SOCIETY OF ACTUARIES

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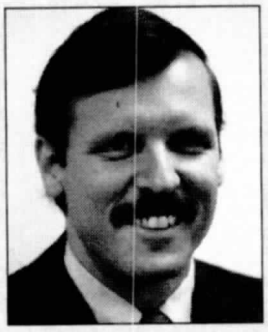
FACTUARIES

This is another in a series of profiles of members of the Society's Board of Governors.



Name: Rick Kischuk.

Birthplace: Detroit.

Current hometown: Noblesville, Indiana.

Current employer: Crown Point Management Consultants, Inc., of which I am principal and cofounder.

Children: Robert, 11; Kirsten, 9; Erin, 1.

My first job was: Self-employed – landscaping service.

I'd give anything to meet: Hulk Hogan and Leonardo da Vinci.

The number of exams I flunked: One, the old part 3.

If I could do it over I'd: Have taken part 3 a little more seriously.

My proudest actuarial moment was: Writing a discussion of "Introduction to the Dynamics of Pension Funding," by Bowers, Hickman and Nesbitt, *TSA* XXVII, and its acknowledgement by the authors in the sequel, "Dynamics of Pension Funding: Contribution Theory," *TSA* XXXI.

The book I recommend most often: *The Nirvana Blues* by John Nichols.

The last movie I saw: *Dangerous Liaisons.*

My favorite kind of music: Bluegrass, blues and jazz.

Nobody would believe it if they saw me: When I'm camping in the Rockies.

The TV show I stay home to watch: "Murphy's Law." (If I'm not home, I tape it.)

My current fantasy is: To understand Internal Revenue Code Section 89.

The silliest thing I've ever done is: Taking a lot of things too seriously.

If I could change one thing about myself, I'd: Stop taking a lot of things too seriously.

The best time of my life: Is now.

Replacement ratios: Narrowing the band of uncertainty

by Fred Munzenmaier

Replacement ratios measure the retirement income needed to preserve a family unit's preretirement standard of living. Mathematically, replacement ratios are defined as follows:

	Gross salary
minus	Preretirement taxes
minus	Preretirement savings
plus or minus	Changes in expenditures
plus	Postretirement taxes
equals	Replacement income needed

$$\text{replacement ratio} = \frac{\text{Replacement income needed}}{\text{Gross salary}}$$

These ratios are important to employers who design retirement programs to meet the financial needs of their employees.

Replacement ratios first gained wide prominence in the United States when the *Interim Report of the President's Commission on Pension Policy* was published in 1980. The replacement ratios from that report were widely used as a guideline in the design of retirement programs.

The ratios in the President's Commission report are no longer suitable because of recent fundamental changes such as the lowering of individual income tax rates under the Tax Reform Act of 1986 and the taxation of Social Security benefits for high-income retirees begun in 1984. In addition, the savings and expenditure pattern changes used to develop the ratios needed refinement. This problem is also apparent in other studies.

Our attempts to identify the best study of replacement ratios resulted in the conclusion that there seemed to be a band of uncertainty, so to speak, surrounding replacement ratios.

We engaged the researchers from the Department of Risk Management and Insurance at Georgia State University to work with us to narrow this band of uncertainty as much as possible. We completed our work last year,

Continued on page 11 column 1

Replacement ratios cont'd

and Georgia State has published a formal report of the results.

Data base and research

The cornerstone of the research is the data available from the Consumer Expenditure Survey (CES), which is sponsored by the Bureau of Labor Statistics (BLS), a division of the U.S. Department of Labor. The Bureau of the Census, under contract to the BLS, gathers the statistics and prepares the CES. The CES, begun in 1980, is a major enhancement of a long-established BLS program that has gathered data on the spending patterns and living costs of individuals. It has been the basis for periodic revisions to the Consumer Price Index.

The data used are available to the public in the form of a 2.4 million record magnetic tape. We purchased the tape and extracted the information needed for our purposes. We then had income and expenditure information on 2,544 working consumer units and 1,217 consumer units classified as retired in the data.

The distinction between the working and retired classifications is important because it appears that previous studies have not been able to make this distinction. Rather, previous studies have been able to make comparisons only by the ages of the individuals in the data. For example, one study designated all individuals from 45 to 54 as the working group and all individuals 65 and over as the retired group. It was not possible to distinguish between who was actually working or retired in the data.

The CES includes a code distinguishing between retired and working. We selected individuals between the ages of 50 and 64 coded as working to represent the working population. Individuals ages 62 through 74 coded as retired were selected as the retired group.

Using this data and incorporating the provisions of the current individual income tax law, including the tax on the Social Security benefits of high-income retirees, we were able to generate new replacement ratios, which were startlingly different from those of previous studies. Much of the difference was due to the new tax law, but we are now able, better than ever, to locate the expenditure pattern and individual savings pieces of the puzzle.

Study results

The results are reported in Table I. As may be seen, the replacement ratios start out at 82% at the lowest income level and dip to 66% at the $60,000 income level and then start back up at 68% for the $80,000 income level.

The space allotted for this article does not allow a discussion of all the variations that can be allowed for in generating replacement ratios for a particular employer. For example, the results can be broken down into the four regions of the country for which the CES is reported, and the particular state income tax provisions of the employer's place of business can be substituted for the overall state income tax results. Similarly, the employee costs of postretirement medical insurance can be substituted for the medical insurance costs from the data. Of course, expenditure changes can be disregarded altogether, resulting in replacement ratios that reflect only savings and tax differences between the working and retired classifications.

I would, however, like to report some additional savings information.

The information shown in Table I reflects the savings of individuals who are in the age range of 50 to 64.

To help an employer judge how much an employee might be expected to save (some additional judgment must be made as to how much of the savings is for retirement needs), we went back into the CES and developed the savings information on age groups 30 to 39 and 40 to 49. Here are the percentages of disposable income based on the data:

Income Level	Age Range		
	50-64	40-49	30-39
$15,000	3.4%	2.5%	5.5%
20,000	6.2	4.9	5.3
25,000	8.0	6.1	5.2
31,250	9.5	6.8	5.1
40,000	10.5	7.5	5.0
50,000	11.7	8.1	5.0
60,000	12.3	8.4	5.0
80,000	13.0	8.8	4.9

It is important for the user of this information to know the definition of savings adopted for this study. The definition may vary from study to study. For example, in its research, BLS defines it as the net change in assets and liabilities over a year's time. The definition reflected in this study follows:

1. Net acquisition of stocks, bonds, and mutual funds.

Continued on page 12 column 1

TABLE I

REPLACEMENT RATIOS

(1)	(2)	(3)	(4)	(5)	(6)	
Gross Pre-Retirement Earnings	Pre-Retirement Taxes: Social Security	Pre-Retirement Taxes: Federal Income	Pre-Retirement Taxes: State	Disposable Income (1)−(2)−(3)−(4)	Pre-Retirement Savings: %	Pre-Retirement Savings: Amount
$15,000	$1,127	$ 915	$ 254	$12,704	3.4%	$ 428
$20,000	$1,502	$ 1,665	$ 358	$16,475	6.2%	$1,017
$25,000	$1,878	$ 2,415	$ 476	$20,231	8.0%	$1,622
$31,250	$2,347	$ 3,353	$ 610	$24,940	9.5%	$2,360
$40,000	$3,004	$ 4,684	$ 796	$31,516	10.5%	$3,299
$50,000	$3,380	$ 7,066	$1,030	$38,524	11.7%	$4,498
$60,000	$3,380	$ 9,435	$1,258	$45,927	12.3%	$5,652
$80,000	$3,380	$14,139	$1,646	$60,835	13.0%	$7,909

(1)	(7)	(8)	(9)	(10)	(11)	(12)
Gross Pre-Retirement Earnings	Net Change In Expenditures	Net Pre-Retirement Income (5)−(6)−(7)	Post-Retirement Taxes: Federal Income	Post-Retirement Taxes: State	Income Required In Retirement Years: Dollars	Income Required In Retirement Years: %
$15,000	($1)	$12,275	$ 0	$ 0	$12,275	82%
$20,000	($371)	$15,087	$ 0	$ 0	$15,087	75%
$25,000	($738)	$17,871	$ 0	$ 0	$17,871	71%
$31,250	($1,200)	$21,380	$ 0	$ 0	$21,380	68%
$40,000	($1,856)	$26,361	$ 586	$108	$27,055	68%
$50,000	($2,533)	$31,493	$1,472	$223	$33,188	66%
$60,000	($3,260)	$37,015	$2,424	$281	$39,720	66%
$80,000	($4,733)	$48,193	$6,007	$262	$54,462	68%

Replacement ratios cont'd

2. Net investment in farm or business.
3. Net changes in saving and checking accounts.
4. Net changes in money owed by the household.
5. Net changes in U.S. Savings Bond holdings.
6. Amount received on surrender of life insurance policies.
7. Contributions to retirement programs.

Conclusion

The information we were able to gather from the CES provides a great deal of help in the design of employer retirement and savings programs. We hope to continue to update the results as future CES reports are published.

Fred Munzenmaier is Vice President, Alexander & Alexander Consulting Group, Inc.

Symposium on the future of healthcare

The SOA and the American Hospital Association joined forces for the first time to conduct the 1989 Healthcare Symposium in Chicago April 5-6, held in conjunction with the SOA Spring Meeting.

Much of the symposium focused on "Looking Ahead at America's Healthcare," which was addressed by keynote speaker Roy Amara, President and Senior Research Fellow for the Institute for the Future. Amara predicted that escalating healthcare costs will cause immense changes in the U.S. healthcare system in the next 10 to 20 years.

He said patients will lose their freedom to choose their physicians as the percentage of individuals in HMOs and other managed-care systems increases. In addition, Amara said physicians will lose much of their clinical and economic autonomy as they see their incomes diminish. Employers, who currently pay more than 40% of the nation's healthcare bills, will demand a bigger say in how the money is spent.

Other topics addressed at the symposium included "Forecasting Health Insurance Premiums," "Are Hospitals Making a Profit?," and "Chaos in Healthcare Costs and Who Is Going to Pay?"

Attendance was high at the SOA Spring Meeting with 778 participants.

New Society research program under way

by Mark G. Doherty

The Society research program is gaining momentum. Seven projects have been approved:

- Actuarial Aspects of Continuing Care Retirement Communities (CCRC)
- Adverse Selection Models
- Bond Data Base
- Correlation of Quality and Default by Category or Insurance Company Investment
- Health Data Base
- Interest Sensitive Cash Flow and Analysis
- U.S. Economics Statistics for Pension Actuaries.

The Project Oversight Groups (POGs) for these activities have been appointed. The POGs, which provide direction and guidance to the researchers, are finalizing descriptions of what they wish to accomplish with these efforts. The POGs also are seeking potential researchers interested in the specific topics to begin the work. These research projects have been funded by the Society in amounts of $5,000 to $25,000. Some Sections have offered additional financial support for those projects of particular interest to their members. An insert offering more information on the CCRC project is included with this issue. Anyone interested in and having expertise in any other of the research projects should complete the "Actuarial Research Interest" questionnaire also included in this mailing.

Draft chapters of an extensive monograph on Derivative Securities and the Management of Financial Risk are undergoing review. The work by Phelim Boyle, FCIA, of the University of Waterloo is progressing quite well. The purpose of the research is to communicate concepts and models from modern financial economics and investment theory that are useful in actuarial science. As such, the monograph includes chapters on:

- Interest Rates and Yield Curves
- Duration
- Options, Forwards, and Futures
- Arbitrage Relationships
- Models of Uncertainty
- Option Pricing Models
- Stochastic Interest Rate Models
- Examples and Applications.

The intent is to have a book published by the end of 1989.

The other side of the Society's research effort and, perhaps, the mainstay of our work is the experience studies. Great emphasis is being placed on the timeliness of the data and the addition of new data contributors. Studies in process or nearing completion at this time include:

- 1985-86 Individual Life
- 1978-83 Large Amounts
- 1981-86 Comparative Mortality
- 1985-86 Aviation Statistics
- 1984-85 Loss of Time
- 1976-84 Individual Annuity
- 1985-87 Group Annuity.

While we have a great deal of work ahead to make our *Reports* more timely, we are allocating much of our resources to addressing the timeliness issue as well as improving our experience studies in general.

Mark G. Doherty is SOA Director of Research.

Reaching the half-century mark

Sometime during 1989, 14 actuaries will celebrate their 50th year as either Fellows or Associates. FSAs who attained Fellowship in 1939 are:

B. Franklin Blair
Lawrence C. Bonnycastle
Stanley E. Brock
Donald D. Cody
James F. Coleman
Leo J. Danzinger
Archibald H. McAulay
William A. Poissant
Philip A. Rabenau
Edward H. Wells
Bert A. Winter

Associates who will reach the half-century mark include:

Donald C. Baillie
George R. Kensit
Alfred W. Perkins