



PENSION SECTION NEWS

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Chairperson's Corner

by Carolyn E. Zimmerman

First of all, let me congratulate the newest members of the Pension Section Council—Bruce Cadenhead, Adrien LaBombarde, and Sylvia Pozezanac (our new Canadian representative). I also want to give a sincere thanks to the departing members of the Council, Amy Viener and Michel St. Germain. And while I'm at it—congratulations to our new officers: Amy Timmons, Chairperson; Colin England, Vice-Chairperson; Sylvia Pozezanac, Secretary; and Lindsay Malkewicz, Treasurer.

It looks like the new Council is already off to a good start, beginning to plan the program for the 1999 Spring Meeting in Seattle, June 16 through 18. Based on the feedback we received from the Maui meeting this past spring, we have decided to continue the concept of a "seminar-within-a-meeting," with a complete "track" of sessions on plan design. Part of this process is finding qualified speakers for each session

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Capital Market Assumptions— The Past Performance Future Returns Debate

by Jane Arnold and
Jennifer Donnelly

world—the markets began to show their stuff.

Explicit Investment Assumptions

With the requirement that actuaries use explicit investment assumptions, more attention than ever must be paid to a pension plan's asset allocation strategy. Questions still remain, however. Given the plan's mix of asset classes, what is the appropriate investment assumption to use? What is the best technique to derive appropriate assumptions, and what is a defensible conclusion?

At the time this article was being submitted, these questions seem even more critical. The worldwide volatility in August and September has gripped everyone's attention. Just when fiduciaries and other investors were getting complacent—increasing equity allocations without a care in the

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How do you come up with reasonable assumptions when the markets are in turmoil? A look at history suggests that volatility is not foreign to investments (no pun intended). Because actuaries usually provide assumptions in a 30 to 40 year context, the current volatility should not have a major impact on deriving assumptions except as further history from which to learn.

Generally, in our consulting, we forecast using assumptions for any ten years. In most of our work, we do not try to predict the immediate future based on current market behavior. Rather, we put current market behavior into the context of the various historical periods we use for our work.

Our advice is aimed chiefly at fiduciaries. Yet, our clients' actuaries have access to our work and frequently find it useful in coming up with their own assumptions.

To help our clients arrive at appropriate investment policies and strategies, we use various computer models. These models relate asset needs to cash-flow requirements, calculate optimal portfolios, determine probable rates of return for various asset mixes, and help provide our clients with other quantitative information relevant to determining their asset allocation strategies.

In order to provide sound advice, we need to offer quantitative analyses, combined with judgment and expertise. If we do our job right, fiduciaries can create an investment strategy tailored to their needs and those of the monies for which they take responsibility.

The First Step

Before the first quantitative step can be taken, however, capital market assumptions must be developed. These assumptions include:

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The Critic's Corner

by Joel I. Rich

Welcome to the second
installment of this new
column reviewing tapes from
various actuarial meetings.

This installment is a review of several
sessions from the SOA 1998 Spring
Meetings in Maui, Hawaii.

Session 5PD: Designing a Stochastic Evaluation/Forecast System

The discussion concerning modeling
assets and liabilities reinforced the
“noncommodity” nature of these projects.
Issues included:

- The base period for setting your
baseline assumptions (for example,
stock/bond returns)
- Correlations between the various
elements including economic and
noneconomic functions (for example,
inflation and turnover)
- The volatility of long-term
projections (see my earlier note with
regard to value at risk techniques
which were designed to look at
variations over hours, days and
weeks).

The discussion reinforced to me the
fact that the major value of these projects
is the discussions with the client about the
assumptions, interrelationships time
horizons, and key client-related measures
rather than the “let’s take a projection
methodology off the shelf, use some
standardized assumptions and see what
happens” approach.

Session 6PD: Retirement Plan Consulting Challenges in the Pacific Rim

A very good review of current pension
issues in Indonesia, China, and Japan.
Those actuaries who have some foreign
exposure (for example, foreign plans
under FAS 87, IRS Section 404A
deductions) will find this a helpful update.

Session 64PD: “On the Way to Medicare”—Progress to Date

A very detailed discussion in the changes
in the prospective payment systems (PPS)
as well as Medicare Part C. While these
changes will have a strong impact on
retiree health valuations and

costs, this detailed discussion is
recommended only for specialists in
retiree health valuations, especially those
setting assumptions for future claims.

Session 66PD: Strategic Asset Allocation for Pension Plans

The first speaker dealt with the more
standard asset-liability modeling. His
organization’s approach was to minimize
the present value of future pension
contributions as well as minimize risk.
They define risk as how bad the results
are in the worst 20% of the cases.
Duration matching was identified as a
way to deal with these issues. Also key
was the lack of symmetry because if you
overfund a pension plan you can’t get the
money back dollar-for-dollar due to
excise taxes and if you underfund, there
are PBGC risk premiums. The more
credible the liabilities you have in the
model (for example, retirees only) the
more likely you are to go into bonds
under this model, whereas if you are
severely underfunded, you should
probably go into higher risk equities
because you have to make contributions
no matter what.

There was no discussion of
organizations that are less concerned with
the present value of future contributions
than they are with accounting results or
where the lack of symmetry and short-
term risk factors are not considered a
problem because of a desire for long-term
cost reduction rather than concern over
short-term fluctuations.

The second speaker spoke about
applying a concept being used by financial
institutions—net value-at-risk—to the
pension arena. Net value-at-risk is a way
that organizations with financial liabilities
and assets look at the maximum expected
loss for some holding period at a certain
level of confidence. You can look at
these in a number of ways, including
Monte Carlo simulations, historical
returns, co-variances, and so on. The
main challenge is that these measures
have been designed to look at the impact
of yield changes over short time horizons.
The application to longer term pension
plans seems to be in its infancy.

*Joel I. Rich, FSA, is Senior Vice
President at The Segal Company in New
York, New York.*

HI Trust Fund:**Actuarial Methodology and Principal Assumptions**

Editor's Note: *The following excerpt is taken from Section II.F, "Actuarial Methodology and Principal Assumptions," in the 1998 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund. Copies of the HI 1998 Annual Report are available from Sol Mussey (410-786-6386).*

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This section describes the basic methodology and assumptions used in the estimates for the HI program under the intermediate assumptions. In addition, sensitivity testing of program costs under two alternative sets of assumptions is presented.

Assumptions

Both the economic and demographic assumptions underlying the projections shown in this report are consistent with those in the 1998 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance (OASDI) Trust Funds. These assumptions are described in more detail in that report.

Program Cost Projection Methodology

The principal steps involved in projecting the future costs of the HI program are (1) establishing the present cost of services provided to beneficiaries, by type of service, to serve as a projection base; (2) projecting increases in payments for inpatient hospital services under the program; (3) projecting increases in payments for skilled nursing, home health, and hospice services covered under the program; (4) projecting increases in payments to managed-care plans; and (5) projecting increases in administrative costs. The major emphasis is directed toward expenditures for fee-for-service inpatient hospital services which account for approximately 67% of total benefits.

Projection Base

In order to establish a suitable base from which to project the future costs of the

program, the incurred payments

for services provided must be reconstructed for the most recent period for which a reliable determination can be made. To do this, payments to providers must be attributed to dates of service, rather than to payment dates. In addition, the nonrecurring effects of any changes in regulations, legislation, or administration of the program and of any items affecting only the timing and flow of payments to providers must be eliminated. As a result, the rates of increase in the incurred cost of the program differ from the increases in cash disbursement shown in Tables II.D1 and II.D2 (not shown).

For those expenses still reimbursed on a reasonable cost basis, the costs for covered services are determined on the basis of provider cost reports. Payments to a provider initially are made on an interim basis; to adjust interim payments to the level of retroactively determined costs, a series of payments or recoveries is effected through the course of cost settlement with the provider. The net amounts paid to date to providers in the form of cost settlements are known; however, the incomplete data available do not permit a precise determination of the exact amounts incurred during a specific period of time. Due to the time required to obtain cost reports from providers, to verify these reports, and to perform audits (where appropriate), final settlements have lagged behind the original costs by as much as several years for some providers. Hence, the final cost of services reimbursed on a reasonable cost basis has not been completely determined for the most recent years of the program, and some degree of uncertainty remains even for earlier years.

Even for inpatient hospital operating payments paid for on the basis of diagnosis-related groups (DRGs), most payments are initially made on an interim basis, and final payments are determined on the basis of bills containing detailed diagnostic information which are later submitted by the hospital.

Additional problems are posed by changes in legislation or regulation, or in administrative or reimbursement policy, which can have a substantial effect on either the amount or incidence of

payment. The extent and timing of the incorporation of such changes into interim payment rates and cost settlement amounts cannot be determined precisely.

The process of allocating the various types of payments made under the program to the proper incurred period—using incomplete data and estimates of the impact of administrative actions—presents difficult problems, the solutions to which can be only approximate. Under the circumstances, the best that can be expected is that the actual incurred cost of the program for a recent period can be estimated within a few percent. This increases the projection error directly, by incorporating any error in estimating the base year into all future years.

Payments for Inpatient Hospital Costs

Beginning with hospital accounting years starting on or after October 1, 1983, the HI program began paying almost all participating hospitals a prospectively determined amount for providing covered services to beneficiaries. With the exception of certain expenses reimbursed on a reasonable cost basis, as defined by law, the payment rate for each admission depends upon the DRG to which the admission belongs.

The law contemplates that the annual increase in the payment rate for each admission will be related to a hospital input price index, which measures the increase in prices for goods and services purchased by hospitals for use in providing care to hospital inpatients. In other literature, the hospital input price index is also called the hospital market basket. For fiscal year 1998, the prospective payment rates have already been determined. The projections contained in this report are based on the assumption that for fiscal years 1999–2002, the prospective payment rates will be increased by the increase in the hospital input price index, less the percentages specified by Public Law 105–33, the Balanced Budget Act of 1997. For the fiscal years 2003 and later, current statute mandates that

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HI Trust Fund

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the annual increase in the payment rate per admission equal the annual increase in the hospital input price index.

Increases in aggregate payments for inpatient hospital care covered under the HI program can be analyzed into five broad categories:

1. Labor factors—the increase in the hospital input price index which is attributable to increases in hospital workers' hourly earnings (including fringe benefits).
2. Nonlabor factors—the increase in the hospital input price index which is attributable to factors other than hospital workers' hourly earnings, such as the cost of energy, food, and supplies.
3. Unit input intensity allowance—the amount added to or subtracted from the input price index (generally as a result of legislation) to yield the prospective payment update factor.
4. Volume of services—the increase in total output of units of service (as measured by hospital admissions covered by the HI program).
5. Other sources—a residual category, reflecting all other factors affecting hospital cost increases (such as intensity increases).

Table II.F1 shows the estimated values of the principal components of the increases for historical periods for which data are available and the projected trends used in the estimates.

**TABLE II.F1
Components of Historical and Projected Increases in HI Inpatient Hospital Payments***

Calendar Year	Labor			Nonlabor			Unit Input Intensity Allowance†	Units of Service			Other Sources	HI Inpatient Hospital Payments
	Average Hourly Earnings	Hospital Hourly Earning Differential	Hospital Hourly Earnings	CPI	Hospital Price Input Intensity	Nonlabor Hospital Prices		Input Price Index	HI Enrollment	Managed Care Shift Effect		
Historical Data:												
1984	6.9%	-1.1	5.7%	3.5%	0.6%	4.1%	5.1%	1.8%	-1.0%	-2.7%	7.3%	11.5%
1985	5.2	-0.6	4.6	3.5	-1.2	2.3	3.6	1.6	-0.8	-6.6	7.9	5.1
1986	4.7	-1.1	3.6	1.6	0.2	1.8	2.9	2.3	-0.6	-4.9	6.1	2.8
1987	4.5	-0.5	4.0	3.6	-0.3	3.3	3.7	1.7	-0.2	-2.9	4.5	4.0
1988	6.3	-1.9	4.8	4.0	1.6	5.7	5.2	2.5	0.1	-2.1	-1.8	1.0
1989	3.2	2.0	5.3	4.8	0.2	5.0	5.2	2.0	0.2	-3.3	6.9	9.8
1990	4.5	1.1	5.5	5.2	-1.9	3.2	4.6	2.1	-0.4	3.4	-1.0	9.0
1991	3.9	0.8	4.7	4.1	-1.2	2.8	4.0	2.2	-0.1	0.9	-0.3	6.2
1992	5.9	-1.9	3.9	2.9	-0.9	2.0	3.2	1.9	-0.4	0.3	7.0	12.0
1993	2.1	1.4	3.5	2.8	-0.6	2.2	3.0	2.1	-0.6	-1.4	2.4	5.2
1994	2.8	0.3	3.1	2.5	-0.5	2.0	2.7	2.6	-0.9	4.6	0.1	8.6
1995	3.5	-0.9	2.6	2.9	-1.1	4.0	3.1	1.4	-2.0	1.4	2.9	6.1
1996	4.4	-1.5	2.8	2.9	-1.5	1.4	2.3	1.7	-2.6	3.4	0.9	5.0
Projections:‡												
2000	3.5	0.0	3.5	2.6	-0.4	2.2	3.0	1.2	-8.6	3.8	1.1	-1.6
2005	4.5	0.0	4.5	3.4	0.0	3.4	4.1	1.5	-0.8	0.6	0.6	6.0
2010	4.5	0.0	4.5	3.5	0.0	3.5	4.2	1.9	0.0	0.1	0.6	6.9
2015	4.5	0.0	4.5	3.5	0.0	3.5	4.2	2.7	0.0	-0.3	0.7	7.5
2020	4.5	0.0	4.5	3.5	0.0	3.5	4.2	2.7	0.0	-0.3	0.8	7.6

*Percent increase in year indicated over previous year, on an incurred basis.
 †Reflects the allowances provided for in the prospective payment update factors.
 ‡Under the intermediate assumptions.
 Note: Historical and projected data reflect the hospital input price index which was recalibrated to a 1987 base year in 1990.

OASDI Trust Fund:

Principal Economic and Demographic Assumptions

Editor's Note: *The following excerpt is taken from Section II.D, "Actuarial Analysis," in the 1998 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds. Copies of the OASDI 1998 Annual Report are available from Cece Enders (410-965-3015).*

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The future income and outgo of the OASDI program depend on many economic and demographic factors, including gross domestic product, labor force, unemployment, average earnings, productivity, inflation, fertility, mortality, net immigration, marriage, divorce, retirement patterns, and disability incidence and termination. The income will depend on how these factors affect the size and composition of the working population and the level and distribution of earnings. Similarly, the outgo will depend on how these factors affect the size and composition of the beneficiary population and the general level of benefits.

Because precise prediction of these various factors is impossible, estimates are shown in this report on the basis of three sets of assumptions, designated as intermediate (alternative II), low cost (alternative I), and high cost (alternative

III). The intermediate set, alternative II, represents the Board's best estimate of the future course of the population and the economy. In terms of the net effect on the status of the OASDI program, the low cost alternative I is the most optimistic, and the high cost alternative III is the most pessimistic of the plausible economic and demographic conditions.

Although these sets of economic and demographic assumptions have been developed using the best available information, the resulting estimates should be interpreted with care. The resulting estimates are not intended to be precise predictions of the future status of the OASDI program, but rather, they are intended to be indicators of the trend and potential range of future income and outgo, under a variety of plausible economic and demographic conditions.

The economic and demographic assumptions used in this report are reexamined each year, in light of recent experience and new information about future trends, and are revised if warranted. This year, the need for such a review is illustrated by such factors as changes in the calculation of the CPI by the Bureau of Labor Statistics, and the potential long-term implications of our recent positive economic growth. As usual, this reexamination should be completed in ample time to make any needed adjustments in the next report.

Economic Assumptions

The principal economic assumptions for the three alternatives are summarized in Table II.D1 (see page 6).

Alternatives I, II, and III represent a range of generally consistent sets of economic assumptions which have been designed to encompass most of the possibilities that might be encountered. The intermediate set of assumptions (alternative II) represents the Trustees' consensus expectation of moderate economic growth through the projection period. The low cost assumptions (alternative I) represent a more optimistic outlook, with relatively stronger economic growth. The high cost assumptions (alternative III) represent a relatively pessimistic forecast, with weaker economic growth and two recessions in the short-range period. Economic cycles are not included in assumptions beyond the first five to ten years of the projection period because they have little effect on the long-range estimates of financial status.

Demographic Assumptions

The principal demographic assumptions for the three alternatives are shown in Table II.D2 (see page 7).

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OASDI Trust Fund
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TABLE II.D1
Selected Economic Assumptions by Alternative,
Calendar Years 1960–2075

Calendar Year	Average Annual Percentage (Change In-)		Real Wage Differential† (Percent)	Calendar Year	Average Annual Percentage (Change In-)		Real Wage Differential† (Percent)
	Average Annual Wage in Covered Employment	Consumer Price Index*			Average Annual Wage in Covered Employment	Consumer Price Index*	
Historical Data:				Low Cost:			
1960–64	3.4	1.2	2.2	1998	3.5	1.3	2.2
1965–69	6.1	3.9	2.2	1999	3.4	2.1	1.3
1970–74	6.6	6.2	0.4	2000	3.7	2.3	1.4
1975	6.7	9.1	-2.4	2001	3.6	2.4	1.2
1976	8.5	5.7	2.8	2002	3.8	2.5	1.3
				2003	3.9	2.5	1.5
1977	6.8	6.5	0.3	2004	3.9	2.5	1.4
1978	8.9	7.7	1.2	2005	3.8	2.5	1.3
1979	10.1	11.4	-1.3	2006	3.8	2.5	1.3
1980	9.4	13.4	-4.0	2007	4.0	2.5	1.5
1981	9.7	10.3	-0.5				
				2010	4.1	2.5	1.6
1982	6.4	6.0	0.4	2020	3.9	2.5	1.4
1983	5.0	3.0	2.0	2030	3.9	2.5	1.4
1984	7.3	3.5	3.8	2040	3.9	2.5	1.4
1985	4.7	3.5	1.2	2050	3.9	2.5	1.4
1986	4.6	1.6	3.0	2060	3.9	2.5	1.4
				2070	3.9	2.5	1.4
1987	4.6	3.6	1.0	2075	3.9	2.5	1.4
1988	5.3	4.0	1.3				
1989	3.9	4.8	-0.9				
1990	5.1	5.2	-0.1				
1991	3.0	4.1	-1.1				
1992	4.9	2.9	2.0				
1993	1.9‡	2.8	-0.9				
1994	3.5‡	2.5	1.0				
1995	4.0‡	2.9	1.1				
1996	4.3‡	2.9	1.4				
1997	4.5‡	2.3	2.2				
Intermediate:				High Cost:			
1998	3.3	1.4	1.9	1998	3.5	2.0	1.5
1999	3.4	2.4	1.0	1999	3.0	3.8	-0.8
2000	3.8	2.6	1.3	2000	6.9	5.4	1.5
2001	3.6	2.7	0.9	2001	6.1	6.0	0.2
2002	3.7	2.8	0.9	2002	2.6	4.6	-2.0
2003	4.1	3.1	1.0	2003	6.5	4.5	2.0
2004	4.4	3.2	1.2	2004	5.4	4.5	0.9
2005	4.4	3.4	1.0	2005	4.9	4.5	0.4
2006	4.4	3.5	0.9	2006	4.8	4.5	0.3
2007	4.4	3.5	0.9	2007	5.0	4.5	0.5
2010	4.5	3.5	1.0	2010	5.0	4.5	0.5
2020	4.4	3.5	0.9	2020	4.9	4.5	0.4
2030	4.4	3.5	0.9	2030	4.9	4.5	0.4
2040	4.4	3.5	0.9	2040	4.9	4.5	0.4
2050	4.4	3.5	0.9	2050	4.9	4.5	0.4
2060	4.4	3.5	0.9	2060	4.9	4.5	0.4
2070	4.4	3.5	0.9	2070	4.9	4.5	0.4
2075	4.4	3.5	0.9	2075	4.9	4.5	0.4

*The Consumer Price Index is the annual average value of the calendar year of the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

†The real-wage differential is the difference between the percentage increases, before rounding, in (1) the average annual wage in covered employment, and (2) the average annual Consumer Price Index.

‡Preliminary. Wages in covered employment are considered preliminary for several years primarily due to uncertainty associated with estimates of amounts above the benefit and contribution base.

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OASDI Trust Fund
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TABLE II.D2
Selected Demographic Assumptions by Alternative,
Calendar Years 1940–2075

Calendar Year	Life Expectancy* (At Age 65)		Calendar Year	Life Expectancy* (At Age 65)	
	Male	Female		Male	Female
Historical Data:			Low Cost:		
1940	11.9	13.4	1998	15.6	19.1
1945	12.6	14.4	2000	15.7	19.1
1950	12.8	15.1	2005	15.7	18.9
1955	13.1	15.6	2010	15.7	18.8
1960	12.9	15.9	2015	15.7	18.8
1965	12.9	16.3	2020	15.8	18.9
1970	13.1	17.1	2025	15.9	19.0
1975	13.7	18.0	2030	16.0	19.0
1976	13.7	18.1	2035	16.1	19.1
1977	13.9	18.3	2040	16.1	19.2
1978	13.9	18.3	2045	16.2	19.3
1979	14.2	18.6	2050	16.3	19.4
1980	14.0	18.4	2055	16.3	19.4
1981	14.2	18.6	2060	16.4	19.5
1982	14.5	18.8	2065	16.5	19.6
1983	14.3	18.6	2070	16.6	19.7
1984	14.4	18.7	2075	16.6	19.7
1985	14.4	18.6			
1986	14.5	18.7			
1987	14.6	18.7			
1988	14.6	18.7			
1989	14.8	18.9			
1990	15.0	19.0			
1991	15.1	19.1			
1992	15.2	19.2			
1993	15.1	19.0			
1994	15.3	19.0			
1995	15.3	19.0			
1996†	15.8	19.1			
1997†	15.6	19.2			
Intermediate:			High Cost:		
1998	15.7	19.2	1998	15.7	19.3
2000	15.8	19.3	2000	16.0	19.5
2005	16.1	19.4	2005	16.5	19.9
2010	16.3	19.5	2010	16.8	20.2
2015	16.5	19.7	2015	17.2	20.6
2020	16.7	19.9	2020	17.6	21.0
2025	16.9	20.1	2025	18.0	21.4
2030	17.1	20.4	2030	18.4	21.8
2035	17.3	20.6	2035	18.8	22.2
2040	17.5	20.8	2040	19.2	22.7
2045	17.7	21.0	2045	19.6	23.1
2050	17.9	21.2	2050	20.0	23.5
2055	18.1	21.4	2055	20.4	23.8
2060	18.3	21.6	2060	20.7	24.2
2065	18.5	21.8	2065	21.1	24.6
2070	18.7	22.0	2070	21.5	25.0
2075	18.8	22.2	2075	21.9	25.4

*The life expectancy for any year is the average number of years of life remaining for a person if that person were to experience the death rates by age observed in, or assumed for, the selected year.

†Preliminary or estimated.

SMI Trust Fund:

Estimates under Alternative II Assumption for Aged and Disabled (Excluding End-Stage Renal Disease) Enrollees

Editor's Note: The following excerpt is taken from Section II.F, "Actuarial Methodology and Principal Assumptions for Cost Estimates for the Supplementary Medical Insurance Program," in the 1998 Annual Report of the Board of Trustees of the Federal Supplementary Medical Insurance Trust Fund. Copies of the SMI 1998 Annual Report are available from Sol Mussey (410- 786-6386).

...

Estimates under the intermediate assumptions for aged and disabled enrollees—excluding disabled persons with end-stage renal disease (ESRD)—are prepared by calculating allowed charges incurred per enrollee in a recent year (the 12-month period ending June 30, 1996, for this report) for each category of enrollees and projecting these charges through the estimating period. The per enrollee charges are then converted to reimbursement amounts by subtracting the per enrollee values of the deductible and coinsurance. Aggregate reimbursement amounts are calculated by multiplying the per enrollee reimbursement amounts by the projected enrollment. In order to estimate cash disbursements, an allowance is made for the delay between receipt of service and payment therefor.

Disabled persons with ESRD have per enrollee costs which are substantially higher and quite different in nature from those of most other disabled persons. Hence, program costs for them have been excluded from the analysis in this section and are included in a later section.

Establishing a Projection Base Physician Services

Reimbursement amounts for physician services (and smaller amounts for other services such as laboratory tests, DME and supplies) are paid through organizations acting for HCFA, referred to as "carriers." The carriers determine whether billed services are covered under the program and determine the allowed charges for the services. A record of the

amount reimbursed after reduction for coinsurance and the deductible is transmitted to HCFA.

A sample of records is drawn for 0.1 percent of aged beneficiaries and tabulated by date of service, thus providing a database which is constructed on an incurred basis. Certain minor adjustments are made to the tabulated sample data to correct for biases and random fluctuations inherent in the sampling process. Having the data on an incurred basis is necessary to meet the

statutory requirement that the program be financed on this basis.

As a check on the validity of the projection base, incurred reimbursement

continued on page 9, column 1

TABLE II.F4
Components of Increases in Total Allowed Charges per Enrollee for Physician Services: Intermediate Estimates (in percent)

Year Ending June 30	Increase Due to Price Changes		Residual Factors	Total Increase in Allowed Charges per Enrollee*
	Increase in Physician Fee Component of CPI	Net Increase in Allowed Fees		
Aged:				
1997	3.2%	0.5%	0.5%	1.0%
1998	2.7	1.0	2.1	3.1
1999	3.5	1.3	0.0	1.3
2000	3.9	-0.9	-1.4	-2.3
2001	4.2	-0.3	1.9	1.6
2002	4.7	0.0	4.2	4.2
2003	4.8	0.6	3.7	4.3
2004	4.9	1.1	3.5	4.6
2005	4.9	1.2	3.7	4.9
2006	5.0	1.1	4.0	5.1
2007	5.1	1.4	4.1	5.6
2008	5.1	2.0	4.0	6.1
Disabled (excluding ESRD):				
1997	3.2%	0.5%	1.4%	1.9%
1998	2.7	1.0	3.2	4.2
1999	3.5	1.3	-2.8	-1.5
2000	3.9	-0.9	-5.9	-6.7
2001	4.2	-0.3	-0.3	-0.6
2002	4.7	0.0	7.3	7.3
2003	4.8	0.6	3.9	4.5
2004	4.9	1.1	2.9	4.0
2005	4.9	1.2	3.0	4.2
2006	5.0	1.1	3.4	4.5
2007	5.1	1.4	4.0	5.5
2008	5.1	2.0	3.9	6.0

* Equals combined increases in allowed fees and residual factors.

SMI Trust Fund*continued from page 8*

amounts are compared with cash expenditures reported by the carriers through an independent reporting system. In a program with continuously increasing incurred reimbursement amounts, cash payments are expected to be slightly lower than incurred expenses (except in the first year of coverage of a service or group of beneficiaries, when the difference should be substantial). These differences between cash and incurred reimbursement amounts occur because of the lag between receipt of services and payment therefor.

Institutional and Other Services

Reimbursement amounts for institutional services under the SMI program are paid by the same fiscal intermediaries that pay for HI services. The principal institutional services covered under the SMI program are outpatient hospital services.

Reimbursements for institutional services occur in two stages. First, provider bills are submitted to the intermediaries, and interim payments are made on the basis of these bills. The second stage occurs at the close of a provider's accounting period, when a cost report is submitted, and lump-sum payments or recoveries are made to correct for the difference between interim payments and final settlement amounts for providing covered services (net of coinsurance and deductible amounts). Tabulations of a sample of the provider bills are prepared by date of service and the lump-sum settlements, which are reported on a cash basis, are adjusted (using approximations) to allocate them to the time of service.

Group practice prepayment plans, which are not reimbursed through carriers, are reimbursed directly by HCFA on either a reasonable cost or capitation basis. Comprehensive data on such direct reimbursements are available on a cash basis. Certain approximations must be made to allocate expenses to the period when services were rendered.

Per Enrollee Increases**Physician Services**

Per enrollee charges for physician services are affected by a variety of factors. One factor, increase in average charge per service, can be identified

TABLE II.F6
Increases in Recognized Charges and Costs per Enrollee
for Institutional and Other Services: Intermediate Estimates
(in percent)

Year Ending June 30	Outpatient Hospital	Home Health Agency*	Group Practice Prepayment Plan	Independent Lab
Aged:				
1997	4.2%	5.4%	22.0%	-2.3%
1998	1.0	‡	41.1	2.3
1999	1.3	95.5‡	31.4	-0.6
2000	3.4	-1.7	28.6	-1.7
2001	7.0	1.5	19.0	2.1
2002	8.9	7.5	5.6	4.4
2003	8.9	7.1	7.2	5.0
2004	9.3	6.4	10.9	5.9
2005	9.7	6.3	11.9	6.4
2006	9.9	6.1	8.8	6.8
2007	10.0	5.8	8.8	7.0
2008	10.0	5.8	10.0	7.0
Disabled (excluding ESRD):				
1997	3.8%	0.0%	87.5%	2.9%
1998	-2.5	‡	45.5	4.0
1999	-1.9	98.5‡	32.2	-1.2
2000	0.7	-1.3	23.4	-5.3
2001	6.9	1.8	20.6	3.0
2002	14.6	7.6	12.1	12.9
2003	10.9	6.6	11.5	9.8
2004	11.1	5.9	15.0	9.1
2005	11.7	5.5	15.7	9.6
2006	11.9	5.1	12.8	10.4
2007	12.2	4.5	12.8	10.8
2008	12.2	4.6	12.8	10.8

* From July 1, 1981 to December 31, 1997, home health agency services have been almost exclusively provided by the Medicare HI program. However, for those SMI enrollees not entitled to HI, the coverage of these services is provided by the SMI program. During that time, since all SMI disabled enrollees are entitled to HI, their coverage of these services is provided by the HI program. The extreme variation in SMI home health cost increases is largely attributable to random fluctuations in a service used by relatively few beneficiaries (see Table II.F2 not shown).

‡ Effective January 1, 1998, the coverage of a majority of home health agency services for those individuals entitled to HI and enrolled in SMI will be transferred from the HI program to the SMI program. As a result, as of January 1, 1998, there will be a large increase in SMI expenditures for these services for the aged enrollees, and SMI coverage for these services will resume for disabled enrollees.

explicitly. Others can be recognized only by the fact that the increase in the average charge per service does not explain all of the increase in per enrollee charges year-to-year.

The increase in the average charge per service is an important factor creating the increase in charges per enrollee. The physician fee component of the CPI provides an approximation of the

historical increases in submitted charge per service.

Projected increases in total allowed charges per enrollee are shown in Table II.F4 (see page 8). Column 1 of Table II.F4 shows the projected increases in the physician fee component of the CPI

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SMI Trust Fund*continued from page 9*

in each of the years ending June 30, 1997 through June 30, 2008. It represents an estimate of projected increases in the charges for all physician services (not only Medicare services), and as such, represents the increase in submitted fees. Column 2 shows the projected net increases in allowed charges, and Column 3 shows the increases due to residual causes. The last column is the compounded product of Columns 2 and 3.

Institutional and Other Services

The historical increases in charges and costs per enrollee for institutional and other services are shown in Table II.F5 (not included here), and the projected increases are shown in Table II.F6 (see page 9). The increases shown in Table II.F6 reflect the impact of the provisions in the Balanced Budget Act of 1997. These include the transfer of a majority of home health agency services from the HI trust fund to the SMI trust fund starting in 1998 and implementation of a prospective payment system for services performed in the outpatient department of a hospital starting in 1999. All benefit payments for those home health agency services being transferred will be paid out of the SMI trust fund beginning January 1998. However, for the six-year period 1998 through 2003, sums of money will also be transferred from the HI trust fund to the SMI trust fund to phase in the financial impact of the transfer of these services. It should be noted that in Table II.F6, and elsewhere in this section with the exception of Table II.F11 (not included here), the estimates for home health agency costs for 1998 through 2003 are those associated with the payment of benefits and are not adjusted for the funds transferred from the HI trust fund.

Articles Needed for the News

Your help and participation are needed and welcomed. All articles will include a by-line to give you full credit for your effort. *News* is pleased to publish articles in a second language if a translation is provided by the author. For those of you interested in working on the *News*, several Associate Editors are needed to handle various specialty areas such as meetings, seminars, symposia, continuing education meetings, teleconferences, and cassettes (audio and video) for Enrolled Actuaries, new pension study notes, new research and studies by Society committee, and so on. If you would like to submit an article or be an Associate Editor, please call me at 860-521-8400.

As in the past, full papers will be published in *The Pension Forum* format, but now only on an ad hoc basis.

News is published quarterly as follows:

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March	February 10
June	May 10
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Capital Market Assumptions

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- An inflation rate
- A rate of return for each investment class. The real return comprises the expected risk-free rate and a risk premium. The nominal return is inflation plus the real return.
- A standard deviation for each asset class. The standard deviation expresses volatility as a way of measuring risk.
- Correlation coefficients, to express the manner in which the returns of each asset class relate to those of other asset classes. A correlation of plus one is a perfect correlation; negative one means that an asset class performs in a manner that is opposite to the other asset class; and zero is a random correlation.

The capital market assumptions are the building blocks on which the quantitative analyses are performed. These assumptions are critical to the whole process, yet there is no universally prescribed method of determining them. No set of capital market assumptions is "right." It is only by looking backward that one can determine, for any given time frame, whether:

- Capital market assumptions were on target
- The spreads really did make sense
- The correlations worked as expected
- The risk was greater or less than projected
- The range of returns really was as anticipated.

To be useful in assisting fiduciaries design their policy and strategy, we want to achieve a set of internally consistent assumptions, justified by a sensible methodology, derived by individuals with economics and investment knowledge, experience, and judgment.

Challenges in Developing a Process

History Is Not All It Is Cracked Up to Be

The process is not a simple one. There is some comfort in using historical data. The results actually happened, so one can accuse us of messing with the numbers. Unfortunately, historical data can be a little quirky for some time periods.

Sometimes events happen that are highly unlikely ever to happen again. Not only do past results not guarantee future results—past results may not indicate in any way what future results are likely to be.

So, Global Portfolio Strategies does not believe in using historical data exclusively. We need to adjust for fundamental economic and environmental changes that have occurred over time. In other words we need to understand and analyze the history.

What Data Should Be Used?

Further supporting the view that history alone is inadequate is the difference among asset classes. Not surprisingly, historical data vary among asset classes. Some asset classes have a great deal of history, with records from the mid-1920s. Some have a relatively short history, 10 to 20 years. And, some asset classes, which are not publicly traded—such as real estate, venture capital, many alternative investments—have unreliable histories, lacking trustworthy, consistently-derived data.

What Time Periods Are Relevant?

Even where we have all the available historical data, we still would need to determine what time periods to use. We can use the longest available time periods for each asset class to get the most data on each. Then, of course, the circumstances under which the history was created could be vastly different. Domestic stock history, which goes back to the 1920s includes such events as the Great Depression and World War II; international stock history goes back to the mid 1970s—well after both those events. Or, we can insist on using comparable time periods, in which case the longest time period under consideration is the one for which all classes have data—perhaps only 10 years—and we are ignoring as much as 45 years of information for a number of asset classes.

How Should the Asset Classes Be Defined?

The process is further complicated by definitional issues. We need to decide whether we will try to distinguish among fragile differences in investment classes. For example, do we derive capital market

assumptions for domestic common stocks, or do we think we can distinguish among management styles—growth, value, momentum, sector analysis? If we think we can identify a quantitative difference, how do we deal with the manager movement among the styles over time?

Leaving aside styles and talking pure asset class definition, do we look at bonds as a single, broad category or make a distinction among intermediate and long-term bonds? And further, if we distinguish between intermediate- and long-term bonds, how do we define each of them? What is the threshold value in defining equity capitalization? How small is a small cap's cap? And, is there even a mid-cap asset class at all?

What's the Problem with Using Historical Data?

What Time Period Do We Use—and Is It Long Enough?

In our job, we look at a lot of numbers combined in lots of different ways. Table 1 on page 12 shows several cuts at lots of data. The basic message, simply, in all these data, is that history is not simple; history does not lead easily to straightforward conclusions. If we look at different time periods, we will draw different inferences—and reach different conclusions.

Our first cut at the data addresses the questions: what time period should we use, and how long a time period is long enough?

To keep the process basic and straightforward, we start with only three asset classes, looked at individually—domestic stock, bonds, and cash (Table 1).

At the extremes, if we use only 10 years of data as a basis for forecasting, we will anticipate a return for stocks that is about 750 basis points more than we would anticipate if we used 70 years of data. Our risk assumption would be about 750 basis points less. In that scenario alone, stocks look tremendously more advantageous using 10-year numbers than they do using 70-year numbers—a lot more return, and a lot less risk. Which figures should we use?

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Capital Market Assumptions

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The numbers for 30, 40, 50, and 60 years look very similar for stocks— both for risk and return. Maybe we should let the majority rule. But then, we are ignoring the longest time period and the most recent time period. Does that make sense?

Bonds, too, look a lot better using 10-year numbers than they do using 70-year numbers—nearly 600 basis points more return at less than 100 basis points more risk. Good trade-off. With bonds, no time periods are markedly similar. Return and risk generally decrease as the time period gets longer, with the exception of the 10-year time period, which has the highest return but a risk number that looks a lot like the 50-year number. No majority rules here and no real consensus either. What assumptions are right for bonds? Not surprisingly, Treasury Bills vary less than stocks and bonds over various time periods.

Capital market assumptions, whether historical or derived by investment professionals, are used to look quantitatively at various combinations of asset classes with an eye toward determining how we might generate mixes to achieve desired return at an acceptable level of risk.

The impact of the risk and return assumptions on these mixes is critical. To demonstrate the impact, we ran seven mixes, using only historical data, as shown in Table 2.

If we use 10 years of data, 20% exposure to stocks will achieve an expected return of over 11%, with a standard deviation less than 7. Little risk, nice return! Using 70 years of data, however, gives a very different picture. The highest expected return in any of the mixes is about 9½%, and that mix has 80% in stocks. The standard deviation for that mix is a little over 16, contrasted to the standard deviation of less than 7 in the first instance.

Risk and return assumptions make a huge difference in outcomes. It is critical to use sound, internally consistent assumptions derived from knowledgeable study of all the data. Judgment is key, and knowledge of the history of the capital markets is necessary (Figure 1). But, history alone is not enough.

TABLE 1

	Stocks		Bonds		Cash	
	Return	Risk	Return	Risk	Return	Risk
10 Years	18.04	12.05	11.12	8.53	5.40	0.45
20 Years	16.61	14.67	10.43	11.35	7.21	0.79
30 Years	12.09	15.07	8.84	10.37	6.73	0.70
40 Years	12.28	14.24	6.86	9.36	5.82	0.75
50 Years	13.10	14.03	5.82	8.58	4.97	0.83
60 Years	12.51	15.44	5.41	7.98	4.16	0.90
70 Years	10.63	19.77	5.22	7.65	3.59	0.92

How Do We Integrate Asset Classes with Shorter Histories?

So far, we have simply used three asset classes that all have 70-year histories. What happens when we want to use more, and not all of the asset classes we want to use have the same amount of historical data?

Rather than introduce more asset classes into our examples, we have designed a fictitious scenario: Suppose we only had 10 years of data for stocks, and 30 years for the other asset classes—or 50 years—or 70 years? The results are shown in Table 3.

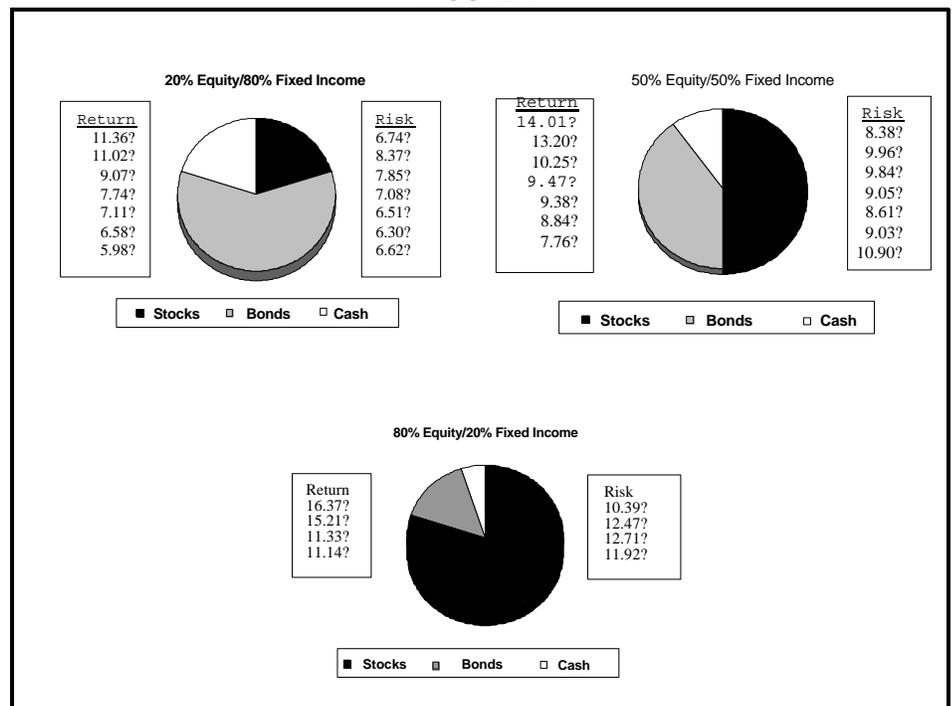
Introducing the shorter time period for stocks into the mix in all cases improves the expected return and has various impacts on the risk. Although

these scenarios are fictitious, since we really do have data on stocks going back to 1926, the result is important.

If we use purely historical figures from various time periods, we are comparing the proverbial apples and oranges. The returns for international stocks—where data go back to 1970—do not embrace the impact of the Great Depression, World War II, the abolition of the gold standard. High yield bonds and international bonds have even shorter histories. How do we treat returns and risk that occurred over various lengths of time?

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FIGURE 1



Capital Market Assumptions

TABLE 2

Mixes	Mix 1		Mix 2		Mix 3		Mix 4		Mix 5		Mix 6		Mix 7	
	Return	Risk	Return	Risk	Return	Risk	Return	Risk	Return	Risk	Return	Risk	Return	Risk
10 Years	11.36	6.74	12.34	7.32	13.32	7.98	14.01	8.38	14.70	8.88	15.68	9.76	16.37	10.39
20 Years	11.02	8.37	11.80	8.88	12.58	9.57	13.20	9.96	13.82	10.56	14.60	11.63	15.21	12.47
30 Years	9.07	7.85	9.50	8.48	9.93	9.28	10.25	9.84	10.58	10.58	11.01	11.75	11.33	12.71
40 Years	7.74	7.08	8.33	7.68	8.92	8.46	9.47	9.05	10.01	9.81	10.60	10.95	11.14	11.92
50 Years	7.11	6.51	7.88	7.14	8.65	7.94	9.38	8.61	10.10	9.45	10.87	10.61	11.60	11.64
60 Years	6.58	6.30	7.35	7.11	8.13	8.11	8.84	9.03	9.55	10.11	10.32	11.45	11.03	12.69
70 Years	5.98	6.62	6.60	7.91	7.22	9.42	7.76	10.90	8.30	12.51	8.93	14.33	9.47	16.08

TABLE 3

Mixes	Mix 1		Mix 2		Mix 3		Mix 4		Mix 5		Mix 6		Mix 7	
	Return	Risk	Return	Risk	Return	Risk	Return	Risk	Return	Risk	Return	Risk	Return	Risk
Stocks	10.26	7.80	11.28	8.25	12.31	8.79	13.23	8.98	14.15	9.30	15.17	10.08	16.09	10.57
Bonds	9.07	7.85	9.50	8.48	9.93	9.28	10.25	9.84	10.58	10.58	11.01	11.75	11.33	12.71
Cash														
30/10 Years	8.09	6.78	9.36	7.35	10.62	8.01	11.85	8.40	13.07	8.90	14.33	9.77	15.55	10.40
50 Years	7.11	6.51	7.88	7.14	8.65	7.94	9.38	8.61	10.10	9.45	10.87	10.61	11.60	11.64
70/10 Years	7.46	6.25	8.82	6.89	10.19	7.61	11.47	8.11	12.75	8.70	14.11	9.61	15.39	10.31
70 Years	5.98	6.62	6.60	7.91	7.22	9.42	7.76	10.90	8.30	12.51	8.93	14.33	9.47	16.08

Capital Market Assumptions

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How Valid Is Any One Decade in Giving Clues to Returns and Risk in Another?

A look at each of our three asset classes on a decade-by-decade basis tells us that predictability is hard to infer. Here are the returns and standard deviation for each asset class for your viewing pleasure. For fun, we even added partial decades for the 1920s and the 1990s (Table 4).

For stocks, the 1950 decade was quite good. Expect a mediocre decade to follow? The 1960 decade was fairly mediocre. Expect a great decade to follow? The decade of the 1970s was equally mediocre. So, should we expect the 1980 decade to stay mediocre? The 1980 decade was strong, and the 1990 decade, until recently, looked equally as good, and with less volatility. Of course, the decade is not over yet.

Even Treasury Bills, an asset class with very little volatility, vary quite a bit from decade to decade, although until the partial decade of the 1990s there has been a pattern of increased return and risk.

Bond returns were going down starting in the partial decade of the 1920s for which we have data, then started going up in the 1960s and continued an upward trend until the partial decade of the 1990s. The 1990s, however, have a few more years to run.

Applying these historical data to our mixes, we get some fascinating results (Table 5).

In the decade of the 1970s, for example, the more stocks you added, the lower your return and the greater your risk. The difference between the first and the seventh mix is 100 basis points in return and approaching 700 basis points in risk. Who could have predicted that result?

Since the decade of the 1970s, the mixes have resumed the expected pattern of increasing in both return and risk as the stock exposure becomes greater.

A look at earlier decades shows a similar pattern. A precursor to the mixes in the decade of the 1970s, the mixes in the decade of the 1930s reflect decreasing returns and increasing risk as the stock exposure increases. In the following three decades—the 1940s, 1950s and 1960s—the more familiar pattern is resumed. The return and risk go up as the stock allocation is increased.

TABLE 4

	Stocks		Bonds		Cash	
	Return	Risk	Return	Risk	Return	Risk
1990–1997	16.61	12.29	10.41	8.35	4.90	0.37
1980s	17.46	16.42	12.88	13.74	8.85	0.74
1970s	5.84	15.95	6.11	7.74	6.26	0.50
1960s	7.81	12.22	1.45	5.87	3.89	0.37
1950s	19.35	11.84	-0.08	4.56	1.89	0.21
1940s	9.17	15.90	3.23	2.73	0.41	0.09
1930s	-0.05	37.83	4.87	5.44	0.19	0.03
1926–1929	19.19	19.83	4.99	3.96	0.27	0.00

Do the Tough Work Up-Front

The sets of historical data and the various mixes begin to tell the story. Capital market assumptions entail a lot more than using historical numbers. Using historical time periods at random, mixing time periods, relying solely on long time periods, or relying solely on the most recent 10 years may create indefensible conclusions. Worse yet, people who study the historical time periods can manipulate data to draw whatever conclusions suit their fancy. There has to be a better way—and there is.

Developing an Internally Consistent Set of Assumptions

A Multidisciplinary Approach Is Important

At Global Portfolio Strategies, we have always reevaluated our carefully derived capital market assumptions on a quarterly basis, fine tuning them and updating them as necessary. For this purpose, along with our own investment professionals, we utilize the expertise of individuals from diverse disciplines—economics, quantitative technology, stock portfolio management, and bond portfolio management. We even use actuaries!

As part of our regular quarterly analysis, we review and, where necessary, update our full set of capital market assumptions. We study the capital markets and amass historical data to derive a full, internally consistent set of capital market assumptions.

Using all the historical data our research finds is reliable, we analyze and compare them over many relevant time periods. In that way, we are able to incorporate long time periods into our analysis and also to compare time periods that reflect the longest time period for which information was available for a given asset class. We therefore can look at both long time periods and comparable time periods.

Next Step: Define Asset Classes and Time Period

We break down investment classes as far as we believe clear, valid distinctions can be made. Our current position is that we will not over-refine the definition of asset classes into many small subasset classes. For example, we divide domestic common stocks only between large capitalization and small capitalization stocks. We do not look at styles. With nearly identical risk and correlation characteristics for these subasset classes, the sensitivity to small differences in expected return is magnified. Because definition of these subasset classes is imprecise, often overlapping, and even different from one time period to the next, the magnification of small differences further exaggerates what may be, at base, minor distinctions.

Our decision, therefore, is to develop an internally consistent set of annualized, 10-year capital market assumptions for distinct asset classes, including: large capitalization domestic common stocks, small capitalization

continued on page 15, column 1

Capital Market Assumptions

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stocks, international stocks, international bonds, cash and cash equivalents, intermediate and long-term government and corporate bonds, high-yield bonds, venture capital, and equity real estate. Additional distinct asset classes are discussed and, using our process, can readily be incorporated into the system that was derived.

The Building Block Approach Uses Lots of Historical Data

The capital market assumptions were derived from the broad array of historical data that we had gathered and adjusted for fundamental economic and environmental changes that had occurred, such as the deregulation of markets and changes in interest rate levels.

Our process began with the derivation of an overall inflation assumption. Then, starting with cash and cash equivalents, we used historical data— especially spreads between asset classes—together with experience and judgment to build our system, one asset class at a time.

In building this system, we rely on some economic scenario assumptions: a fairly stable economy, a normal yield curve, and a disinflationary federal policy.

The System Is Understandable, Clear and Rigorous

The careful analytical system we use to derive our capital market assumptions allows us to explain its underpinnings in discussing the outcome of our analyses. Further, it permits us to fine-tune assumptions, if others would like to see quantitative analyses using differing views of the capital markets or the economy.

Table 6 on page 16 illustrates some of the capital market assumptions we have been using. Currently, we are again reviewing and possibly revising our capital market assumptions. In the process, we will review our current approach, run more numbers than most people would ever want to see, slice and dice data in every way we think will give us new insights. It is a rigorous process—and it should be.

Jane Arnold, JD, not a member of the Society, is Senior Vice President and Jennifer Donnelley is a Marketing/Client Specialist at Global Portfolio Strategies, Inc. in Bloomfield, Connecticut.

TABLE 5

Mixes	Mix 1		Mix 2		Mix 3		Mix 4		Mix 5		Mix 6		Mix 7	
	Return	Risk	Return	Risk	Return	Risk	Return	Risk	Return	Risk	Return	Risk	Return	Risk
Stocks	20		30		40		50		60		70		80	
Bonds	60		55		50		40		30		25		15	
Cash	20		15		10		10		10		5		5	
1990-1997	10.55	6.71	11.44	7.33	12.34	8.05	12.96	8.49	13.58	9.03	14.47	9.93	15.09	10.59
1980s	12.99	9.71	13.65	10.14	14.31	10.78	14.77	11.11	15.22	11.72	15.88	12.91	16.34	13.87
1970s	6.09	6.67	6.05	7.66	6.02	8.78	5.99	9.72	5.96	10.78	5.93	12.13	5.90	13.30
1960s	3.21	4.44	3.72	5.07	4.24	5.90	4.87	6.72	5.51	7.67	6.02	8.79	6.66	9.89
1950s	4.20	3.32	6.04	4.00	7.89	4.92	9.83	5.91	11.78	7.01	13.62	8.18	15.56	9.39
1940s	3.85	4.07	4.59	5.49	5.32	6.97	5.92	8.40	6.51	9.86	7.25	11.39	7.84	12.87
1930s	2.95	8.69	2.69	12.18	2.43	15.78	1.94	19.37	1.45	23.01	1.19	26.73	0.70	30.40
1926-1929	6.89	4.02	8.54	5.74	10.20	7.62	11.62	9.59	13.04	11.62	14.69	13.64	16.11	15.71

Capital Market Assumptions

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Table 6 of this article not available on line.
Contact the Communications Department
and the Society office (874-706-3543)
for a hard copy.

TABLE 6

Book Review

Pension Fund Excellence— Creating Value for Stakeholders

by K.P. Ambachtsteere & D.D. Ezra

Reviewed by Barnet N. Berin

Pension Fund Excellence is a handbook on “what pension funds do, how well they do it, and how they could improve their performance.” The discussion is both qualitative and quantitative with the former often by-the-numbers, brimming with common sense and the latter elusive. Fund managers starting out and those who manage smaller and medium-sized funds will find this book helpful. While global in outlook, it is predominantly about trillions of dollars in U.S. pension fund assets and related practices.

The concept of stakeholders is introduced as typically pension plan members and the plan sponsor, but these two groups do not always share the same objectives. Mostly, but not always, the authors sort them out. However, ERISA asks trustees (not just of U.S. corporate trends as the text states) to act in the best interests of fund participants, not stakeholders.

The topics and their treatment are interesting: the coming era of pension fund capitalism; how good is pension fund management; what fiduciaries should know; managing pension funds, asset allocation policy; some brief examples and even briefer illustrations of other countries’ national pensions. Insights are plentiful and the authors do not shy away from choices. There are many notes but these occasionally refer to publications difficult to find and the authors’ releases for their clients and the public. Now, for some particulars from the text.

- “All pension funds work the same way. This is summed up ... (by) ... *the fundamental pension equation*: Contributions + Investment Return = Benefits Paid.” (In this equation contributors should separate employee and employers

monies; investment returns is the total of required interest and excess interest gain or loss (which affect each year’s contributions); benefits should separate any expenses; starting assets are assumed to be zero as is the final terminal adjustment which could be significant (for example, on insurance company buy-outs). This is the *ultimate* cost of a pension plan and worth more discussion.

- “Pension payments are typically 80% funded by investment returns and only 20% by contributions.” It would be helpful to have a source for the relationship which is referred to more than once.
- “And it is not only governing fiduciaries who want high returns but are reluctant to acknowledge that they have to accept commensurate risks of potentially bad outcomes. Even wealthy business people who otherwise would seem to be sophisticated investors behave this way.” The example cited is Raul Solinas de Gortari, brother of Mexico’s president from 1988 to 1994, who invested more than \$80 million with Citibank. Another example should have been found.
- The authors introduce “an average risk-adjusted net value added (RAVNA)” representing “the amount of fund return left after accounting for a fund’s asset mix policy, incremental operating costs, and incremental risk assumption costs.” The RAVNA measure calculation is difficult to pin down. “It is a measurement system for people who would rather measure the right things imperfectly than measure the wrong things perfectly or measure nothing at all.”



- There is some mention of the liability side and the work of actuaries but it is much less satisfying than the interesting discussion of the asset side. Some examples:
 - 15-year amortization payments of the unfunded liability will decrease over time.
 - Government fiduciaries should ask for a report of assets and liabilities measured using best estimates.
 - Actuaries can build a contingency reserve by using assumptions containing a margin; the “entry-age method” provides a reserve against the average-age of members increasing.
 Perhaps, with actuaries becoming more involved with the asset side, the situation will improve.
- Despite statements such as “... if one were to construct the average of everyone’s asset allocation policies, most funds would be similar to this average, though most funds would also be a little bit different ...” or “... if we were to take the average holdings in any asset class, most funds would own a list of holdings in that asset class that is broadly similar to the average, though most funds would also be a little bit different from the average.” The good material is of interest.

Barnet N. Berin, FSA, is a Past-President (1994–1995) of the Society of Actuaries.

Minutes of the Committee on Retirement Systems Practice Advancement Meeting

May 7, 1998

In Attendance: Joe Applebaum, Colin England (for Carol Zimmerman), Patrick Flanagan, Ethan Kra (Chairperson), Neil Parmenter, Larry Pinzur, Don Segal, Arnold Shapiro, Joan Weiss (for Dick Joss), and Tom Edwalds (by phone) and Judy Anderson, SOA staff.



1. Turnover Study— Outstanding Issues and Next Steps

Regarding the recently issued turnover study, participants were concerned about the shortcomings in the data and the presentation of the results. On data, the committee recommended that both census and decrement data be requested in future studies to alleviate the “negative decrement” problem cited in the report. The committee also suggested requesting data from more small and mid-size plans. On the presentation, the committee did not think that the multivariate analysis was as useful as a series of tables, representing high, medium and low overall turnover along with front- and back-loaded rates.

Rather than doing more with the current data, the committee recommended we begin a new data collection process. To get the census and decrement data for at least a three-year period would require a significant effort. A letter from the SOA President, asking consulting firms to make a commitment to this process will be drafted. The chairman of the project oversight group for the past study will be asked to do a first draft of the letter and begin recruiting for a new project oversight group. The Retirement Systems Practice Advancement Committee (RSPA) will be available to review as the project proceeds.

2. Research Priorities and Budget Allocation

Each year the SOA research budget is allocated to the Practice Areas and the Committee on Knowledge Extension. At the end of the year, if funds are uncommitted, the remainder is redistributed where needed. Ethan Kra would like the RSPA Committee to provide feedback on the practice area

research budget before it is submitted to the Research Project Oversight Subcommittee. This can be done by conference call.

3. Continuing Education

Each practice area has been asked to develop programs that could be used for the Professional Development requirement under the redesigned SOA Education and Examination (E&E) process. The Pension Section will discuss the role it would like to assume at its next meeting. The Retirement Systems Professional Education and Development Committee will then address this project after the Section’s role is determined.

A teleconference has been scheduled for this fall. Jim Holland is willing to be the principal speaker. A repeat of a recent Conference of Consulting Actuaries seminar was also suggested.

4. Joint Board Examination Redesign & SOA E&E Redesign

The RSPA Committee is comfortable with the credit given to the EA examinations under the redesigned SOA E&E program. However, it is less comfortable with the lack of recognition for the overlap between SOA Courses 3 and 4 and EA1 Segment A. A candidate passing Courses 3 and 4 would have covered the topics in EA1 Segment A and more. The Committee would like the Joint Board to consider accepting courses 3 and 4 as sufficient to waive EA1 segment A. The SOA could provide the Joint Board and its Advisory Committee with examination blueprints to assure consistent coverage of the appropriate topics from year to year. The consulting firms represented at the meeting may follow through with letters to the Joint Board.

5. Retirement Policy Seminar

The SOA, ASPA, CCA, AAA, and the International Foundation of Employee Benefit Plans (IFEFP) has been asked to cosponsor a seminar on retirement policy in the United States. A call for papers will be issued, to be presented at a conference in the first quarter of the year

2000. The Practice Advancement Committee is very supportive of this effort and the coordination across organizations. Pat Scahill will represent the SOA on the planning group. Planning will begin with a conference call later this month.

6. Committee/Section Updates

Research

- The GATT Mortality study is proceeding on schedule. Researchers have been selected for a multivariate analysis to ascertain the variability in mortality across groups.
- The initial report on the macro-demographic model feasibility and background study should be completed later this year.
- The results of the asset valuation study survey are being analyzed. The initial report should be available this summer.
- The Canadian pensioner mortality study has stalled. Efforts will be taken to re-energize this project.
- A project on mortality projection for pension plans is underway. It will follow up on the project “mortality projection and its impact on Social Security in North America.”

Professional Education and Development

- We have received 16 responses to the call for papers. They will be presented at a conference in December.
- The committee has designed a seminar on plan design for the SOA Annual meeting. The practice area will contribute \$5,000 to this project.
- The committee is discussing methods for getting recent research, actuarial and otherwise, publicized in the *Pension Section News* and/or on the SOA web site.

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Minutes of the RSPA Committee
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Social Security—Retirement and Disability Income

- a. The committee is working on a brief paper that will attempt to isolate the issue that all sides of the Social Security debate can agree on.
- b. There was a proposal to do a symposium on economic assumptions for projecting Social Security. The committee did not believe that this was the best forum for the SOA. However, it will be considering a symposium on the non-mortality demographic assumptions.

Pension Section Council

- a. The Pension Section Council will be releasing a request for proposal on designing a CD-ROM on pension basics.
- b. The Pension Section is sponsoring a seminar on mergers and acquisitions, a track on effective consulting, and another track on technical concerns at the Maui meeting.

7. Liaison Reports

Canadian Institute of Actuaries (CIA)

- a. A CIA Committee is reviewing the minimum transfer value standard. The GATT mortality study may be helpful for this effort.
- b. The CIA would like to get the Canadian mortality project moving again, particularly in light of the review of minimum transfer values.
- c. CIA has a task force reviewing pension plan funding.

American Academy of Actuaries

- a. A number of legislative proposals are being reviewed.
- b. Ron Gebhardtsbauer has been speaking at a variety of forums on Social Security.

Actuarial Standards Board

- a. A new standard on demographic assumptions should be ready for exposure soon.
- b. The ASB pension committee is discussing the appropriate focus for a standard on actuarial cost methods.

8. ERISA Documentary

The RSPA committee received a proposal for a documentary on the first 25 years of ERISA. The committee will support this but with some input into content to be sure that it remains unbiased. The practice area is contributing \$5,000 conditional on other funding for the project. They will also encourage the Pension Section and the Actuarial Foundation to contribute.

9. Committee on Knowledge Extension Proposals

The RSPA Committee was forwarded two proposals from CKER—one on Social Security and the other on modeling. The committee will request additional information on the anticipated deliverable from the proposal on Social Security before referring it to the Retirement Systems Research Committee.

One of these proposals received partial funding from CKER anticipating additional practice area funding. The other proposal received a grant contingent on funding from the research committee. In the future, the committee is requesting that CKER get input from the practice area earlier in the process.

10. Next Meeting

The next meeting will be held in Boston at the end of August or the first week in September.

*Respectfully Submitted,
Judy F. Anderson, FSA
Staff Fellow*

Minutes of the Committee on Social Security Retirement and Disability Income Meeting

June 21, 1998

In Attendance: Rob Brown, Bernard Dussault, Ron Gebhardtsbauer, David Knox, Robert Katz, Sam Gutterman, Mike Sze, and Judy Anderson (SOA staff).



Committee Paper on Social Security, Productivity and Demographics

The committee reviewed the most recent draft of the paper. A new draft will be circulated and discussed in a conference call in August. It is hoped that the paper will appear in the *North American Actuarial Journal (NAAJ)*.

Call for Papers/Competition

The committee discussed the possibility of doing a call for papers with the intent of eliciting fresh ideas and increasing the attention of actuaries on Social Security issues. This will be discussed further at the next meeting.

Conference/Symposium on Demographic Assumptions Other than Mortality

The Committee discussed possible focus for this program. It was initially envisioned as being similar to "The Impact of Mortality Improvement on Social Security in the U.S., Canada and Mexico." Retirement age was mentioned as being the most interesting assumption, however, the committee thought that it may be more appropriate to address the whole block of demographic assumptions. This will be discussed further at the next meeting.

*Respectfully Submitted,
Judy F. Anderson, FSA
Staff Fellow*

Minutes of the Pension Section Council Meeting

July 13, 1998
Toronto, Ontario

In Attendance: Carolyn Zimmerman (Chairperson), Amy Timmons, Amy Viener, Martha Moeller, Joan Boughton, Lindsay Malkiewich, Michel St. Germain, Lee Trad and Judy Anderson and Lois Chinnock (SOA staff).



1. **Minutes Approved.** The minutes of the March 22, 1998 meeting were approved.
2. **1998 Spring Meeting.** The Pension meeting in Maui was reviewed and the suggestion was made that perhaps a "track" or seminar could be done for the 1999 Spring meeting, June 16-18 in Seattle. Lee Trad agreed to be the Section representative to the Spring Meetings Program Committee, which will meet for the first time on September 10 in Chicago. Lindsay Malkiewich will assist him.
3. **SOA 50th Anniversary Meeting.** The Council discussed possible pension papers which could be submitted for the SOA 50th Anniversary monograph. Judy Anderson will fax a list of possibilities to the Council.
After discussion the Council decided not to do a special Section monograph. Instead, the Section will publish a list of articles and papers in a Section newsletter article. Judy Anderson will send a list of possibilities. The Section Council will fax suggestions to Judy Anderson in response to the request for pension-related entries for a 50-year time line.
4. **Pension Section News.** After discussion of recent newsletter issues, the Pension Section Council agreed that the content of the Section newsletter is up to the discretion of Dan Arnold, the editor, and that if he has concerns, he should bring them to the Council.
5. **Pension Boot Camp Update (CD-ROM).** Amy Timmons reported that no proposals had been submitted to her so far. Carol Zimmerman volunteered to discuss the project with Dick Schreitmueller and Ho Kuen Ng. Lois Chinnock will arrange for a one-page flyer announcing the request for proposal to be inserted in the July Section newsletter.
6. **Membership Survey.** The Council authorized Amy Timmons to spend up to \$1,000 to have the recent membership survey tabulated. Approximately 600 responses were received.
7. **Retirement Practice Advancement Committee Report.** Judy Anderson reported that the Turnover Study is out and that there are plans to repeat the study with a revised, improved data request. Dick Joss and Joe Applebaum are members of the POG.
Judy reported that there will be a conference co-sponsored by the SOA, CCA, AAA, IFEBP, and ASPA on U.S. Retirement Policy 2000. Pat Scahill and Anna Rappaport of the SOA are on the planning committee.
The Asset Valuation Methods survey report will be out soon.
8. **Pension Syllabus.** The EA exams are being restructured for 2000. Judy will send the EA proposal to the Council members.
9. **Statistics for Employee Benefits.** Judy raised the question of data sources for *Statistics for Employee Benefits*. The suggestion was made that the Investment Section may be able to help and may also like to be involved in the production and distribution of this publication.
10. **Seminars.** Judy suggested a seminar on estimation for EA credit. She will send seminar information to the Council. The Council wanted to sponsor the seminar, to be held in the first quarter of 1999 with notice that it will still earn EA continuing education credit.
On conducting an investment boot camp, Part 2 was suggested. It could perhaps be a 1½ day seminar with six or seven speakers and done within the Spring meeting.
11. **Video Documentary.** After discussion of the benefit to Pension Section members, the Council tabled committing financial support to the video documentary until more information about other sources of funding is available.
12. **GATT Mortality Study Update.** Lindsay reported that the study should be completed in the fall of 1999. The Section committed \$10,000 to this project in March 1998.
13. **Retirement Needs Framework Conference.** Judy reported that the Retirement Needs Framework Conference will be held in Orlando on December 10-11, 1998. Approximately 16 papers will be presented. The Council committed \$2,500 to the conference, but assumes no financial risk.
14. **Research Proposal.** The Council voted not to help fund a research proposal on Modern Modeling Technologies for Pension Actuaries submitted to the Council by the SOA Committee on Knowledge Extension Research.
15. **Professional Development.** The Council discussed the Section's role in the professional development component of the year 2000 E&E program. The members will keep this requirement in mind when they develop sessions for the SOA Spring meetings.
16. **Dues.** The Council voted to raise the section dues to \$25.00 in 1999. The subscription price will also be \$25.00 per year.
17. **Next Meeting.** The next meeting of the Pension Section Council will be Monday, October 5, 1998, in Boston.

Respectfully submitted,
Lois Chinnock
SOA Section Coordinator

Minutes of the Retirement Plans Experience Committee Meeting

September 13, 1998
Hartford, Connecticut

In Attendance: Ed Husted (Chairperson), Vince Amoroso, Kevin Binder, John Kalnberg, Bart Prien, Diane Storm, and Mike Virga. Tom Edwalds was present as Society support staff.

Absent: Julie Pope, Greg Schlappich, and Lindsay Malkiewich.

Observers: Ethan Kra, Larry Pinzur, and Judy Anderson (SOA staff).

Researchers: Charles Vinsonhaler and Nalini Ravishankar.

The researchers presented their report. They found distinct patterns by amount and collar but could not fit these to a model readily usable by pension actuaries. They were asked to add some explanation but the report was accepted pending those changes.

The report is part of the basis for Chapter 5 on Relative Mortality. The Committee agreed that the Chapter

should begin with a presentation of findings on the differences of mortality by amount and collar and a summary of the research report findings. The Chapter will conclude with recommendations to actuaries on uses of the differences. The recommendations will be determined at the next meeting. The researchers report will be published separately so that full information is available.

The Committee discussed the recommendation on a projection method. The Committee agreed to recommend that the generational method is the preferred method but, if the generational method is not used, then the actuary should project mortality using a static table approach. The actuary should consider the average duration of the annuities and the period of time over which the table is to be effective. As an example, the report will include the mortality table projected to 2010.

The following writing assignments were delegated:

- Chapter 5 (except for recommendations), Mike
- Chapter 6, Mike
- Chapter 7, Diane
- Chapter 8, Kevin.

The next meeting will be held at 10:00 on November 11 at Kevin's office in Washington, D.C. The Committee will review the draft of the full report with the exception of the recommended use of mortality differences.

The next, and probably final, meeting of the Committee will be on January 20, 1999 in Washington, D.C. to review the final draft of the paper. The Committee plans to send the final report forward in February 1999. This should allow sufficient time for an Exposure Draft to be distributed to actuaries in the Fall of 1999.

*Respectfully Submitted,
Edwin C. Husted, FSA
Chairperson
Retirement Plans Experience Committee*

Chairperson's Corner *continued from page 1*

(including the seminar on plan design and other topics as well), so please let Council member Lee Trad or Kathy O'Neill of the Society office know if you are interested in speaking at this meeting.

Some of you may remember completing the surveys that was sent out earlier this year. The purpose of this survey was to see whether we were focusing on activities, publications, and so on, that were important to you, the members of the Pension Section. We received more than 600 responses, which have been tallied (more on the results in the next issue of *Pension Section News*). These have already been helpful. From the survey responses, it is clear that members are looking for more information on plan design, hence the plan-design seminar in the 1999 Spring Meeting.

And now for the bad news. We have come to a point where it is necessary for us to raise the dues for Pension Section membership. We have been able to hold these dues at the same level for the past

seven years, but have seen our funds steadily decrease as we respond to requests to sponsor research, seminars and the like. Recently, we have had to decline several worthwhile projects because of lack of funds, especially since we have earmarked a good portion of our current balance to a project developing a training program for entry-level actuaries. Therefore, the Council voted to increase the dues to \$25 per year, effective in 1999.

As my term ends, I guess it's only natural to look back over my last three years on the Pension Section Council. I have thoroughly enjoyed working with the Council and have gained a new appreciation for the work that is done by the Society of Actuaries and for the support of the SOA staff. I am also very grateful to Dan Arnold for all his work in coordinating *Pension Section News* and other Pension Section publications—the Pension Section gets accolades for publishing with the most regularity, but it would not happen without Dan.

I had hoped to get farther on the entry-level actuarial training program that we planned to begin this year. However, we have finally received some response from actuaries interested in working on this project, and so I am hopeful that the new Council will be able to report some progress in the near future.

I am pleased with what we have accomplished; it is gratifying to hear people discussing how much the SOA Spring Meetings have improved and to see the results of some of the research projects we have funded. I have no doubt that these accomplishments will continue with your new Council. It is made up of outstanding people, and you are in very good hands!

Carolyn E. Zimmerman, FSA, is with Ernst & Young LLP in Pittsburgh, Pennsylvania and outgoing Chairperson of the Pension Section Council.

Minutes of the Retirement Plans Experience Committee Meeting

**July 22, 1998
Washington, D.C.**

In Attendance: Kevin Binder, Ed Husted (Chairperson) John Kalnberg, Diane Storm, and Mike Virga. Bart Prien and Lindsay Malkiewich joined by telephone. Tom Edwalds was present as Society support staff.

Absent: Julie Pope, Greg Schlappich and Vince Amoroso

Observers: Judy Anderson (SOA staff), Jim Holland

The committee reviewed the draft of chapters 1 through 4 on Relative Mortality. The only major structural change was to move the blended healthy table from the Appendix to Chapter 4. The committee selected RP-2000 (retirement plans-2000) as the name for the table. All *qx* rates will be presented to six decimals.

The committee reviewed initial results from Vinsonhaler. A follow-up phone conference on July 30 set the basis for proceeding to a final report. The report should be ready by the end of August.

Diane and Kevin presented the results of the comparisons of annuities and liabilities. The liabilities of the 83-GAM and RP-2000 tables were computed for a 50/50 gender mix at 7½% interest. Diane will provide calculations comparing the UP-94 (projected to 2000) and RP-2000 tables on an all-male, all-female, and mixed- gender basis at three interest rates.

The next meeting will be on September 14 in Hartford. Tentative agenda:

- Review of research report and discussion with researchers
- Projection method
- Continued review of report drafts.

*Respectfully Submitted,
Edwin C. Husted, FSA
Chairperson
Retirement Plans Experience Committee*

Continuing Education Update

by Barbara S. Choyke

The end of the year is fast approaching. For those who are enrolled actuaries, the end of the enrollment cycle is December 31, 1998. How can you acquire those last few credits to satisfy your continuing education requirements?

The Society of Actuaries has questionnaires to accompany most audio tapes from the meetings in 1996, 1997, and 1998. In addition, there are videotapes from teleconferences, a Hybrid Plans CD-ROM, round table discussions (November in various cities), teleconference on voluntary compliance (December 17, various U.S. cities, three hours core credit), and a seminar on "The Art of Estimation" (February/March 1999, location TBA).

Information on these programs can be found on the SOA web site (www.soa.org) in the Continuing Education area, via direct mail, brochures, or by e-mailing Melanie Hopkins at mhopkins@soa.org.



Election Results Announced

The results of the Pension Section election have been tabulated and Bruce A. Cadenhead, Adrien R. LaBombarde, and Sylvia Pozezanac join the council for three-year terms beginning in October.

Remaining on the Council are Amy S. Timmons, Colin England, Lindsay J. Malkiewich, Joan Boughton, Martha A. Moeller, and Lee Trad.

The Section would like to thank outgoing Council members Carolyn E. Zimmerman, Amy C. Viener, and Michel St. Germain for their efforts and dedicated work.

