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INTEREST RATES AND SALARY SCALES IN PENSION VALUATIONS

by Barnet N. Berin

In these days of uncertain economic conditions, it seems unusual to find the actuary—at least some actuaries—brave enough to attempt to forecast a rate of future inflation and then to introduce this rate as a specific actuarial assumption. It seems even more startling in light of the experience of the past in which some actuaries, on the eve of the great depression of 1929, were optimistically forecasting favorable investment performance for many years to come. Some of these forecasts can still be read in the published actuarial literature of 1929 et. seq. (The Society's library—see details in the Year Book—is a good source for such readings).

In a profession as independent as ours, it may be necessary to sometimes ignore the lessons of the past, and occasionally to suffer the consequences of not learning those particular lessons. But is it wise to ignore current developments which suggest that certain predictions may not be reliable, even when made by experts in the field?

The New York Times of February 16, 1975, reported on a meeting of economists in New York City at which it was indicated emphatically that there was little or no agreement about future economic conditions in this country. One quote: "I don't know why anybody listens to economists anymore." Further, the same issue referred to an article from *The Morgan Guaranty Survey* of January, 1975 in which the author, after reviewing the record, suggested that economic forecasts as a guide to the behavior of prices were about as reliable as tossing a coin on the *"heads* up, *tails* down" principle. The article indicated that there have been substantial failures,

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CANADIAN INSTITUTE OF ACTUARIES

I would like to extend an open invitation to Members of the Society of Actuaries to attend the Canadian Institute of Actuaries 1975 Annual Meeting in Winnipeg June 12 and 13 at the Winnipeg Inn.

The program will present topics of interest to both life company and consulting actuaries, with a special emphasis on consumerism. The special feature of the extra-curricular activities planned will be a reception, dinner, and cruise aboard a paddle-wheel steamer.

For further information write to Mrs. Elizabeth Nichols, Executive Secretary, Canadian Institute of Actuaries, 116 Albert Street, Suite 506, Ottawa, Ontario KIP 5G3.

R. B. Leckie,
President-Elect
Canadian Institute of Actuaries

Actuarial Meetings

May 1, Actuarial Club of Indianapolis

May 8, Baltimore Actuaries Club

May 29, Joint Meeting Boston and Hartford Actuaries Clubs—Pleasant Valley Country Club, Sutton, Mass.

June 12, Baltimore Actuaries Club

June 12/13, Southeastern Actuaries Club

June 19-20, Middle Atlantic Actuarial Club

ERISA

Copies of the Special Edition of *The Actuary* reviewing the Employees Retirement Income Security Act may be obtained free from the Chicago office while the supply lasts.

THE ACTUARIAL ECONOMISTS

Robert S. Kaplan and Roman L. Weil, *An Actuarial Audit of the Social Security System*; U.S. Department of the Treasury, September 1974, p. 144.

by Robert J. Myers

The report, "An Actuarial Audit of the Social Security System", was commissioned by the Treasury Department in September 1973, and was completed a year later. Professor Kaplan is a professor of Industrial Administration at Carnegie-Mellon University and has a background in accounting and operations research. Professor Weil is a professor of Industrial Management at Georgia Institute of Technology and has a background in economics and mathematics.

Usually, such reports commissioned by government agencies are not publicly released, but a draft copy was obtained by the press after it had been submitted for information purposes to the Advisory Council on Social Security. At the time this report became available to the public, the subject of Social Security financing was at a peak of discussion because of the release of the 1974 Trustees Report, which showed the long-range financing problem that exists currently. Although this problem is a very serious and significant one, it has been greatly overemphasized in the public press, and material from the Kaplan-Weil Report only added to the general misunderstanding that prevailed.

The Kaplan-Weil Report is an excellent example of the problems that government actuaries have in their relations with economists, who seem to feel perfectly qualified to do actuarial work even though they have had no education or experience in this field. It is amazing — and, dismaying — that the Treasury Department should commission an actuarial report from persons who are by no means qualified actuaries.

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Moreover, this report is a good illustration of how the Federal Government spends considerable sums of money on grants to persons where the results obtained are not of any real value. Such a procedure is common in the academic world—and the reviewer well recognizes that he is living in such a "glass house" —but hopes that this criticism does not relate to his own work.

It can be said in summary that the Report presents very little not already known to the actuaries of the Social Security Administration and to many other actuaries. In fact, the information contained in the report was already out of date by the time even the draft report was circulated in mid-1974.

The report contains a surprising number of factual errors and perhaps this is not surprising, considering how some economists bravely venture into areas in which they have little, if any, competence. For example, the report states that a system financed on the pay-as-you-go basis depends for its financing upon increases in productivity and in the population at the working ages. Quite obviously, this is not so, because the financing is built around the estimated benefit operations, whatever they might be.

Also, the report criticizes the investments in special issues because of their low coupon rates and because of their lack of liquidity (since liquidity might be necessary in order to meet unexpectedly high outgo). The fact that some of these special issues have low coupon rates is not inequitable, because they drew the going rate when they were purchased. More importantly, such special issues are redeemable at par whenever the trust funds need them.

In several places in the report, the taxable earnings base for 1974 is stated to be $13,600, rather than the correct figure of $13,200.

The authors state that the basis of social insurance systems is to stress social adequacy rather than actuarial soundness. These two elements most certainly are not incompatible or mutually exclusive. In this connection, they quote the famous saying by the distinguished economist, Dr. Paul Samuelson of Harvard, that "The beauty about social in-

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allowances under the 60-percent review mechanism. Under the sample in the per 1972-74, there have been a higher percentage of reviewed cases questioned (abou 18 percent), and in contrast to previous experience more of these have been allowances than denials. The Social Security Administration maintains that this is due more to the intensity of the review rather than to more adjudicative errors. According to SSA, a sample of the sample shows that in about 30 to 35 percent of the returned cases the decisions are changed."

Since the report gives the number of applications in fiscal 1971 requiring a disability determination as 762,700, the "over 10,000 cases" questioned in the first six months presumbly represented no more than 5% of all the cases reviewed under the 60-percent program, as compared to the 18% figure for the past three years.

In addition to and independent of the review system there is a rather elaborate procedure for hearing or appeal of the claimant who has been denied benefits at the administrative level. This system prompted Robert G. Dixon, author of the book "Social Security Disability and Mass Justice," to raise "the question whether such appeal mechanisms may result in the final epitaph for the U. S. reading 'Died in litigation circa 2000 A.D.'."

A dissatisfied claimant may request reconsideration, which is given in the State agency by personnel other than those making the initial determination. If the initial adverse decision is not reversed the claimant is given a hearing before an Administrative Law Judge (ALJ) upon timely request. If his claim is still denied he can request review by the Appeals Council, which may affirm, modify, or reverse the ALJ or remand the case to him for further development. The claimant may then appeal an adverse decision to a U. S. District Court, the decisions of which courts are sometimes reviewed by a Circuit Court of Appeals. Some indication of the trend in the volume and direction of adjudication is given by the following:

Percentage of Appealed Cases Winning Reversal

Hearings by Administrative Law Judges		Hearings by Courts	
Fiscal Year	% of Cases	Period	% of Cases
1960	17%	1955-67	52%
1973	50	"Now"	36

"The net effect of the increasing administrative hearing reversal rate and declining court reversal rate has been a higher allowance rate for individuals who have decided to take their cases to hearings." The number of reversals by Administrative Law Judges has increased almost tenfold from 3,470 in 1960 to 33,906 in 1973. The last figure represents nearly 8% of the number of cases approved at the administrative level.

Presumably the sharp increase in claim activity since 1969 is related to trends in unemployment. The report presents the following data.

Year	1967	1968	1969	1970	1971	1972	1973
Applications for benefits per 1000 insured workers	1.02	1.26	1.03	1.20	1.24	1.24	1.37
Number unemployed per 100 insured workers	2.5	2.2	2.1	3.4	4.1	3.5	2.7

Some correlation is apparent through 1971 but the two series diverge in the following years. However, spotty unemployment, as in the aerospace industry recent years, can adversely affect disability results before lay-offs become numerous in other industries or kinds of employment.

The increase in claim frequency is well documented by the above information. Although the study into the causes has not been completed, it seems clear that

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liberalizations in the definition, trends in adjudication, and generally rising unemployment have all contributed.

The second dimension of disability cost is of course the average duration. On this score the information given is somewhat less specific. The report notes that the current cost estimates are based on mortality and recovery rates for the period 1957-67 and adds that "the use of more current data would seem desirable." There is indication of a recent "rather sharp decline" in the mortality rate among disabled workers. The data are not on a select basis and the report notes that Mr. Robert J. Myers has been asked to review the study of mortality experience, "including the degree to which it has taken into account duration of disability ***."

A comparison of total termination rates and death rates given in Actuarial Study No. 65 shows that in general death rates under Social Security disability insurance are higher than the experience of life companies, while recovery rates are much lower. To select a single example from a rather complex comparison, the following rates per thousand apply to the fifth year of disablements commencing at ages 50 to 54.

Termination Rates per 1,000	*Recovery*	*Deaths*	*Total*
Benefits 2 & 3, 1930-50	29	59	88
Benefit 1, 1930-50	21	65	86
Group Waiver of Premium, 1955-64	16	69	85
OASDI experience, 1957-63	10	78	88

It should not be inferred that the total termination rates under the four experiences are nearly equivalent on the average. However, the above example illustrates the generality that recovery rates under Social Security disability are low as compared to any experience of life insurers. This would be expected in a comparison with the individually selected risks covered under the old "90-day clause" of the 1920's (Benefits 2 and 3) but Benefit 1 required a finding of "permanence," and the Group Waiver benefit includes a 9 month deferment period.

It should be noted that the 1957-63 OASDI experience all occurred while the definition required that the disability "must be expected to result in death or to be of long-continued and indefinite duration." Under such a definition a comparatively low recovery rate is to be expected. The change to the 12-month requirement in the 1965 Act was followed by an increase in the aggregate recovery rate, but this rate peaked in 1967. The following recoveries and ratios to the number exposed are reported: 1964—16,487, 1.6%; 1966—23,111, 1.8%; 1968—37,723, 2.5%; 1970—40,802, 2.3%; 1972—39,393, 1.9%. One must be cautious in drawing conclusions from crude rates, but the trend does not augur well for the future cost of the system.

The net result of these trends in experience, to the extent reflected in the valuation, and of changes in regulations, administrative procedures, and legislation—including increases in the monthly benefit payments—has been to more than triple the cost estimates, as a percentage of taxable earnings, since the 1960 extension of the program to cover persons under age 50.

Year of Valuation	*Basis*	*Cost as % of Taxable Payroll*
1960	Intermediate Level Cost Estimate, 1960 Act, *TSA* XIII, 253	.56
1969	Long-range cost of the 1967 Act, Staff Report, p. 14	.96
1972	" " " " " 1972 " " " p. 14	1.31
1973	" " " " " 1972 " " " p. 15	1.54
(revised) 1973	" " " " " 1973 " " " "	1.58
(revised) * 1974	" " " " " 1973 ", 1974 Trustees' Report	1.92

* To reflect the 11% benefit increase in 1974.

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surance is that it is *actuarially* unsound. Everyone who reaches retirement, however, is given benefit privileges that far exceed anything that he has paid in", (*Newsweek*, February 13, 1967.) This, again, is a vivid example of the lack of knowledge of economists about actuarial principles in general, and as they apply to social insurance in particular.

The authors state that Congress usually interprets the situation of income currently exceeding outgo—which they incorrectly designate as "a surplus position"—"as a signal that benefits can be increased in the short run without having to increase taxes." I can state, from my long experience in working with the Congressional committees responsible for Social Security legislation, that this is not true. Careful consideration has always been given in the past to the long-range cost estimates for the program and proposed changes therein, and benefit increases were not made solely because income currently significantly exceeded outgo.

The principal recommendation of the report that the Office of the Actuary, Social Security Administration, should keep its population projections up to date completely ignores the fact that such projections were being revised at the time the study was made. In fact, the new cost estimates, based on these propections, came out before the report itself! In the past, these population projections have been revised from time to time as census data became available. Considering how demographic elements have changed rapidly in the past, it does not seem advisable to revise population projections too frequently on the theory that "Now, we know all the facts, and they will remain unchanged hereafter."

The authors spent much time and energy (and undoubtedly much money too) in developing a computerized model for the actuarial cost estimates. In doing so, they adopted a number of shortcuts and approximations that raise questions as to the value of their results. One of these was to make the estimates on a static economic basis, which procedure has been completely outmoded during the last few years because of the adoption of the automatic-adjustment

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Committee on Ways and Means

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As pointed out by the staff, these costs do not reflect any change in termination rates since the 1957-67 level. No projection factors are used to allow for possible continuing increases in the incidence of claim rates by age.

Rehabilitation

In reference to the original legislation for the "disability freeze" the report states, "To stress rehabilitation in the disability program Congress specified that wherever possible the State vocational rehabilitation agency should be the contracting agency to make disability determinations." The same intent was reaffirmed in the 1956 amendments providing cash benefits. Moreover benefits may be withheld or reduced if the beneficiary refuses rehabilitation service without good cause.

Some provisions of the Act intended to encourage rehabilitation include "A trial work period for the worker to try new skills, elimination of the waiting period for recurring disability to encourage the worker to return to short-term employment, and elimination of the waiting period for former childhood disability beneficiaries who again become disabled." In the report of the Senate Finance Committee relating to the 1965 Act it is stated "that only about 3,000 disability beneficiaries were rehabilitated in any previous year mainly because of the lack of State funds to match the available Federal funds." On the principle that money spent on rehabilitation would actually reduce expenditures from the disability trust fund, provision was made for financing rehabilitation services from this source in an amount up to 1 percent of the disability benefits paid in the previous year. This limit was increased to 1.25 percent in 1973 and to 1.5 percent for 1974 and subsequent years.

In the legislation for the establishment of the new Supplemental Security Income (SSI) program, discussed in the next section, the Secretary was authorized to pay from general revenues the full cost of vocational rehabilitation for SSI recipients who qualify by reason of a disability.

The criteria for determining whether trust fund money rather than regular vocational rehabilitation appropriations will be used to finance rehabilitation of DI beneficiaries are, briefly restated, as follows:

(1) The disability is not so "progressive as to outrun the effect of vocational rehabilitation services, or to preclude restoration *** to productive activity."

(2) The disabling effect may otherwise be expected to "remain at a level of severity which would result in the continuing payment of disability benefits."

(3) "There is a reasonable expectation [of] restoration *** to productive activity."

(4) A net saving to the trust fund may reasonably be predicted.

Statistics by states, presented in the report, indicate a wide range in the number of cases successfully rehabilitated in relation to the disability beneficiary cases closed. Averaging 24.6 percent for the nation they ranged from 12.6 percent in California to 55.8 percent in Delaware. (As a yearly rate per million of population the respective numbers are approximately 79, 51, and 109).

Among demographic factors influencing the success of rehabilitation efforts the report mentions the economic status prior to disability.

"The level of economic status prior to disability is indicated by differences in the Primary Insurance Benefit Amount (PIA). Higher earners had a substantially greater proportion who left the benefit rolls after services than lower earners. Over 50 percent of those with a PIA of $200 or more left the rolls for recovery compared to about 30 percent of those with a PIA under $100. The differences in health indicated by death after closure was not very different at all by income group based on PIA . It may be likely that persons with higher earnings before disability returned to better employment situations after services than lower earners."

Among its conclusions the report notes "Of all the 28,000 disabled worker rehabilitants, the accumulated savings (to the trust fund) through June 1973 was

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provisions and the recommendations of the Advisory Council on Social Security in 1971.

I strongly believe that computers have their place in making long, simple, and routine calculations, such as running the year-by-year projection of the trust funds or making approximate estimates for varying economic conditions which are built on top of a detailed individually-computed basic estimate. However, I do not believe that such a model is desirable for all computations involved in the actuarial cost estimates. It is much better to develop individually — and to view with the eye—the complex elements involved in the cost estimates. Too often, people are enamored by EDP and toss in all sorts of inputs without any recognition being possible as to whether the resulting output will be correct, or even reasonable.

Another important recommendation of the authors is that the trust funds should not be invested in so-called "flower bonds", of which the funds hold more than $2 billion. Flower bonds can be redeemed at par for payment of estate taxes, and thus they sell at a somewhat lower market rate of interest than other government securities. The authors are quite correct on this point, but they did not do a very good literature search, because this same matter was pointed out by the 1971 Advisory Council, although nothing has been done about it.

The authors quote, with approval, the figure of $1.9 trillion as the unfunded accrued liability of the OASDI program as of mid-1972 as computed on a *closed-group* basis, and also the figure of $2.1 trillion a year later. As a minor point, they incorrectly state that this applies only to the OASI portion of the system. They do not recognize — as I believe all actuaries do — the artificiality of this actuarially-computed figure, as a result of its ignoring the fact that the program is compulsory, and accordingly there will always be new entrants.

Further, the authors assert that the difference between the two figures fo the accrued liability, $253 billion, is the normal cost for the year. A large part of this increase resulted from the liberalizations in the October 1972 amend-

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COMPETITION No. 3

We have noted that New York has adopted the Beaver as its official animal; the official insect of New Jersey is not its legendary mosquito but the bee. The Society and other professional bodies are seriously deficient in not having an official bird, animal, insect or flower. Some examples of the general idea are:

Las Vegas — Pigeon

Fire Island — Pansy

New York — Cockroach

Readers are invited to submit up to four suggestions for official symbols in any or all categories for the Society, the AMA, the AICPA, a Bar Association, veterinarians, chiropodists, what have you. There will be an appropriate prize for the winner in each category. Example, *Common Weeds of the United States.*

* * * *

Rules

1. All verse must be original (and printable).
2. The Editor and Competition Editor are *Ex Officio* not eligible.
3. Only one copy please, to be sent to
   Competition Editor
   The Actuary
   Mail Drop 13-2
   1740 Broadway
   New York, New York 10019
4. Entries must be mailed within two weeks after your copy of *The Actuary* arrives (air mail from overseas).
5. Competition Editor's decision is not subject to appeal.

Rule four has been changed to the honor system. The reason for this is twofold: (1) The probability distribution of your receiving *The Actuary* within 30 days after printing is unknown, and (2) We wish to encourage entries from overseas readers. We have one entry to Competition No. 1 from the Phillipines which we hope to print when the Editor provides an odd inch of space.

* * * *

Results of Competition No. 2

Entries were a little on the thin side (in quantity only), owing no doubt to the Society's mailing arrangements, which save us money but confound scheduling.

Not the only one to express his frustration, but the most poetic, was Larry R. Sluder, who wrote:

How the — ∞
Can a meager fool like me
Enter, anyway but late,
A contest ending Feb. 28
When the mail comes March 3?

We are awarding the prize, *Mathematical Magpie,* to Mr. Sluder, who took pains to see that his entries were real people and Society members, very much in keeping with the spirit of the competition:

Winner

Witt and Wisdom; Actuarial Advice
or
Games, Gamble and Dice; Actuarial Research

A non-entry from Mr. Sluder: Piano, Drumm and Horn; Musical Mortality.

Runner Up

We also especially liked Mr. Maltby's, perhaps because it conforms to a prejudice of our own:

With respect to Contest Two,
here's a goodie just for you.
There's a firm of Auditors I think,
whose actions drive us all to drink;
Hav'y'ever heard a name much slicker,
than good ol' "Grouch and Nitpicker"?

And Honorable Mention to:

Wynott Gopher, Broker. *Wilfred A. Kraegel*

Don Rickles, Actuarial Insultant. *Steven Klubock*

Stayn D. Black, Inc., Management Consultants.

Philip Ur, Soc., Sumerian Savings Assn. *Donald J. vanKeuren*

Makem and Brakem, Stock Analysts. *Jerrold Scher*

Mu & Delta, "Forces in the Field". *Steve White*

Oberstatt, Ehrnings & Schurplis, GAAP Statement Specialists. *J. A. Oates*

Select and Ulti Mate, Marriage Brokers. *John W. Grantier*

$e_x + 1$, Greater Expectation Life Company — Σ Merrily Submitted. *Julian L. Plant*

R. A. Dix, Life Tables. *Anon*

Trito, Makeham and Stay, Persistency Tables. *Joseph A. Pagano*

C.E.

PSRO's AND THE LIKE

Health Services Information Systems in the United States Today By: Jane H. Murnaghan, B.A., New England Journal of Medicine, 290: 603-610 (March 14), 1974.

by L. J. Rupp

This article describes and, more importantly, identifies information systems which are either in existence or planned on the national, state, and local levels. It describes the data available on the national level from the National Center for Health Statistics, the Office of Research and Statistics of the Social Security Administration, the AMA, the AHA, etc. It also describes a number of state and local information systems and addresses itself to information systems for inpatient care, ambulatory care, and the needs and likely sources of data for PSRO's.

It provides a quick reference table for abbreviations used in health services information systems with a very brief description thereof and a bibliography with a wealth of references. It should be considered as a valuable tool for the actuary interested in health care information.

Reprints of the article may be obtained on request from the author, Mrs. Murnaghan. Department of Medical Care and Hospitals. Johns Hopkins University, School of Hygiene and Public Health, 615 *N. Wolfe Street, Baltimore, Md.,* 21205. □

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ments, such as increasing the widow's benefits payable for claim at age 65 or after from 82½% of the primary insurance amount to 100% thereof.

In summary, it is certainly amazing that economists should have the temerity to venture so deeply into the actuarial field without any hesitation or any qualification of their results. It is almost as amazing that the Federal Government should commission economists to make an actuarial study! □

Erratum

In the article on the Veteran's Insurance Act of 1974 in the March issue, the requirement for full time coverage for Ready Reservists should read, ". . . twelve periods of *inactive* duty training . . ."