AND BAYESIAN APPROXIMATION METHODS

Get particulars from: Prof. William S. Jewell, Operations Research Center, 3115 Etcheverry Hall, University of California, Berkeley, CA 94720.

HIGH DRAMA ON THE DIVIDEND FRONT

by Ardian Gill

This article is about several giants of our profession, but is concerned not so much with their life paths as with an intersection of those paths in 1869-70. It's about a dispute concerning dividend distribution that was to draw into the fray university professors, a future justice of the Supreme Court, the Massachusetts insurance commissioner, and the daily press. Among the effects were even the timing and format of the Actuarial Society of America itself.

One is tempted to set this story in the form of a T.V. docudrama complete with flashbacks, inquiring reporters, investigating committees and grand juries. But it must suffice here to describe the characters as a casting director might see them, to use their words when possible, and to rely upon the reader's imagination . . . (Think, when we talk of horses, that you see them printing their proud hooves.).

The Characters

The four major characters are:

Fred S. Winston
President of The Mutual Life Insurance Company of New York, then the largest in America.

Sheppard Homans
Actuary and Auditor of Mutual Life, and (much later) first president of the Actuarial Society.

William H. C. Bartlett
Professor of Philosophy at West Point, nearing the end of that distinguished career.

Elizur Wright
Dedicated reformer, embattled Commissioner of Insurance, Massachusetts.

Among lesser protagonists: Joseph P. Bradley, actuary and future Supreme Court justice; Prof. Church, West Point professor of mathematics; Hubert A. Newton, professor of mathematics at Yale; and, in the background, the young David Parks Fackler, formerly Homans' assistant, in due course to be chief organizer of the Actuarial Society.

Act One

Our drama opens in late 1869. Winston and Homans are seen arguing in

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High Drama

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Winston's office about how to calculate and pay policyholder dividends for the following calendar year. While a coal fire sputters in the grate, Homans describes how he calculated the 1870 dividends according to the "contribution method" which he and his former assistant, D. Parks Fackler, have developed. He has submitted his estimate of the dividend liability as $2.2 million, representing the arithmetical sum of all the dividends to be paid in the following year. Homans is exasperatingly deliberate in speech and manner in contrast to Winston who is mercurial, short-tempered and impatient, especially of contradiction. He has developed a dislike for Homans, whom he regards as obstinate and an obstacle to his free-wheeling style of management. Winston believes he has caught Homans in an actuarial blunder as he smugly points out that Homans' figures can't possibly be correct since there are "unearned margins" that will accrue between year-end and the 1870 policy anniversaries. Homans' reply that, "They will surely be earned by the time the dividend is paid", terminates the conversation, but not the issue.

Readers will recognize that Winston was arguing for today's group practice. Had the issue been confined to the *liability* there would have been a reasonable difference of opinion. It was the extension of the idea to restrict the dividend *payable* to the amount earned at the start of the calendar year that caused the fat to hit the fire in Winston's grate.

The Mutual Life's Board of Trustees backed Winston who, in fact, owned them. In those halcyon days it was, at best, rash to overrule your actuary, so Winston then applied to Professors Bartlett and Church of West Point to review the issue. Bartlett seemed a good choice, having written in 1868 of Homans' contribution method, "I find this question (dividend distribution) has been solved by Mr. Sheppard Homans . . . in a way which leaves nothing to be desired. His solution is simple, direct and accurate."

Act Two

Bartlett has an alert and dignified appearance, is quick off the mark and given to absolutes as in the previous statement. Something about him creates a sense of unease, the way one feels when in the presence of a suspected opportunist. Of all our main characters, Bartlett is the only one we can accuse of flexibility. Bartlett (and Church) backed Winston and came up with the "accumulation formula", in effect an historical asset share, reconstructing each policy from issue so that policy years (after the first truncated year) coincided with calendar years. The formulas are elaborate and cause Elizur Wright to comment, "Such algebra is as easy as travelling by balloon. The only difficulty is, when you come down to solid ground of the facts, it may take a great deal longer to establish a satisfactory connection with them than it did to make the journey."

Wright is a crusty New Englander given to aphorisms and a master of the tongue in cheek put-down. At this point he has succeeded in sorting out actuarial thinking to the extent of net level premium reserves, with his battles with Bartlett over nonforfeiture benefits yet to come. It seemed as natural as spit, therefore, to turn to Wright for arbitration. And this the Trustees of the Mutual Life did, but not before Winston had pushed matters to an impasse with Homans.

We see this development in flashbacks of meeting after meeting in which Homans, ordered by Winston and his Board to apply Bartlett's formulas, argues that they are too "complicated, contain so many quantities not tabulated that the work of making the dividend would consume many months, if not years."

Winston is unrelenting and, in a dramatic culmination, we see him presenting to the Trustees an "opinion of counsel" to the effect that the company's charter *required* that the 1870 dividend distribution be limited to the surplus developed by the end of 1869. The fat was sputtering in the fire for fair.

Joining Wright in his panel of arbiters were the experienced Newark actuary, J. P. Bradley, and the mathematician and astronomer, Hubert Anson Newton of Yale College. Let us imagine Wright coming downstage to speak to the audience much like the stage manager in *"Our Town"*:

> "The referees had a very delicate duty before them. They were unanimously of opinion that while the West Point formulas were substantially correct, their application must throw away a great deal of labor; that the interpretation given to the charter by the counsel did not secure any better equity of distribution while the change it involved would entail a present derangement and needless future expense."

The referees suggested that the Charter be changed and, in the meantime, offered "the best formula they could", a workable modification of Homans'. Using the formula, Homans had calculated that, of the $2.2 million total dividends, only $1.1 million was earned by year-end; he established his dividend liability accordingly. Under counsel's opinion, the remaining $1.1 million would not be available for distribution until 1871. Things would, of course, true up then, but there would be a year of low dividends, a policy with a December 31st anniversary having earned only one day's dividend while a January 1st issue would earn twelve months.

Wright, chuckling, addresses the audience:

> "Mr. Winston concludes, in spite of his legal counsel, not to disgust his policyholders after all, by the blunder of so small a dividend; keeping on hand an unnecessary million for a year! So, without asking either Mr. Homans or any of the referees, or even Professor Bartlett or Church, *how* this . . . should be divided, any one of whom, if asked, would have prevented him from making the most comical blunder in the annals of finance, he and his committee voted that each . . . dividend ascertained by Mr. Homans, should be increased 80 percent!"

Homans' protests are in vain. Our camera pans in to contrast Winston's triumphant smirk with Homans' rising gorge. In the end Homans knuckles under and calculates the dividends as ordered, some folks getting 180% of a normal dividend and others getting scuppered.

Wright comments from the wings:

> "Probably this blunder has been fully corrected, and though it must have cost somebody a good deal of worry to do it, the fun of it ,to say nothing of its lesson, is worth a good deal. Poor plodding actuaries have a dull time of it, and an occasional joke of this sort does them good."

Act Three

In real life, the rest of the drama took place in the press, but readers may wish to imagine Barbara Walters interviewing Winston and Tom Brokaw pick-

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High Drama

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ing up Homans. The time is three years later.

The New York Spectator in July 1873 carried an interview with Winston: "What were the causes of Mr. (Actuary) Homans' retirement from the Mutual Life?".

"In brief, unfaithfulness, incompetency, obstinacy, unpracticability and insubordination, in my opinion, were the reasons why the board rid themselves of him."

Winston lays the whole thing to "a mistake which he (Homans) made in reporting the amount of divisible surplus to the board . . . Mr. Homans probably forgot the unearned margins in premium accruing from that day (December 31, 1869) to the respective anniversaries of the policies . . . Mr. Homans at that time either did not comprehend or was afraid to admit the nature of his mistake . . . his first error was increased by a disingenuous attempt to cover it up; and the committee, unable to follow the tortuous windings of his elaborate attempts at mystification, were compelled to take that course (i.e. the 80% increase) . . . Mr. Homans' mistake was subsequently rectified . . . No expense to the company was involved other than that of the labor incurred. For that expense the company has probably been fully compensated by the reduced cost of the actuary's department since Mr. Homans left."

Mr. Homans struck back in the New York Herald that same month:

". . . the facts are these:

"In November 1869, I was the auditor of the Mutual Life and Mr. Winston was the President. He brought to me for audit the official quarterly statement of receipts and payments, prepared under his direction by the bookkeeper, in such a manner that . . . certain items had been improperly withheld in the final payment of death-claims . . . the books of the company having been already prepared, under his order, with a view to deprive such parties of said amounts due to them.

". . . I therefore declined auditing the statement beyond certifying the same was 'in accordance with the entries upon the books of the company'. This certificate he passionately and violently erased, with the threat that if I did not audit the statement in the usual manner, he would find somebody else for actuary who would . . . " [Mr. Winston was good as his word: Homans' replacement was Professor Bartlett!].

After recounting the history of his "mistake", he states that Winston "was responsible for the blunder, as he well knows. Mr. Winston never would have made this charge against me except under the excitement of feeling growing out of a circumstance beyond my control—viz., that I lately gave testimony, under the compulsory process of subpoena . . . which resulted in his conviction of malfeasance in office, of the unwarranted use of trust funds by him, and fraudulent attempts at concealment of his conduct by false and altered entries in the books of the company."

Epilogue

Winston went to jail for cooking the books. Homans did actuarial consulting for a while, then formed his own life company; nine years after his election as Society President he died suddenly, running for a trolley, just before he would have headed the U.S. delegation to the Second International Congress of Actuaries. Wright and Bartlett jousted for years over algebra and surrender charges. Fackler deliberately postponed launching the Actuarial Society till Wright had died and Bartlett had retired, this probably with Homans' concurrence. In 1909 Fackler said (T.A.S.A. XI, 12):

"(W)e could hardly form a society without including them, and possibly would have to give some of them important positions, so rather than have an association which would not be a proper exponent of the actuarial profession we preferred to have nothing at all."

Let's give Wright the last word. He says of his bouts with Bartlett over surrender values:

"Altogether the most painful incident of this conflict is to be obliged to say what he (Wright) has of some of the life insurance studies of his amicable friend, the West Point Professor. His mathematical capacity nobody questions. But even a war-horse might not know how to work a bark-mill till he had tried it."

DEATHS

Robert H. Armstrong, F.S.A. 1943

Frederick J. Cunningham, F.S.A. 1930

Ralph J. Hasbrouck, F.S.A. 1937

John A. Oates, F.S.A. 1950

Charles W. Southern, F.S.A. 1944

Retirement Communities

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more, not even the services are fixed, but are likely to change with medical and social developments. Other variables are mortality and life expectancy, morbidity, and rates of investment return.

An important question is the degree to which fees should be calculated individually or pooled among groups of residents. A related issue is the division of fees between fixed entry fees and variable monthly fees. Monthly fees must be variable because of the flexible dollar promise. For this reason, CCRCs are usually operated by non-profit organizations, in whom the residents must place great trust.

The authors illustrate the full actuarial workings of a CCRC. They show the trade-off between entry fees and monthly fees on any given set of assumptions. They provide sensitivity analyses, to indicate the effect of various assumption changes. They illustrate the use of stochastic methods to predict the likely range of experience variations under a given set of assumptions.

They focus on the actuarial fact that occupancy of a living unit by two people for as long as either shall live will on the average tie it up for a substantially longer time than occupancy by one person—a relationship not fully measured in most CCRC planning. They discuss the issues in differentiating fees by age, sex and double-versus-single occupancy. They point out that a part of fees covers the square feet of real estate occupied by the resident, and a part covers per capita needs.

They illustrate some of the issues and costs involved in promising the refund of entry fees upon death after long residence. Providing such refunds adds to the costs of residency and reduces the pooling of risks.

I recommend this useful book, but would add that it does not tell the whole story.

It postulates a condition of maturity in CCRCs, where the number of health care beds needed for a given number of independent living units will stabilize—after, say, fifteen years. But it does not mention that other scenarios can produce conditions under which the need for health care beds may grow in-

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