The Actuary

The Newsletter of the Society of Actuaries

VOL. 18, No. 4 APRIL, 198

TAXES AND PROFIT DISCOUNTING

by Douglas A. Eckley

The question can be put simply: should statutory profits be discounted at an after-tax rate, or at a pre-tax rate? Beyond the pedantic answer, "yes", there are some hair-raising complications.

Imagine that statutory profits have been projected for each of the next thirty years. This may have been done for a block of in-force, a company, or per-thousand-of-face-amount for a new product. Now the profit stream is to be discounted to a present value.

Why After-Tax?

One strong argument for using an after-tax rate takes the "reductio ad absurdum" form. If profits were being accumulated, rather than discounted, an after-tax rate would be used, because tax would have to be paid on the investment income generated as the company reinvested the profits. Assume for the sake of argument that the profit stream is negative in the first year, positive thereafter, and non-decreasing. Further, assume that the accumulation at the after-tax rate is zero after ten years. If the same ten years of profits are discounted at the higher pre-tax rate, then the present value will be negative. The absurdity is that the stream breaks even, yet has negative value. The conclusion—profits must be discounted at the after-tax rate.

Why Pre-Tax?

But there's a strong argument for the opposite view which also takes the "reductio ad absurdum" form. Compare two products, similar in every respect except that one has lower reserve requirements than the other in every year until the last (when reserves naturally become zero). The low-reserve product should produce an equal or higher present value of profits because of earlier availability of profits. (Higher reserves defer taxes also, but

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TO PROSPECTIVE ENROLLED ACTUARIES

If you are unhappy that the transitional period, within which credit will be granted for the first part of exam EA-1, extends only through 1985, please write to the Joint Board for Enrollment of Actuaries, 1725 Eye Street, Suite 1103, Washington, DC 20006. It may not be too late to persuade the Joint Board to lengthen this, if enough of us show that we are interested.

Ed. Note: This notice is displayed at the request of a displeased student who found out for himself that the Joint Board IS INTERESTED in hearing views on appropriateness of their announced transition rule.

MORE ON GAAP FOR MUTUALS

by Donald D. Cody

Daniel F. Case's article (Dec. 1983 issue) prompts me to discuss how statutory financials would differ from a *reasonable* GAAP for Mutuals structure, if the latter were ever imposed. Background may be found in my paper, TSA XXXIII (1981) 313-366, "An Expanded Financial Structure for Ordinary Dividends", in Thomas G. Kabele's brilliant discussion of it, and in my subsequent TSA XXXV (1983) preprinted September 2, 1983 "The Generalized Ordinary Dividend Formula Under TEFRA".

The generalized dividend formula explicitly contains all factors of the mutual company financial mechanism; all Contribution Principle formulas are approximations of it. It is practicable, and in use in at least one company. It provides an exact answer to the GAAP-for-Mutuals question, if indeed there should be such a question.

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A FAIRY TALE

by David H. Raymond

Once upon a time there were two persons, identical except for one minor difference—Fanatica Feminista was female; Machismo Maximo was male.

Fanny and Macho took identical jobs at World Wide Widget Works on the same day. Each contributed 3% of salary to WWWW's thrift plan, which accumulated to $100,000: $20,000 of contributions and $80,000 of investment income. Reaching age 65, each had two options:

To take the $100,000 in cash, or

To take a life annuity worth $100,000 from Actuarially Equitable Annuity Company.

Actuarially Equitable, using the 1983 Individual Annuity Mortality Tables which showed Fanny's life expectancy to be 21% greater than Macho's, offered Fanny $907.45 per month and Macho $986.38 per month, 9% more—these weren't 21% different because of the impact of interest, at 9% p.a. on the calculations. After taxes at 20% these annuities would yield $744.29 monthly to Fanny, $811.40 to Macho.

Fanny was unhappy. She was glad to have 21% greater life expectancy than Macho, but was unwilling to acknowledge the implication for her annuity benefit. She demanded that Big Brother do something about her unhappiness. Big Brother, whose preference for political over actuarial considerations had already been demonstrated by the condition of his social security system, told WWWW that if annuities were offered they must provide identical monthly payments.

WWWW, not prepared to pay an extra 9% for all its female employees, and fearing that if it did, Macho would

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The Actuary

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The Society is not responsible for statements made or opinions expressed herein. All contributions are subject to editing. Submissions must be signed.

EDITORIAL

YEARS OF PURGATORY

Marta L. Holmberg, elsewhere in this issue, gives us a helpful look at the distribution of times taken by the welcome 211 who achieved Society Fellowship last year. This displays an important measure of the soundness of our qualification system; we look forward to more such analyses that Dr. Holmberg has promised.

Impressive indeed are the records of the seven Fellows who arrived in less than five years—and, in a different way, of the six who persevered (not, as Dr. Holmberg reminds us, necessarily continuously) for fifteen years or more. Particulars of the student careers of those at the extremes of the distribution would be enlightening, as are the averages to which we confine our observations here.

What about our 7½-year median and our 8.27-year mean qualification periods? To begin with, we know these are longer than those of the Institute of Actuaries; William W. Truckle's paper reviewed in our April 1982 issue says:

> "The time taken to qualify is generally rather long. Members currently completing the Institute's examinations will have taken on average 6½ years . . ."

But, how do our present averages compare with performances of our own former days? This matter seems not to have been covered in the *Transactions* as often or as thoroughly as its importance warrants, but there are some comparative facts.

James R. Herman—T.A.S.A. 50 (1949), 64—gave some averages, probably means, going back to new Fellows of 1920, as follows:

1920-24	6.7 years
1925-29	6.7
1930-34	7.2
1935-39	8.6

and he showed the painful increase in this figure to 13.6 years in the World War II years when military service took priority in so many cases.

Harry M. Sarason—T.S.A. 1 (1949), 99—felt able to say of the post-war era that "A median of 6 or 7 years to become a Fellow is very comforting". We note in passing that Charles A. Spoerl in the same volume, p. 59, said:

> "A comprehensive record system has been started by means of which we will be able to follow individual students or groups of students from their first registration through the entire series of examinations. . . . we have organized a special section of the (E. & E.) Committee to be in charge of all statistical studies."

We wonder if Society archives contain the results of that special section's findings that were not previously given to members outside the E. & E. heirarchy.

In informal discussion on selection, education and training of actuarial students a few years later—T.S.A. 7 (1955), 291—Robert G. Espie observed:

> "During the past ten years the Examination Committee has reduced the total number of references on the syllabus from 201 to 132. The list of books, journals and miscellaneous recommended publications now totals 29 rather than 61 as in the 1945 course of reading. These reductions in many cases have been made possible by the preparation of more comprehensive sets of study notes . . ."

All of these references belong to eras before the responsibilities of qualified actuaries and the economically and socially induced complications impinged so heavily upon our educational needs as they have in the past two decades. All of which is to say that it is good for us to take a fresh look at qualification times.

E.J.M.

ANY QUERIES ON E. & E.?

The formerly popular *E. & E. Corner* has been in limbo recently because no questions have come in. Please be assured that enquiries are welcomed. Send them to E. & E. General Chairman James J. Murphy at his Yearbook address.

A Fairy Tale

(Continued from page 1)

complain to Big Brother that he was a victim of illegal discrimination because his annuity would then be worth less, removed the annuity option from its thrift plan.

A Trip For Fanny

Fanny triumphantly took her $100,000 and headed for Politically Expedient Annuity Company, which advertised "unisex" rates. A funny thing happened to her on the way. An IRS agent accosted her and explained that since she had constructively received the money she couldn't spread the tax on the $80,000 investment income over the rest of her life interest-free. She had to pay now; getting so much in one year boosted her average tax rate from 20% to 30%. The IRS took $24,000.

Fanny wondered if she should feel betrayed because Big Brother, who had helped her to reach this state of affairs, now had $24,000 of her savings. She decided that everything must be OK—she had forced Macho to give Big Brother $24,000 also.

But another funny thing happened when Fanny reached Politically Expedient; that company's agent told her she'd have to pay a 5% sales charge, which wouldn't have happened if she'd stayed in the thrift plan. So the company took $3,800, leaving $72,200, which bought $655.18 per month ($593.72 after taxes). Fanny noticed immediately that $655.18 is to $72,200 as $907.45 is to $100,000:

> "You're using the same rates as Actuarially Equitable's female rates," she cried. "You advertised unisex rates. You're supposed to charge Macho more and me less."

The agent explained,

> "These *are* unisex rates. We charge them to all our annuitants, regardless of sex. They happen to be female rates because all our annuitants are women. A man would be a fool not to buy from a Canadian company at a fair price." □

More on GAAP

(Continued from page 1)

To return briefly to Mr. Case's article —it seems satisfactory to state that mutual statutory financials are based on "accounting practices prescribed or permitted by the State of domicile, which are considered generally accepted accounting principles for mutual life insurance companies". Thus, his question whether such financials conform to all-industry GAAP should not be central.

Mutual companies are different from stock companies. This difference cannot be convincingly demonstrated by philosophies like "zero earnings", which are debatable, or by scenarios like "going out of business", which are unrealistic, or by other such arguments. The difference for these purposes is epitomized by the fact that mutuals must pay policyholder dividends based on the Contribution Principle, the precise expression of which is the generalized dividend formula. Analysis of this difference discloses the following:

1. The release-from-risk mechanism imbedded in the GAAP adjusted reserves in stock companies lies elsewhere in the mutual company financial structure. For mutuals the release-from-risk mechanism is imbedded in the policyholder dividends.

2. If Formula (4) for the generalized dividend on page 319 of my 1981 paper (or the "New Formula (4)" of my 1983 paper) is solved for V_{n-1} and applied recursively to V_n in the formula, one proves that the statutory reserve (V_{n-1}) exactly equals (a) the GAAP benefit reserve providing for contract obligations, renewal expenses, and *dividends as benefits*, with the GAAP net benefit premium equal to gross premium less the charge for amortization of acquisition expenses, plus (b) the present value of profit charges, with all items after FIT. The GAAP basis here sets total GAAP net premium equal to the gross premium. The GAAP benefit reserve and GAAP net benefit premium incorporate the unknown future generalized dividends and the unknown future mortality, lapse, FIT and investment income rates. The unamortized acquisition expense asset likewise incorporates the unknown future mortality, lapse, FIT and investment income rates, since the generalized dividend is assumed to have a "floating" acquisition expense amortization charge which assures that the unamortized acquisition expenses are kept on target, as determined at issue, by recognizing the effects of the changing rates, as discussed in my 1983 paper.

3. The conclusion from all this is that in a mutual company with a precise generalized dividend formula, the statutory reserve is already a GAAP benefit reserve including provision for FIT and profit charges. Also, the statutory financials can be easily converted to full going-concern GAAP-type financials for management use by adding a deferred acquisition expense asset (available in the generalized dividend financial structure), plus, of course, other items, like prepaid development expenses (available in the expense matrices), moving MSVR into surplus, and similar GAAP-type changes.

But the important point is that the statutory reserves need not be adjusted, since the dividend design assures that they already are GAAP adjusted benefit reserves!

4. Several features deserve detailed comment:

   (a) The actuarial factors in the above GAAP structure (mortality, lapse, FIT, investment income) are not loaded, but are the actual rates as they appear in the future. The dividend itself is a complete pass-through of experience in the future and thus loadings are unnecessary. What a distinct improvement over stock company GAAP with its arbitrary confusing loadings!

   (b) Although stock company GAAP stipulates profit as a flat percent of premium (revenues) when expected experience is exactly realized, the loadings in the expected experience cause profit to emerge in fact increasingly with duration, due largely to the margins in expected interest rate. The generalized dividend has an explicit profit factor, which I believe should be predominantly a percent of reserve, but can be otherwise designed.

   (c) While a mutual with a full blown generalized dividend formula would precisely realize the relationships in (1), (2) and (3) above, a company with a well designed traditional 3-factor dividend formula is likely to have financials differing in no material manner. Similar non-material variations also arise from lags and estimates of experience in the generalized dividend formula, the effects of which should average out over several years.

   (d) Mutual company surplus does not provide for dividends; as proved, the statutory reserve makes this provision. However, variations from the precise generalized dividend formula, as noted in (c), do have an effect on surplus, which should average out.

5. All-industry GAAP has been adapted to stock life insurance companies. If all-industry GAAP is ever adapted to mutual life insurance companies, the adaptation should recognize as the central consideration the predominancy of dividends on the Contribution Principle. □

EXAM STATISTICS

Part 1

	Passed	G.R.E. Credit	Total	New Associates	New Fellows
1980—May	664	40	704	393	186
—Nov.	586	30	616	277	226
—Total	1250	70	1320	670	412
1981—May	641	32	673	212	87
—Nov.	584	23	607	230	178
—Total	1225	55	1280	442	265
1982—May	667	43	710	225	146
—Nov.	670	28	698	197	118
—Total	1337	71	1408	422	264
1983—May	813	36	849	187	160
—Nov.	699	24	723	167	51
—Total	1512	60	1572	354	211

The upward trend in numbers of Part 1 passers that started in 1982, continued in 1983. The number of Fellows in the Class of 1983 (211) is the smallest since 1974 (see 1984 Yearbook, p. 84). The number of New Associates by examination in 1983 (354) is the lowest since 1976, when it also was 354.

A MASSACHUSETTS LIFE INSURANCE ADVOCATE OF LONG AGO

A reader has sent us a copy of a booklet printed in Boston in 1772 whose title page goes thus:

THE
PLAN of a SOCIETY
FOR
Making Provision for Widows, by Annuities for the remainder of Life;
AND
For granting Annuities to Persons after certain Ages;
WITH THE
Proper TABLES for calculating what must be paid by the several Members, in order to secure the said advantages,

by William Gordon

Our correspondent raised the reasonable question whether William Gordon may qualify as North America's earliest actuary, ahead of Robert Patterson or Jacob Shoemaker of Philadelphia.

The book's Preface sets forth its author's ideas as follows:

> "The painful circumstances in which numbers are involved, when aged ,or deprived of that, or those, on whom their support chiefly depended, are too notorious to require a recital. But that same Divine Wisdom, which allows and orders the existence of these calamities, has mercifully, and in proof of his providence, so directed its manner, as to admit of their being greatly alleviated, by the joint endeavours of mankind . . . many, by cooperating with each other, may secure individuals from those hardships they must otherwise experience; and that, on terms with which a reasonable and humane person will readily comply . . . An attention to these particulars has given rise to various Societies in Great-Britain, which within a few years have multiplied apace, chiefly in London. Though such Societies have been formed with a good design, yet having in general gone upon mistaken principles, they must at length, if not speedily regulated, be productive of much disappointment and calamity.
>
> "A benevolent desire of informing the public what calculations might be depended upon, and of adverting that distress which was otherwise to be expected, has induced the Rev. Dr. Price, an eminent Mathematician, to publish Observations on Reversionary Payments on schemes for providing Annuities, for Widows, and for persons in Old Age, &c."

Mr. Gordon proceeds to express his desire of contributing his "mite towards the happiness of the Colonists" by presenting materials for forming such Societies.

His 35-page text, containing many references to, and quotations of, Richard Price, is classified into two parts. PART I, "Containing the Plan for the Erection, Continuance and Government of the SOCIETY, with the various reasons", is laid out in 23 Articles such as might form the Charter and By-Laws of a mutual life insurance company. PART II contains elaborate tables of rates classified by age at several rates of interest, thoroughly described in such terms as the following example:

> "In working the probabilities of the given lives, the process has been carried on according to Mr. De Moivre's Hypothesis, as recommended by Dr. Price . . . The Doctor calculated on the probabilities of the duration of life, as deduced by Dr. Halley . . ."

The clear impression is that author Gordon had a solid grasp of how an insurance organization might function, and how to go about making premium calculations.

But, having secured, courtesy of Rowland E. Cross, a copy of William Gordon's dossier in the Dictionary of American Biography, we are inclined not to place him at the head of our list of North American actuaries. Says that Dictionary:

> "GORDON, WILLIAM (1728-Oct. 19, 1807), author, clergyman, born at Hitchin, Hertfordshire, England, was educated for the dissenting ministry . . . He began his ministry in 1752 in an Independent Church in Ipswich . . . then succeeded Dr. David Jennings in the Old Gravel Lane Church in Southwark. His political sympathies were with the colonists; he had already been in correspondence with several of the Colonial leaders and in 1770 he resigned his pastorate and emigrated to America. On July 6, 1772, having already preached to the society a year, he was ordained as pastor of the Third Congregational Church at Roxbury, Mass."

That account then mentions that in the same year he published the pamphlet described in this article, but states, inaccurately in today's terms, that in it he was advocating old age pensions. There is no reference to mathematical training or interests on his part. Rev. Gordon returned to London in 1786, secured a congregation at St. Neots in Huntingdonshire in 1789, "returned to Ipswich in 1802 and lived in great poverty until his death".

Perhaps in so dismissing him from membership in our profession, we do this interesting gentleman an injustice. Certainly he seems entitled to our respect for his right thinking as a life insurance believer and his ability in presenting his case for forming such an organization in Boston. It may be noted that the Presbyterian Ministers Fund had been organized in Philadelphia in 1759. *E.J.M.*

ACTUARIAL REGRESSION

By Barry S. Halpern

Ed. Note: This, like other fantasies we've already printed, was inspired by David S. Williams' "Actuaries and Wellness", (Nov. 1983 issue). Mr. Halpern has adapted it from a piece by Nathaniel Lande, "Picking Daisies"; he assures us that resemblance to any actuary he knows of is coincidental.

If I had my career to start over again, I'd accept larger second differences.

If I had my career to do over again, I'd make more mistakes. Next time, I would care less about six decimal accuracy. I'd accept rounded whole numbers.

I know I would take work less seriously. I would be crazier. I would not graduate so smoothly. I would take more chances; I would price aggressively. I would state my opinion. I would develop a loss leader. I'd befriend an insurance agent.

I would have more actual problems and fewer imaginary ones. You see, I am one of those people who works in an ordered way, keeps a neat desk, corrects every typo—hour after hour, day after day.

Oh, I have had my moments, and if I had to take my exams all over again, I'd fail more of them. I'd worry less about performance appraisals and advancement potential.

I have been one of those actuaries who never does any work without a mortality table, a calculator, a PC and a textbook. If I had to do it all over again, I would pull the plug and use more imagination.

If I had my career to do over again, I would start later every day and take weekends off. I'd look up to banks, agents and lawyers. I'd treat the investment officer as a person.

I would have more fun doing my job. I'd run shorter meetings—or I wouldn't run them at all. I'd respect the CLU, FLMI, and all OHS's (other homo sapiens).

I could start my career again—now!

ELAPSED EXAMINATION TIMES

by Marta L. Holmberg, Examination Staff Consultant

This is a tabulation, for all our new Fellows who qualified in the May and November 1983 examinations, of the years that elapsed from the date when each wrote his or her first examination.

STUDY OF ELAPSED TIMES BY ALL (211) 1983 NEW FELLOWS

	From First Exam Written to A.S.A.		*From A.S.A. to F.S.A.*		*From First Exam Written to F.S.A.*	
Years	*N*	*Cumulative Frequency*	*N*	*Cumulative Frequency*	*N*	*Cumulative Frequency*
Less than 2	8	3.8%	7	3.3%	0	0 %
2.0	19	12.8	7	6.6	0	0
2.5	17	20.9	13	12.8	1	0.5
3.0	36	37.9	36	29.9	1	0.9
3.5	33	56.4	32	45.0	1	1.4
4.0	32	68.7	46	66.8	1	1.9
4.5	14	75.4	6	69.7	3	3.3
5.0	12	81.0	17	77.7	12	9.0
5.5	11	86.3	6	80.6	14	15.6
6.0	7	89.6	7	83.9	21	25.6
6.5	5	91.9	8	87.7	18	34.1
7.0	4	93.8	5	90.0	22	44.5
7.5	4	95.7	6	92.9	13	50.7
8.0	1	96.2	3	94.3	17	58.8
8.5	2	97.1	2	95.3	14	65.4
9.0	1	97.6	2	96.2	8	69.2
9.5	2	98.6	1	96.7	10	73.9
10.0	3	100.0	3	98.1	9	78.2
10.5		100.0	1	98.6	13	84.4
More than 10.5		100.0	3	100.0	33*	100.0
	211		211		211	
Median, yrs.	3.5		4.0		7.5	
Mean, yrs.	3.96		4.38		8.27	

*Elapsed times for these 33 persons were: 11.0 or 11.5 yrs., 9; 12.0 or 12.5, 5; 13.0 or 13.5, 8; 14.0 or 14.5, 5; 15 yrs. or more, 6. The longest elapsed time was 20.0 yrs. (1 person).

In interpreting this, one must keep in mind that the candidates whose elapsed times were relatively long don't represent a homogeneous population; not all of them had trouble with one or more exams, rather some ceased for various reasons and for various periods to sit for examinations. Note also that the clusterings of candidates around the medians and means in the two partial segments differ substantially from each other. The diversity, perhaps naturally, is greater in the "A.S.A. to F.S.A." segment when mathematical skills become less critical to success. □

STOCK MARKET VALUES, 1871-1983 ("S & P 500")

For the convenience of readers who may want to trace the peregrinations of an accepted index of U.S. stock market prices (with allowance for dividends paid) for any considerable part of the past 113 years, we have again prevailed upon Mr. Herbert W. Hickman to give us the extension of his table printed in TASA XXII (1970), 197. The complete extension, including values we previously published, follows.

Year	*Average Value*	*December Value*
1969	1,601.87472	1,515.62979
1970	1,415.12817	1,556.59853
1971	1,717.15898	1,757.34050
1972	1,954.79661	2,128.67577
1973	1,975.88887	1,770.96944
1974	1,593.23823	1,323.39147
1975	1,722.84816	1,808.61154
1976	2,105.07925	2,196.79755
1977	2,109.49992	2,061.48770
1978	2,161.81552	2,218.19567
1979	2,429.96712	2,605.89674
1980	2,926.26361	3,368.67049
1981	3,300.35715	3,279.03126
1982	3,258.80565	3,892.65850
1983	4,524.94941	4,740.06634

In our next issue we will show what these figures tell about growth in common stock values, and its relation to growth in the Consumer Price Index in the United States.

E.J.M.

HE THAT RUNS MAY READ

We gladly draw attention to the first issue of a highly specialized journal, ACTUARIAL MARATHONERS NEWSLETTER. For a copy, write to Michael J. Cowell at his Yearbook address.

Its title page depicts a crowd running along a q_x-curve, but only through its nearly level segment, to age 35 or so. After that the runners seem to establish a mortality curve of their own, rising, apparently, to no more than one per thousand at age 70.

The editorial message asserts that close to one person in 200 among North America's adult population has run a full marathon course, an extraordinarily large number of these being actuaries. This is followed by speculation on what makes actuaries such dedicated runners.

Appended is a Directory listing the names and records of more than 40 actuarial marathoners of whom the editor has personal knowledge, and a form, by completion of which others may join that list in future issues.

E.J.M.

Taxes and Profit Discounting

(Continued from page 1)

taxes are less than profits.) This will happen only when the discount rate equals or exceeds the assumed earnings rate. The after-tax rate will usually be less than the assumed earnings rate, causing the absurdity of higher reserves, yet higher profits. The conclusion—profits must be discounted at the pre-tax rate.

Can This Paradox Be Resolved?

One possibility is that there is no right answer. Different discount rates may be appropriate in different circumstances. Perhaps the most valid use of a discount rate with a new product is to determine an equivalent level profit; then any reasonable rate might suffice with proper disclosure. In valuing a company, the selection of discount rate might reflect the investor's intention; an after-tax rate would be used if profits were to be left in the company, and a pre-tax rate if they were to be withdrawn as earned (thus taxed to the investor). Disclosure in this case is of paramount importance. □

WHAT'S NEW IN LIMRA REPORTS

LIMRA has invited us to alert our members to publications likely to be of use to actuaries:

The Impact of IRAs, (I/R Code 62.30)

The Financial Dynamics of Variable Life, (I/R Code 30.80)

The Term Marketplace: Lapses and Other Issues (I/R Code 63.30)

The Canadian Marketplace: The Opportunity to Buy (I/R Code 84.30)

Issues and Outlooks for the Ordinary Insurance Distribution System (I/R Code 32.00)

Insurance Marketing and the Actuary (new part 9 study note)

Year 1982 Life Insurance Sales in Review (I/R Code 47.40), latest edition has been updated with the 1983 sales

Marketing to U.S. Small Business in the 80's (I/R Code 60.50)

Charging Professional Fees for Financial Planning (I/R Code 16.10)

Consumer Experiences in the Marketplace, Vol. III: The Claim Process (I/R Code 13.00)

Security Expenditures in Canada (I/R Code 20.20)

If your company is a LIMRA member, you can find many of these in your company library or marketing division. There is also a general report entitled *LIMRA Research,* (I/R Code 6.00).

Or, you can request individual reports from: LIMRA Library, Box 208, Hartford, CT 06141. (There may be a fee for some reports if yours is not a member company). *D.A.P.*

ATTENTION A.S.A. CANDIDATES

Receive morale-building "A.S.A. IN '84" campaign button. Just send $1 to BANZAI ASSOCIATES, c/o Bruce Kearnan, 127 Summer St., Malden, MA 02148. Banzai Associates is an almost organized group of gung-ho types determined to be ASA's by next Jan. Quantities limited—order now!

B.K.

SKANDIA FELLOWSHIP AT SOUTHAMPTON

A U.K. friend has sent us news of a Fellowship at University of Southampton funded by Skandia Life Assurance Company of that city. Its purpose is to advance the study of practical issues in life company management; research may be in actuarial science, economics, finance, mathematics, statistics or management.

Details may be had from Mr. D. Copland, University of Southampton, Southampton SO9 5NH.

E.J.M.

LETTERS

Irish Pioneer

Sir:

When I took up actuarial studies in the early 1930's there was no qualified actuary in Ireland, North or South. I had joined the Civil Service in the Irish Republic and was assigned to the Department of Finance in Dublin. With a mathematics degree it was thought that I would have special expertise in compound interest and be able to deal with such problems as determining the yields to redemption of Government loans. It was then I discovered that there was a profession that looked after such matters; furthermore, that such Governmental actuarial work as came up was handled for a fee by the British Government Actuary although the two countries had been politically separated in 1922. There were only 4 or 5 life companies with head offices in the then Irish Free State; these were at the time in poor financial shape.

In due course, I qualified as F.I.A. with the assistance of a two-year spell on loan to the British Government Actuary's Department in London. So far as I know, I was the first Irish-born person to qualify in Ireland as an actuary. Another 10 years were to elapse before number two arrived. There are now some 50 actuaries working in Ireland, but a large number of these are immigrants from Britain.

One might wonder how so many actuaries can now find a living here where none did so half a century ago. The answer is mainly in the growth of pensions activity and in servicing of foreign-based insurance companies by resident actuaries.

Actuaries have had a certain mystique in the public mind and have traditionally carried on an expertise in life contingencies, not inaccurately described by our W. B. Yeats as casting "a cold eye on life, on death". In my lifetime it has swung away a good deal from this tradition, possibly because of inflation, and now pays much more attention to cash flows, emerging costs and pay-as-you-go projections, which indeed is more searching, especially in the fields of future interest rates and investments.

Ireland will always have a soft spot for the United States, not least because of the large number of family connections between the two countries. My greetings to all American actuaries, especially those who came from (or whose forebears came from) the "auld sod".

W. A. Honohan
Glasnevin, Dublin

Ed. Note: This letter was solicited. And this may be the place to note that the earliest validated United States actuary (Robert Patterson) was born in Ireland in 1743, and assuredly the earliest Canadian actuary (Hugh C. Baker) likewise in 1818.

* * * *

Mystique for Actuaries

Sir:

My friend and Futurism colleague Tony (A. Anthony Autin, Jan. issue) seems to interpret George D. Gwilt's expression "potentially sterile" as I do, i.e., that ESP and eastern mysticism are not of themselves sterile, but are potentially

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so when considered by actuaries. But his view seems to be that we actuaries—in our professional activities—should have no truck with such stuff.

Mr. Autin's expressions, "rational tools", "cause-and-effect relationships", and "hard facts", conform nicely to the left-brain, hard-science perception of reality that has been the bedrock of our actuarial training, indeed the dominant paradigm of Western society for the past five centuries. But it is gravely flawed!

One of futurism's major lessons is that the "scientific" approach is inadequate. Its inherent materialism and anti-spirituality have brought civilization to the edge of ultimate sterility: a planet without life. Actuaries who don't pick up the trail of eastern mysticism and recent discoveries of the paranormal powers of the mind will have missed the heart of futurism.

We must do more than just "understand" the perspective of the East—we must absorb some of its perceptions and wisdom. This learning is a long path; a starting place is reading Fritjof Capra's *The Tao of Physics* and David Loye's *The Sphinx and The Rainbow.*

The new age now aborning represents more than an understanding between Eastern and Western cultures. It is a blending of them.

Roy R. Anderson

To which Mr. Autin replies: Mr. Anderson and I see different futures on this issue; perhaps he would say we even see a different present. Futurists and others are beginning to see the inadequacy of the western world's view, an awareness introduced in Capra's book cited, and developed in his more recent *The Turning Point.*

But I believe a "whole-brained" approach is needed. My left-brained training has served me well but I've become increasingly aware of right-brain talents, not as a substitute for, but as a complement to, the linear, analytical, rational mode.

The two of us agree, I feel, on the need for concepts of reality that work, i.e., that support plans and actions that will achieve the results we actuaries are required to deliver.

* * * *

Calculators in the Exam Room

Sir:

Last week I sat down to analyze my home mortgage, determined to use a calculator that the Society has blessed for exam room use, i.e., one having only basic functions and devoid of power buttons. In Canada, mortgage payments are made monthly, and the interest rate must not be compounded more often than semi-annually; mine is a $36,000 mortgage @ 10% compounded semi-annually with 11 years left to run.

The choice among three factors—

$(1+i)^{1/6}$, $i^{(6)}$, or $i/i^{(6)}$

where i = 5%—is open to me; unfortunately my tables don't provide me with any of these. So I find $(1+i)^{1/6}$ by squaring $(1+i)^{1/12}$, thus increasing the expected effect of round-off error; I proceed, albeit slowly, to an answer of $446.59 for my monthly payment, using Kellison's Tables.

To check my work, I got out my $20 non-approved pocket calculator with its power button, and did the following:

Find i^* such that $(1+i^*)^6 = (1.05)$

$i^* = .00816485$

Now $P = \$36{,}000 / a_{\overline{132}|i^*}$

$= \$446.61$

This second method took a fraction of the first method's time and was far more accurate. Further, it can be used for other realistic rates such as $i^{(365)} = 10\%$, or $i^{(2)} = 11\frac{3}{4}\%$.

When might I expect official sanction for its use?

Robert L. Brown

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TEFRA & Term Cost Vesting

Sir:

I believe the IRS position on what is an ancillary benefit has shifted from that described by Howard J. Small (Sept. 1983 issue). Their present position is that term costing of vested benefits is not an acceptable funding method—see "Reasonable Funding Methods", ¶ 1.412 (c) (3) -1.

Mr. Small's problem can be solved more directly by using a salary scale. My tests have shown that 4% is adequate for most new groups.

Allan C. Weaver

Mr. Small comments:

Mr. Weaver is correct. My article's intent was to present several ideas, warranted because the issue of funding procedures for the TEFRA minimum needs examining to determine what new approaches, if any, may be required. To avoid stifling initial thought it seems useful to consider ideas without regard to their acceptability under current regulations. I might better have presented mine in an open letter with appropriate statement of purpose.

The term cost or unit credit approach has attractive features, both mathematically and logically. The IRS position is that the TEFRA minimum is the retirement benefit under the plan and therefore must be valued using the method used to compute retirement benefits.

* * * *

Excellence—A Different View

Sir:

If self-flagellation—Deborah Poppel, Dec. issue—has any therapeutic value, our profession must indeed be healthy. Although occasional reminders of lapses from perfection are needed, surely it's unfair to paint the horizon all black as often as we do; the actuarial profession, while not yet faultless, is doing just fine.

Applications and resumés in increasing volume show that more people are becoming aware of our profession and like what they see. More actuaries are finding themselves in insurance and consulting company Board Rooms and behind C.E.O.'s desks. Actuarial ingenuity is largely responsible for shifts to consumer orientation in products and services. And actuaries are paying attention to social issues, as, for example, the unisex question.

I don't believe our profession flunks all the eight tests of Messrs. Peters and Waterman. We do have bias for action—look how quickly our products respond to the changing economic environment. On other tests too—Productivity through People and Being Close to Customers, we rank well, provided we correctly identify who our people and customers are.

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If the man-in-the-street doesn't know an actuary from a mortuary, need that bother us? He probably can't distinguish between an optometrist and an optician, either.

Caution and thorough analysis are essential to our work. Perhaps some of us overdo these, but surely our profession as a whole doesn't. Another Peters and Waterman test is Emphasis on What They Know Best; let's not try to be what we aren't trained to be, and let's not compete with the big professions for public recognition.

We needn't apologize for being specialists in a science that happens to be beyond the comprehension of non-mathematicians.

Arshad H. Qureshi

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Is This a Record?

Sir:

As a contribution to miscellany about actuaries, I report that three of today's Society members who attended a small school together as children, all come from actuarial families.

The school was Loomis, Class of 1939. They are:

Robert H. Hoskins, F.S.A. 1952, son of James E. Hoskins, F.S.A. 1920.

William W. Keffer, F.S.A. 1950, son of Ralph Keffer, F.S.A. 1925.

Shepherd M. Holcombe, F.S.A. 1952, grandson of John Marshall Holcombe, F.S.A. 1889.

Shepherd M. Holcombe

* * * *

What To Call Our Newest Textbook

Sir:

Past life contingencies texts could easily be called King, Spurgeon, or Jordan. But what can we dub the latest with its five authors: Bowers, Gerber, Hickman, Jones and Nesbitt?

Since all of them except Hickman have had some connection with University of Michigan, the text might be identified, at least on paper, "micHIgan". Nothing, it seems, can be done with the initials of their surnames, which are all consonants, but we might permutate the first two letters—BO JO HI GE NE (Bojo Higene) into other attractive sets, such as NE HI GE JO BO. Had they brought me in, a classy rhyme—ED GE BO, HI NE JO—would have emerged.

Before the not so long-suffering students make the labelling decision for us, perhaps Society members can devise some good non-obscene choices.

Ralph E. Edwards

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JAI-ALAI MATHEMATICS

Three readers have been heard from about David M. Lipkin's articles (Nov. & Feb. issues).

MICHAEL R. WEILER calculated the odds, to a computer-oriented thirteen decimal places. To old-fashioned five places, these probabilities are:

Team	*First Place*	*Second Place*	*Third Place*
1	.16312	.17724	.15115
2	.16312	.17724	.15115
3	.13861	.16491	.14456
4	.12401	.13337	.13674
5	.10203	.10862	.12973
6	.10259	.07925	.11216
7	.08878	.08332	.09091
8	.11774	.07605	.08360
	1.00000	1.00000	1.00000

Mr. Weiler explained that these assume equal probabilities in event of ties for runner-up spots, e.g., if when the first team reaches 7 points, four others have 6 points, each of those four is allotted a .25 probability of second and a .25 probability of third place. He recognizes that if the play-off system works like the regular game this would not be the case.

Walter Shur, we understand, arrived at these same probabilities.

Warren A. Shugars, Jr. was glad to see that Mr. Lipkin had not fallen into the common actuarial trap of looking only at expected results under uniform conditions, ignoring deviations from the norm. Said he:

> "Players' abilities are an important consideration, but, interestingly, what counts isn't just one's favored player's ability or his position, but also the positions of the other players.
>
> "Consider for example, a contest among 1 Hartford player, 2 Tampa players, and 5 actuarial students. Assume, for any one point, that the actuarial students will always lose to the professionals, that the Tampa players have equal ability, and that the Hartford player will defeat either Tampa player 60% of the time.
>
> "Put the Hartford player in the favored #1 slot, the Tampa players in the poor #6 and #7 slots, and the actuarial students elsewhere. Now we have the best player in the best slot—so we should bet the farm on him, right? Wrong!
>
> "Of course our hero from Hartford will wrap up four quick points against #'s 2 through 5, but then he'll face strong opposition for the next two points before getting an easy point against #8, leaving his winning chance at 36%. The Tampa player in #7 slot, on the other hand, needs only to win his first point against #1 or #6 and he'll be home free, beating #8 for his second point, then picking up doubled points against #'s 2 through 4 for the victory, a whopping 44% of the time, even though he's in the 'worst' spot and isn't the best player.
>
> "Here, as with other problems that actuaries must try to solve, disturbing influences may be much more potent than initially envisioned."

Our thanks to these gentlemen for taking the trouble to tell us of their findings.

E.J.M.