



## Chairperson's Corner

by Bruce Cadenhead

**M**y father often asks me, "When are you actuaries going to fix Social Security?" My first thought is, "That's not my job; there are plenty of other people (actuaries among them) working on that problem." But upon reflection, it's not so easy to shrug off this responsibility. Even if it's not my job, it should certainly be my concern.

When the time comes, I may be lucky enough to be able to afford retirement even without Social Security. Still, the value of my benefit (at least under current law) is pretty significant. Looking beyond my own narrow concerns, to those of family, friends and neighbors, Social Security becomes far more of a concern. Because of its enormous scale, and because so many Americans rely on it to make ends meet, Social Security's financial difficulties are everybody's problem.

When most people think of Social Security, they think of the Old Age and survivor Income Benefits. Medicare, of course, is another important component

*continued on page 3*

## OASDI Trust Fund: Principal Economic and Demographic Assumptions

*Editor's Note: The following excerpt is taken from Section V. "Assumptions and Methods Underlying Actuarial Estimates," in the 2001 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds. Copies of the OASDI 2001 Annual Report are available from Cece Enders (410-965-3015).*

**T**he future income and outgo of the OASDI program will depend on many economic, demographic, and program-specific factors. Trust fund income will depend on how these factors affect the size and composition of the working population and the level and distribution of earnings. Similarly, trust fund outgo will depend on how these factors affect the size and composition of the beneficiary population and the general level of benefits.

Because projections of these facts and their interrelationships are inherently uncertain, estimates are shown in this report on the basis of three plausible sets of assumptions designated as intermediate (alternative II), low cost (alternative I), and high cost (alternative III). The intermediate set, alternative II, represents the Boards' best estimate of the future course of the population and the economy. In terms of the new 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.

Although the three sets of economic and demographic assumptions have been developed using the best available information, the resulting estimates should be interpreted with care. The estimates are not intended to be predictions of the future

*continued on page 4*

## In This Issue

	page		page		page
<b>Special Report</b>					
OASDI Trust Fund:		The Changing Retirement Landscape		Capital Market Assumptions — A 2000 Update	
Principal Economic and Demographic Assumptions .....	1	by Robert L. Clark and Anna M. Rappaport .....	14	by Timothy C. Burns .....	28
HI Trust Fund:		401(k) Tax Trap?		Retirement Issues Symposium News Release: August 9, 2001	
Actuarial Methodology and Principal Assumptions .....	7	by Ho Kuen Ng .....	20	by Linda Heacox .....	30
SMI Trust Fund:		Cash Balance Papers		Continuing Professional Education Notice	
Estimates under Alternative II Assumption for Aged and Disabled (Excluding End-Stage Renal Disease) Enrollees .....	10	by Thomas B. Lowman .....	22	by the Joint Board for the Enrollment of Actuaries .....	31
* * *		Dead on Time or Late Again?		"Real" Continuing Education in the "Virtual" World	
Chairperson's Corner		by Gene Kalwarski and Peter Hardcastle .....	23	by John Riley .....	32
by Bruce Cadenhead .....	1	Pension Section Council Minutes — June 15, 2001, San Francisco Hilton Hotel .....	27	PBGC's Question and Answer Corner .....	32

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## Articles Needed for the News

Your help and participation are needed and welcomed. All articles will include a byline 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 committees, and so on. If you would like to submit an article or be an associate editor, please call Dan Arnold, editor, 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.

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Mail both a diskette and a hard copy of your article. We are able to convert most PC-compatible software packages. Headlines are typed upper and lower case. Carriage returns are put in only at the end of paragraphs. The right-hand margin is not justified.

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Thank you for your help.

## Chairperson's Column

*continued from page 1*

of our social insurance program, with its own financing problems that will have to be addressed. I'm going to focus on the retirement benefits because I'm a pension actuary and because I think the problems are somewhat easier to define. Once we develop a better public understanding of these problems, Medicare's problems should come into clearer focus as well.

As pension actuaries we have the opportunity to play a significant role in the long-term health of Social Security. In particular, we have two things that many others do not have:

- A solid grasp of the economic and demographic trends leading to the program's impending financial difficulties
- Credibility – Social Security is something that people expect us to understand. Our opinions therefore carry some weight.

According to the 2000 annual report from the Social Security trustees, the system is projected to become insolvent by 2037. We are likely to feel the effects of the looming insolvency long before that date. By 2015 payments to beneficiaries are expected to exceed tax revenues. The shortfall will be made up as the government repays money it borrowed from Social Security in earlier years. The money for these repayments will have to come from other revenue sources (i.e., tax revenues or borrowing).

However, focusing on these milestone dates gives the impression that the "crisis" will occur suddenly. In fact we will feel the pinch a little bit more every year. Right now the government's net income from the Social Security system is positive. Each year the net income will shrink a little bit. At some point (2015 under current projections) the cash flow will become negative. Each year thereafter the shortfall will grow a little more. All other things equal, the funds available for other purposes will be squeezed a little more each year. Eventually the squeeze will become too uncomfortable to ignore.

I suspect that most politicians have a basic understanding of the problem and would like to come up with a good long-term solution. The trouble is you can't do

much if you are out of office. In order to stay in office—or get elected in the first place—politicians tend to try to avoid touching Social Security, the so-called "third rail" of American politics. It's easy to attack somebody who proposes a real solution. Any solution involves some combination of an increase in taxes, a reduction in benefits or a decrease in benefit security. As a result, any solution is bound to offend some powerful constituency.

This is where we can add value. Politicians will not lead this debate. They will only follow. If enough voters understand the real issues, politicians will talk about them. We have to muster our best communication skills to help raise the level of public awareness. We can do this in public forums, such as speeches and articles, or in private discussions — educating one voter at a time. Contact your congressional representatives. Find out what they are doing and what you can do to help. Regardless of which approach you favor, a timely solution is critical.

Why bother making the effort? Can we really hope to make enough of an impact? What will happen if we don't? If we fail, the problem will be discussed on a superficial level, with promises of solutions that avoid any real pain, but ignored on a substantive level for as long as possible. At some point, however, we will not be able to ignore the problem any longer. The longer we wait, the more unpleasant the solution. The sooner we can turn the tide, the better. Even if our hard work accelerates change by only a few years, it will be worth the effort. There are many actuaries already leading this effort. Let's add our voices to theirs and be heard.

Fortunately there are a lot of resources to help us educate ourselves and the public (see next column). The American Academy of Actuaries Web site ([www.actuary.org](http://www.actuary.org)) has a lot of useful information. I just played the Social Security Game there, and found it to be a very accessible tool for introducing people to the issues and to the proposed solutions.

Some day, well before 2015, I hope to be able to answer my father's question.

### **Useful sites:**

Here are ten Web sites that may be useful in your quest to inform and educate others on the issues surrounding Social

Security. *This list is not an endorsement of any of these Web sites, nor of the accuracy of any information contained therein. All sites operate independently. Questions regarding the content of these sites should be directed to their respective owners.*



Bruce  
Cadenhead

### **On Social Security**

**Social Security Online:** Understanding Social Security

[www.ssa.gov/understanding.htm](http://www.ssa.gov/understanding.htm)

**The American Institute of Certified Public Accountants:** Understanding Social Security

[www.aicpa.org/members/socsec.htm](http://www.aicpa.org/members/socsec.htm)

**American Academy of Actuaries:** Social Security Game

[www.actuary.org/socsec.htm](http://www.actuary.org/socsec.htm)

**Employee Benefits Research Institute:**

Social Security Web site Links

[www.ebri.org/SSProject/LINKS.html](http://www.ebri.org/SSProject/LINKS.html)

**BenefitsLink:** Social Security Links

[www.benefitslink.com/index/socialsecurity/index.shtml](http://www.benefitslink.com/index/socialsecurity/index.shtml)

### **On Public Speaking**

**Toastmasters International**

[www.toastmasters.org](http://www.toastmasters.org)

**Advanced Public Speaking Institute**

[www.public-speaking.org](http://www.public-speaking.org)

### **On Public Policy**

**Engineer's Guide to Influencing Public Policy**

[www.ieeeusa.org/forum/guide/index.html](http://www.ieeeusa.org/forum/guide/index.html)

**Write Your Representative**

[www.house.gov/writerep/](http://www.house.gov/writerep/)

**Find Your Senator**

[www.senate.gov](http://www.senate.gov)

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**OASDI Trust Fund***continued from page 1*

status of the OASDI program, but rather, they are intended to be indicators of the expected trend and likely range of

demographic factors are intended to represent average experience or growth rates. Actual future values will exhibit

The intermediate assumptions (alternative II) reflect the Trustees' consensus expectation of moderate economic growth throughout 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.

*"The values for each of the economic and demographic factors are assumed to move from recently experience levels or trends, toward long-range ultimate values over next 5 to 30 years."*

future income and outgo, under a variety of plausible economic and demographic conditions.

The values for each of the economic and demographic factors are assumed to move from recently experienced levels or trends, toward long-range ultimate values over the next 5 to 30 years. The ultimate values assumed after the first 5 to 30 years for both the economic and the

fluctuations or cyclical patterns, as in the past.

***Economic Assumptions***

The basic economic assumptions are embodied in three alternatives that are designed to vary Social Security's financial status, and illustrate the likely range of outcomes that might be encountered.

***Demographic Assumptions***

The principal demographic assumptions for the three alternatives are shown in Table V.A3 (see page 6).

## ***Congratulations***

The following are newly elected members of the Pension Section Council. They will each serve a 3-year term:

- 1) ***K. Eric Freden, William M. Mercer Incorporated, Atlanta, GA***
- 2) ***C. Ian Genno, Towers Perrin, Toronto, ON***
- 3) ***Sarah W. Wright, The Segal Company, New York, NY***

**TABLE V.B1  
Principle Economic Assumptions**

Calendar Year	Average Annual Percentage (Increase In-)		Real Wage Differential t (Percent)	Calendar Year	Average Annual Percentage (Increase In-)		Real Wage Differential t (Percent)
	Average Annual Wage in Covered Employment	Consumer Price Index *			Average Annual Wage in Covered Employment	Consumer Price Index *	
Historical Data:				Low Cost:			
1960-65	3.2	1.2	2.0	2001	5.1	3.0	2.2
1965-70	5.8	4.2	1.6	2002	4.8	2.6	2.2
1970-75	6.6	6.8	-0.1	2003	4.0	2.4	1.6
1975-1980	8.7	8.9	-0.2	2004	4.0	2.3	1.7
1980-1985	6.7	5.2	1.4	2005	3.9	2.3	1.6
1985-1990	4.7	3.8	0.9	2006	4.0	2.3	1.7
1990-1995	3.4	3.0	0.4	2007	3.8	2.3	1.5
1995-2000	5.4	2.4	3.0	2008	3.7	2.3	1.4
1990	5.1	5.2	-0.1	2009	3.8	2.3	1.5
1991	3.0	4.1	-1.1	2010	3.8	2.3	1.5
1992	4.9	2.9	2.0	2015	3.8	2.3	1.5
1993	1.9	2.8	-0.9	2020	3.8	2.3	1.5
1994	3.4	2.5	1.0	2025	3.8	2.3	1.5
1995	4.0	2.9	1.1	2030	3.8	2.3	1.5
1996	4.5	2.9	1.6	2035	3.8	2.3	1.5
1997	6.0	2.3	3.7	2040	3.8	2.3	1.5
1998	5.7	1.3	4.4	2045	3.8	2.3	1.5
1999	5.7	2.2	3.5	2050	3.8	2.3	1.5
2000	5.5	3.5	2.0	2055	3.8	2.3	1.5
				2060	3.8	2.3	1.5
				2065	3.8	2.3	1.5
				2070	3.8	2.3	1.5
				2075	3.8	2.3	1.5
Intermediate:				High Cost:			
2001	4.9	3.0	1.9	2001	2.9	3.1	-0.3
2002	4.8	2.9	1.9	2002	3.6	3.4	0.2
2003	4.3	3.0	1.3	2003	6.8	5.0	1.7
2004	4.3	3.1	1.2	2004	4.3	6.1	-1.8
2005	4.4	3.2	1.2	2005	5.2	4.4	0.7
2006	4.4	3.3	1.2	2006	5.9	3.8	2.1
2007	4.3	3.3	1.0	2007	5.0	4.1	1.0
2008	4.2	3.3	0.9	2008	4.8	4.3	0.5
2009	4.3	3.3	1.0	2009	4.8	4.3	0.4
2010	4.3	3.3	1.0	2010	4.9	4.3	0.6
2015	4.3	3.3	1.0	2015	4.8	4.3	0.5
2020	4.3	3.3	1.0	2020	4.8	4.3	0.5
2025	4.3	3.3	1.0	2025	4.8	4.3	0.5
2030	4.3	3.3	1.0	2030	4.8	4.3	0.5
2035	4.3	3.3	1.0	2035	4.8	4.3	0.5
2040	4.3	3.3	1.0	2040	4.8	4.3	0.5
2045	4.3	3.3	1.0	2045	4.8	4.3	0.5
2050	4.3	3.3	1.0	2050	4.8	4.3	0.5
2055	4.3	3.3	1.0	2055	4.8	4.3	0.5
2060	4.3	3.3	1.0	2060	4.8	4.3	0.5
2065	4.3	3.3	1.0	2065	4.8	4.3	0.5
2070	4.3	3.3	1.0	2070	4.8	4.3	0.5
2075	4.3	3.3	1.0	2075	4.8	4.3	0.5

\* The Consumer Price Index is the annual average value for 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 the average annual wage in covered employment, and the average annual Consumer Price Index.

**OASDI Trust Fund**  
*continued from page 5*

**TABLE V.A3**  
**Period Life Expectancies**

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	2005	15.8	19.0
1945	12.6	14.4	2010	15.8	18.8
1950	12.8	15.1	2015	15.8	18.7
1955	13.1	15.6	2020	15.9	18.8
1960	12.9	15.9	2025	16.1	18.9
1965	12.9	16.3	2030	16.2	19.0
1970	13.1	17.1	2035	16.3	19.1
1975	13.7	18.0	2040	16.4	19.2
1980	14.0	18.4	2045	16.5	19.3
1985	14.4	18.6	2050	16.6	19.4
1990	15.0	19.0	2055	16.7	19.5
1991	15.1	19.1	2060	16.8	19.6
1992	15.2	19.2	2065	16.9	19.7
1993	15.1	19.0	2070	17.0	19.8
1994	15.3	19.0	2075	17.1	19.9
1995	15.3	19.0	High Cost:		
1996	15.4	19.0	2005	16.3	19.6
1997	15.5	19.1	2010	16.7	19.9
1998	15.6	19.0	2015	17.1	20.3
1999 t	15.7	19.1	2020	17.7	20.8
2000 t	15.7	19.1	2025	18.2	21.3
Intermediate:			2030	18.7	21.8
2005	16.0	19.3	2035	19.3	22.3
2010	16.3	19.3	2040	19.8	22.8
2015	16.5	19.5	2045	20.3	23.3
2020	16.8	19.7	2050	20.7	23.7
2025	17.0	20.0	2055	21.2	24.2
2030	17.3	20.3	2060	21.7	24.6
2035	17.6	20.6	2065	22.1	25.0
2040	17.9	20.8	2070	22.6	25.5
2045	18.2	21.1	2075	23.0	25.9
2050	18.4	21.4			
2055	18.7	21.6			
2060	18.9	21.9			
2065	19.2	22.1			
2070	19.4	22.4			
2075	19.7	22.6			

\* The period life expectancy at a given age for a given year represents the average number of years of life remaining if a group of persons at that age were to experience the mortality for that year over the course of their remaining life.

t Preliminary or estimated.

**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 for the Hospital Insurance Cost Estimates," in the 2001 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund. Copies of the HI 2001 Annual Report are available from Sol Mussey (410-786-6386).*

**T**his section describes the basic methodology and assumptions used in the estimates for the HI program under the intermediate assumptions. In addition, projections of program costs under two alternative sets of assumptions are presented.

**1. Assumptions**

The economic and demographic assumptions underlying the projections shown in this report are consistent with those in the 2000 Annual Report of the Board of Trustees of the Federal Old Age and Survivors Insurance and Disability Insurance Trust Funds. These assumptions are described in more detail in that report.

**2. Program Cost Projection Methodology**

The principal steps involved in projecting the future costs of the HI program are (a) establishing the present cost of services provided to beneficiaries, by type of service, to serve as a projection base; (b) projecting increases in payments for inpatient hospital services under the program; (c) projecting increases in payments for skilled nursing, home health, and hospice services covered under the program; (d) projecting increases in payments to managed-care plans; and (e) projecting increases in administrative costs. The major emphasis is directed toward expenditures for fee-for-service inpatient

hospital services, which account for approximately 68% of total benefits.

**a) 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. Therefore, payments to providers must be attributed to dates of service, rather than to payment dates. In addition, the non-recurring 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 that have been 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.

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 process increases the projection error directly, by incorporating any error in estimating the base year into all future years.

**b) Fee-for-Service 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.



**HI Trust Fund***continued from page 7*

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

Calendar Year	Labor			Nonlabor			Input Price Index	Unit Input Intensity Allowance †	Units of Service		
	Average Hourly Earnings	Hospital Hourly Earning Differential	Hospital Hourly Earnings	CPI	Hospital Price Input Intensity	Nonlabor Hospital Prices			HI Enrollment	Managed Care Shift Effect	Admission Incidence
Historical Data:											
1991	3.9%	0.8%	4.7%	4.1%	-1.2%	2.8%	4.0%	-0.6%	2.1%	-0.3%	1.1%
1992	6.3	-2.3	3.9	2.9	-0.9	2.0	3.2	-0.3	2.1	-0.4	0.0
1993	1.4	2.1	3.5	2.8	-0.6	2.2	3.0	-0.3	2.1	-0.6	2.8
1994	1.7	1.4	3.1	2.5	-0.6	1.9	2.7	-0.7	1.8	-1.0	2.4
1995	3.3	-0.7	2.6	2.9	1.1	4.0	3.1	-1.0	1.7	-2.0	2.4
1996	4.9	-2.0	2.8	2.9	-1.5	1.4	2.3	-0.7	1.4	-2.7	2.8
1997	4.2	-1.4	2.7	2.3	-1.2	1.1	2.1	-0.8	1.1	-3.2	3.5
1998	5.2	-1.8	3.3	1.3	1.2	2.5	3.0	-2.6	1.0	-3.1	1.1
1999	4.9	-1.6	3.2	2.2	-0.9	1.3	2.5	-2.2	0.9	-1.8	0.2
2000	4.8	-0.7	4.1	3.5	-0.1	3.4	3.8	-2.2	1.0	0.3	0.3
Projections: ++											
2001	3.8%	0.1%	3.9%	3.0%	-0.6%	2.4%	3.4%	-0.2%	1.1%	2.0%	-0.5%
2002	4.0	0.0	4.0	2.9	-0.4	2.5	3.4	-0.7	1.0	-0.2	0.6
2003	3.9	0.0	3.9	3.0	-0.2	2.8	3.5	-0.4	1.2	-0.2	0.2
2004	4.1	0.0	4.1	3.1	0.0	3.1	3.7	0.0	1.3	-0.2	0.1
2005	4.2	0.0	4.2	3.2	0.0	3.2	3.8	0.0	1.4	0.1	0.0
2006	4.3	0.0	4.3	3.3	0.0	3.3	3.9	0.0	1.5	-0.2	0.0
2007	4.1	0.0	4.1	3.3	0.0	3.3	3.8	0.0	1.8	-0.2	-0.2
2008	4.3	0.0	4.3	3.3	0.0	3.3	3.9	0.0	2.1	-0.3	-0.3
2009	4.4	0.0	4.4	3.3	0.0	3.3	4.0	0.0	2.1	-0.3	-0.3
2010	4.3	0.0	4.3	3.3	0.0	3.3	4.0	0.0	2.0	-0.4	-0.1
2015	4.4	0.0	4.4	3.3	0.0	3.3	4.0	0.0	2.9	-0.2	-0.4
2020	4.4	0.0	4.4	3.3	0.0	3.3	4.0	0.0	2.9	-0.1	-0.2
2025	4.4	0.0	4.4	3.3	0.0	3.3	4.1	0.0	2.5	-0.1	0.2

\* 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 1992 base year in 1997.

The law stipulates that the annual increase in the payment rate for each admission will be related to a hospital input price index (also known as the hospital market basket), which measures the increase in prices for goods and services purchased by hospitals for use in providing care to hospital inpatients. For the fiscal year 2001, the prospective payment rates have already been determined. The projections contained in this report are based on the assumption that for fiscal years 2002-2003, the prospective payment rates will be increased by the increase in the hospital input price index less the percentages specified by Public Law 106-554, the Benefits Improvement and Protection Act of 2000. For fiscal years 2004 and later, current statute mandates that 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 in five broad categories:

- 1) **Labor factors**—the increase in the hospital input price index that is attributable to increases in hospital workers' hourly earnings (including fringe benefits).
- 2) **Nonlabor factors**—the increase in the hospital input price index that 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 above shows the estimated values of the principal components of the increases for historical periods for which data are available, as well as the projected trends used in the estimates. Unless otherwise indicated, the following discussions apply to projections under the intermediate assumptions.



**TABLE II.F1 \* (continued from page 8)**  
**Components of Historical and Projected Increases in HI Inpatient Hospital Payments**

Calendar Year	Other Sources	HI Inpatient Hospital Payment
Historical Data:		
1991	-0.2%	6.2%
1992	7.0	11.9
1993	-1.3	5.8
1994	1.7	7.1
1995	0.4	4.7
1996	1.8	5.0
1997	-0.5	2.0
1998	-0.7	-1.4
1999	0.9	0.5
2000	0.3	3.6
Projections: ++		
2001	2.9%	8.9%
2002	1.2	5.4
2003	0.3	4.6
2004	0.6	5.7
2005	0.6	5.9
2006	0.6	6.0
2007	0.7	6.1
2008	0.6	6.2
2009	0.6	6.2
2010	0.7	6.2
2015	0.7	7.2
2020	0.8	7.6
2025	0.8	7.6

\* Percent increase in year indicated over previous year, on an incurred basis.

++ Under the intermediate assumptions

*Note: Historical and projected data reflect the hospital input price index which was recalibrated to a 1992 base year in 1997.*

**SMI Trust Fund:*****Estimates under Alternative II Assumption for Aged and Disabled (Excluding End-Stage Renal Disease) Enrollees***

*Editor's Note: The following except is taken from Section II.G, "Actuarial Methodology and Principal Assumptions for Cost Estimates for the Supplementary Medical Insurance Program," in the 2001 Annual Report of the Board of Trustees of the Federal Supplementary Medical Insurance Trust Fund. Copies of the SMI 2001 Annual Report are available from Sol Mussey (410-786-6386).*

\* \* \*

**T**his section describes the basic methodology and assumptions used in the estimates for the SMI program under the intermediate assumptions. In addition, projections of program costs under two alternative sets of assumptions are presented.

**1. Assumptions**

The economic and demographic assumptions underlying the projections shown in this report are consistent with those in the 2001 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds. These assumptions are described more fully in that report.

**2. Program Cost Projection Methodology**

Estimates under the intermediate assumptions are prepared by establishing for each category of enrollee and for each type of service the allowed charges or costs incurred per enrollee for a recent year (to service as a projection base) and then projecting these charges through the estimation 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 and payment for, service.

**a. Projection Base**

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. Therefore, payments to providers must be attributed to dates of service, rather than 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 disbursements.

**(1) Carrier Services**

Reimbursement amounts for physician services, durable medical equipment (DME), laboratory tests performed in physician offices and independent laboratories, and other services (such as free-standing ambulatory surgical center facility services, ambulance, and supplies) are paid through organizations acting for HCFA. These organizations referred to as "carriers," determine whether billed services are covered under the program and establish the allowed charges for the covered services. A record of the allowed charges, the applicable deductible and coinsurance, and the amount reimbursed after the reduction for coinsurance and the deductible is transmitted to HCFA.

The data are tabulated on an incurred basis, as the statute requires. As a check on the validity of the projection base, incurred reimbursement amounts are compared

with cash expenditures reported by the carriers through an independent reporting system. In a health care 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, and payment for, services.

**(2) Intermediary Services**

Reimbursement amounts for institutional services under the SMI program are paid by the same fiscal intermediaries that pay for HI services. Institutional services covered under the SMI program are outpatient hospital services, home health agency services, laboratory services performed in hospital outpatient departments, and other services such as renal dialysis performed in free-standing dialysis facilities, services in outpatient rehabilitation facilities, and services in rural health clinics. Reimbursement for institutional services occur in two stages. First, bills are submitted to the intermediaries and interim payments are made on the basis of these bills. The second stage takes place 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 the bills are prepared by date of service and the lump-sum settlements, which are reported only on a cash basis, are adjusted (using approximations) to allocate them to the time of service.

**(3) Managed Care Services**

Managed care plans with contracts to provide health services to Medicare beneficiaries are not reimbursed through carriers or intermediaries but instead are reimbursed directly by HCFA on either a reasonable cost or capitation basis. Comprehensive data on such direct reimbursements are available only on a cash basis. Certain approximations must be made to allocate expenses to the period when services were rendered.

**b. Fee-for-Service Payments for Aged Enrollees and Disabled Enrollees without End-Stage Renal Disease (ESRD)**

Disabled persons with ESRD have per enrollee costs that 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 contained in a later section. Similarly, costs associated with beneficiaries enrolled in managed care plans are discussed separately.

**(1) Carrier Services****(a) Physician Services**

Charges for physician services per fee-for-service enrollee are affected by a variety of factors. One factor, the increase in average charge per service, can be identified 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. Each of these categories will be discussed in turn.

Prior to 1992, bills submitted to the carriers during a specified "fee-screen year" were subject by statute to certain limitations on the level of fees to be allowed by the program for reimbursement purposes. The fee level allowed for a particular service by a physician was subject to reduction if it exceeded the median charge that the physician assessed for the same service in a prior base period. This median charge was called the "customary charge." Fees were subject to further reduction if they exceeded the prevailing charges for the locality (defined as the 75<sup>th</sup> percentile of customary charges for a particular service in a particular locality). Starting July 1, 1975, the rate of increase in prevailing charges was limited further by the application of the Medicare Economic Index (MEI). The

customary and prevailing charge limits maintained by the carriers were called "fee screens." Allowed charges were charges after application of the fee screens and were the charges on which reimbursement was based.

Public Law 101-239 provided for the replacement of customary and prevailing charges with fee schedules for physician services starting in 1992. The fee schedules are based on a resource-based relative value scale. The fee schedule amount is equal to the product of the procedure's relative value, a conversion factor, and a geographic adjustment factor. Payments are based on the lower of the actual charge and the fee schedule amount. Increases in physician fees are based on growth in the MEI, plus a performance adjustment reflecting whether past growth in the volume and intensity of services met specified targets.

Beginning in 1999, the MEI is adjusted to match spending under a sustainable growth rate (SGR) mechanism. Table II.G1 shows the projected MEI increases and performance adjustments for 2002 through 2010.

The physician fee updates shown through 2001 are actual values. The net increase in allowed fees shown in column 3 reflects the growth in the MEI, the performance adjustment, as well as any legislative impacts.

Per capita physician charges also have increased each year as a result of a number of other factors besides fee increases, including more physician visits per enrollee, the aging of the Medicare population, greater use of specialists and more expensive techniques, and certain administrative actions. The fourth column of table II.G1 shows the increases in charges per enrollee resulting from these residual factors. Because the measurement of increased allowed charges per service is subject to error, this error is included implicitly under residual causes. Based on the increases in table II.G1, table II.G2 (not included here) shows the estimates of the incurred reimbursement for physician services per fee-for-service enrollee.

**(b) DME, Laboratory, and Other Carrier Services**

Like physician services prior to 1992, all the non-physician carrier services were at one time reimbursed on a "fee screen" basis (with the exception that the MEI was not applied to their prevailing charges). Over time, special reimbursement rules

have been developed for such services. Beginning July 1, 1984, a unique fee schedule was established for laboratory tests performed in physician offices and independent laboratories. However, the laboratory fee schedule does not pertain to such laboratory services as pathology services and blood handling, which are reimbursed based on other fee schedules or other reimbursement mechanisms. In 1987, a fee schedule was established for certain DME items, and in 1989 another fee schedule was developed for additional DME items (prosthetics and orthotics). Similarly, over time other unique fee schedules or reimbursement mechanisms have been established for all other non-physician carrier services.

Table II.G1 shows the increases in the allowed charges per fee-for-service enrollee for DME, laboratory services, and other carrier services. Based on the increases in table II.G1, table II.G2 shows the corresponding estimates of the average incurred reimbursement for these services per fee-for-service enrollee.

The fee schedules for each of these expenditure categories are updated by increases in the Consumer Price Index (CPI), together with applicable legislated limits on payment updates. In addition, per capita charges for these expenditure categories have grown as a result of a number of other factors, including increased number of services provided, the aging of the Medicare population, more expensive services, and certain administrative actions. This growth is projected based on recent past trends in growth per enrollee.

**(2) Intermediary Services**

Originally, all intermediary services were reimbursed on a "reasonable cost" basis. The "reasonable costs" for a particular provider were the provider's aggregate costs associated with SMI beneficiaries. While the provider does not have costs per service, the provider does have a charge for each service. These charges were used to determine any beneficiary deductible or coinsurance liability. The SMI reimbursement would be the difference between the lower of the provider's reasonable costs or aggregate SMI charges and the aggregate amounts collected by the provider for any associated deductible and coinsurance payments.

**SMI Trust Fund***continued from page 11*

**TABLE II.G1**  
**Components of Increases in Total Allowed Charges**  
**Per Fee-for-Service Enrollee for Carrier Services (in percent)**

Physician Fee Schedule									
Increase Due to Price Changes									
Calendar year	MEI	MPA <sup>1</sup>	Net increase in allowed fees <sup>2</sup>	Residual factors	Total increase <sup>3</sup>	CPI	DME	Lab	Other carrier
<b>Aged:</b>									
1996	2.0	-1.2	0.8	-0.1	0.7	2.8	6.1	-8.0	13.7
1997	2.0	-1.4	0.6	3.0	3.6	2.7	12.0	-5.2	14.9
1998	2.2	1.2	2.9	2.6	5.6	2.3	-1.4	-9.2	10.9
1999	2.3	0.0	2.7	0.7	3.4	2.3	5.5	-0.3	10.8
2000	2.4	3.0	5.9	3.1	9.2	2.4	9.9	7.5	11.4
2001	2.1	3.0	6.2	1.5	7.9	2.7	11.1	1.5	9.0
2002	2.2	0.9	4.6	2.0	6.7	2.9	7.0	2.3	7.7
2003	1.8	0.1	2.1	2.3	4.5	3.0	7.6	5.2	7.6
2004	1.7	-0.8	1.0	2.8	3.8	3.1	7.2	5.8	7.3
2005	1.6	-1.6	1.1	2.7	3.8	3.2	7.3	5.9	7.4
2006	1.6	-2.6	-1.0	3.3	2.3	3.3	7.5	6.0	7.5
2007	1.7	-2.7	-1.0	3.4	2.3	3.3	7.5	6.0	7.5
2008	1.7	-2.6	-0.9	3.3	2.4	3.3	7.5	6.0	7.5
2009	1.7	-2.5	-0.8	3.3	2.4	3.3	7.4	6.0	7.5
2010	1.7	-2.2	-0.5	3.2	2.7	3.3	7.5	6.0	7.5
<b>Disabled (excluding ERSD)</b>									
1996	2.0	-1.2	0.8	-1.2	-0.4	2.8	4.8	-8.8	8.8
1997	2.0	-1.4	0.6	1.7	2.3	2.7	15.2	-5.4	8.1
1998	2.2	1.2	2.9	1.9	4.9	2.3	2.0	-7.0	8.9
1999	2.3	0.0	2.7	-0.3	2.4	2.3	4.3	1.6	9.6
2000	2.4	3.0	5.9	-2.7	8.8	2.4	8.8	5.5	9.5
2001	2.1	3.0	6.2	1.5	7.8	2.7	11.2	1.5	14.2
2002	2.2	0.9	4.6	2.0	6.7	2.9	6.9	2.2	7.5
2003	1.8	0.1	2.1	2.3	4.4	3.0	7.5	5.1	7.5
2004	1.7	-0.8	1.0	2.7	3.7	3.1	7.2	5.7	7.2
2005	1.6	-1.6	1.1	2.7	3.8	3.2	7.3	5.8	7.3
2006	1.6	-2.6	-1.0	3.3	2.2	3.3	7.4	5.9	7.4
2007	1.7	-2.7	-1.0	3.3	2.3	3.3	7.4	5.9	7.4
2008	1.7	-2.6	-0.9	3.3	2.3	3.3	7.4	5.9	7.4
2009	1.7	-2.5	-0.8	3.3	2.4	3.3	7.4	5.9	7.4
2010	1.7	-2.2	-0.5	3.2	2.6	3.3	7.4	5.9	7.4

<sup>1</sup> Medicare performance adjustment<sup>2</sup> Reflects the growth in the MEI, the performance adjustment, as well as any legislative impacts.<sup>3</sup> Equals combined increases in allowed fees and residual factors.

Over the years, legislation modified this reimbursement mechanism for various types of services. Beginning July 1, 1984, the same laboratory fee schedule established for tests performed in physician offices and independent laboratories also applied to laboratories in hospital out-patient departments, but with slightly higher rates. Subsequent legislation made the two fee schedules identical. The Balanced Budget Act of 1997 (BBA) implemented a prospective payment system (PPS), effective August 1, 2000, for services performed in the outpatient department of a hospital. It also implemented a PPS for home health agency services, which began October 1, 2000.

The historical and projected increases in charges and costs per fee-for-service enrollee for intermediary services are shown in table II.G3 (see page 13). The projected increases shown in this table reflect the impact of the BBA, provisions of which include the transfer of roughly two-thirds of home health agency services from the HI trust fund to the SMI trust fund starting in 1998. All benefit payments for those home health agency services being transferred are to be paid out of the SMI trust fund beginning January 1998. However, for the 6-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.G3, and elsewhere in this section with the exception of table II.G8 (not shown), the estimates for home health agency costs for 1998 through 2003 are the gross amounts associated with the payment of benefits and are not adjusted for the funds transferred from the HI trust fund.

Based on the increases in table II.G3, table II.G4 (not included here) shows the estimates of the incurred reimbursement for the various intermediary services per fee-for-service enrollee. Each of these expenditure-categories is projected on the basis of recent past trends in growth per

**TABLE II.G3**  
**Components of Increases in Recognized Charges and Costs Per Fee-for-Service Enrollee for Intermediary Services (in percent)**

Calendar year	Outpatient hospital	Home health agency <sup>1</sup>	Outpatient lab	Other intermediary
<b>Aged:</b>				
1996	9.2	6.0	1.4	18.0
1997	8.1	1.0	5.8	10.9
1998	-0.5	3,118.8 <sup>2</sup>	5.0	-1.5
1999	5.6	-21.3	8.2	-19.0
2000	5.5	0.2	5.9	16.3
2001	15.2	19.8	3.9	8.6
2002	2.7	23.7	3.7	6.0
2003	7.4	5.5	5.7	-13.6
2004	5.8	8.8	5.8	6.3
2005	9.0	5.7	5.9	6.1
2006	8.1	5.8	6.0	6.1
2007	8.0	5.4	6.0	6.1
2008	8.1	4.9	6.0	6.1
2009	8.2	4.0	6.0	5.9
2010	8.2	4.4	6.0	5.9
<b>Disabled (excluding ERSD)</b>				
1996	3.2	—	-7.4	20.8
1997	6.2	—	-2.9	16.7
1998	-0.6	— <sup>2</sup>	-0.2	-23.1
1999	5.0	-20.8	8.7	-11.3
2000	7.7	6.1	5.0	10.2
2001	14.6	20.3	3.8	11.4
2002	2.8	22.2	3.6	7.0
2003	7.3	5.1	5.7	-28.2
2004	5.8	8.3	5.7	7.0
2005	8.8	5.3	5.8	7.0
2006	7.9	5.5	5.9	7.0
2007	7.8	5.4	5.9	7.0
2008	7.9	5.3	5.9	7.0
2009	8.0	4.6	5.9	7.0
2010	8.0	4.9	5.9	7.0

<sup>1</sup> From July 1, 1981 to December 31, 1997, home health agency services were almost exclusively provided by the Medicare HI program. However, for those SMI enrollees not entitled to HI, the coverage of these services was provided by the SMI program. During that time, since all SMI disabled enrollees were entitled to HI, their coverage of these services was provided by the HI program.

<sup>2</sup> Effective January 1, 1998, the coverage of a majority of home health agency services for those individuals entitled to HI and enrolled in SMI was transferred from the HI program to the SMI program. As a result, as of January 1, 1998, there was a large increase in SMI expenditures for these services for the aged enrollees, and SMI coverage for these services resumed for disabled enrollees.

enrollee, together with applicable legislated limits on payment updates.

**c. Fee-for-Service Payments for Persons Suffering from ESRD**  
 See SMI 2001 Annual Report.

**d. Managed Care Costs**

Program experience with managed care payments has generally shown a strong upward trend. However, in recent years, there has been a slow-down in the number of Medicare beneficiaries choosing to enroll in managed care plans, and in 2001 an overall reduction in this number. Capitated plans currently account for approximately 95% of all SMI managed care payments. For capitated

plans, per capita payment amounts have grown following the same trend as fee-for-service per capita cost growth, based on the formula in the law to calculate managed care capitation amounts. The projection of future per capita amounts follows the requirements of the Balanced Budget Act of 1997 as related to the Medicare+Choice capitation amounts, which increase at rates based on the per capita growth for all of Medicare, less specified adjustments in 1998 to 2002.

The projected rates are further adjusted by the Benefits Improvement and Protection Act of 2000 (see section II.A for more details). Table II.G6 shows

the estimated number of SMI beneficiaries enrolled in a managed care plan and the aggregate incurred reimbursements associated with those enrollees.

Growth in managed care enrollment and expenditures was quite large in the early 1980s, but slowed in the late 1980s. Then very rapid growth occurred through the mid-1990s. Recently the growth in managed care has slowed to a more moderate level. The projection reflects a significant decrease in 2001, based on plan preliminary enrollment data, followed by slow increases in the next few years as the provisions of the BBA (as subsequently modified) continue to limit growth in capitation rates. Thereafter, Medicare+Choice enrollment is assumed to gradually reaccelerate somewhat.

## The Changing Retirement Landscape

by Robert L. Clark and Anna M. Rappaport

*Editor's Note: This article is based on the presentations given by both authors at the Changing Patterns of Retirement Seminar at the Spring 2001 Society of Actuaries meeting.*

### Introduction

Older workers must determine the desired age of retirement from their career employer and whether they wish to continue working at some other job or retire completely. The timing of retirement depends on an individual's health status, family situation, household wealth, annual earnings, personal preferences, and whether they are covered by a pension plan. Throughout most of the twentieth century the retirement age of men declined; however, since the mid-1980s, labor force participation rates of older men have remained relatively constant. The proportion of older women in the labor force has always been lower than that for men. During the last half of the twentieth century, the participation rates of younger women increased rapidly. This has gradually increased the number of older women who are now deciding on retirement from career jobs. In this paper, we describe some of the important changes that have occurred in the timing of retirement and explore the reasons for the shift in retirement practices.

Employer-provided pension plans play a major role in the retirement decisions of many employees. Until the mid-1970s, most pension plans were defined benefit pensions. In these plans, workers are promised a benefit in retirement that is a function of their years of service and final earnings. These plans tend to cover all qualified employees and the company bears the investment risk associated with saving for retirement. For the past 25 years, there has been a sharp and continuing movement away from defined benefit plans and toward greater utilization of defined contribution plans. In these plans, the company and employees make periodic

contributions into an individual account for the employee. Income in retirement depends on worker decisions to make contributions, the investment choices made by the individual, and a willingness to use plan funds for retirement purposes.

This change in plan type has altered retirement decisions and hence the timing of retirement for many workers. Defined benefit plans foster career employment and encourage early retirement while defined contribution plans are much more age neutral. This change has been in response to increased government regulation that raised the cost of offering defined benefit plans, shifts in employment away from large and well established businesses, and worker preferences for individual account plans that are more portable. The low levels of unemployment that have prevailed during the last five years have been created severe shortages of some types of workers, especially those with special skills. This has made attracting and retaining employees more difficult for many firms and increased their desire to retain older workers.

Since 1985, the age at which men leave the labor force has gradually increased. Women, who do not have the same histories in the labor force as men, are also gradually increasing the time when they leave the labor force. This year the first wave of baby boomers will reach the traditional early retirement age of 55. A number of employers will face a markedly older worker force and a significant talent drain if baby boomers elect to retire at early ages. The average age of employees in many utilities is in the mid-40s. Hospitals have a general nursing shortage and are concerned as many nurses near retirement age.

Individuals are choosing to leave the workforce in steps, often by retiring from one job, and taking a bridge job before leaving the labor force entirely.



Currently, few employers facilitate leaving the company in steps, but phased retirement is getting increased attention today. Often, it is viewed as a way to get people to stay on the job longer. In other cases, such as in universities, offering these programs to tenured faculty is a way to encourage people to leave. In this article, we will review basic patterns of retirement and key trends, retirement plan trends, and present the results of a William M. Mercer, Incorporated survey on phased retirement and compare these results to other national data.

### Economic Determinants of Retirement

Retirement decisions are influenced by a variety of socio-economic factors. Key determinants of retirement include an individual's health status along with the health of one's spouse, children, and parents. The primary economic factors affecting the retirement age are annual compensation, household wealth, pension coverage and benefit accruals, and access to health insurance. Individual preferences for leisure activities and the onerousness of work also play a role. Research findings indicate that retirement is more likely among those with poor health, higher wealth, and relatively stable annual earnings.

Pension coverage is typically associated with earlier retirement, especially if there is coverage by a traditional defined benefit plan. These plans provide large economic incentives for workers to retire at particular ages, i.e. when the worker qualifies for early and normal retirement

benefits. In contrast, defined contribution plans are more age neutral in their retirement effects. Individuals covered by these plans tend to have higher total wealth that provides an incentive for retirement; however, benefits continue to accrue under these plans and future annual benefits can increase rapidly as retirement is delayed until older ages.

Workers covered by health insurance through their employer may be reluctant to retire and have to purchase health insurance in the private market. Most individuals will become eligible for Medicare at age 65 so that this is primarily a problem facing early retirees. In an effort to support early retirement, some companies provided retiree health insurance so that early retirees would retain their access to the company's health insurance plan. This benefit can be of considerable value to many individuals especially those considering early retirement.

Workers with rapidly increasing annual earnings will be more likely to remain on the job while employees whose nominal earnings have plateaued are more likely to retire. This effect is even more important when the worker is a participant in a defined benefit pension plan. Workers in poorer health are more likely to retire; however, access to health and disability insurance may influence this decision. Health problems of a spouse, parents, or children may also influence retirement decisions. The need for additional income and health insurance coverage will tend to prolong worklife while the need to provide care to ill and disabled family members may hasten retirement. The importance of these effects typically differs by gender.

### ***Trends in Retirement Age***

Throughout most of the twentieth century there was a long-term trend toward earlier retirement. The labor force participation rates of older men fell dramatically during this period. In 1950, one out of every two men 65 and older was in the labor force. By 1985, only one out of six older men remained on the job. Declines in the proportion of men in the labor force were also reported for men aged 45 – 64. For example, the labor force participation rate

of men 55 – 59 years of age fell from over 90% in the early 1960s to less than 80% by 1985 while the rate for men aged 60 – 64 dropped from 80% to almost 50% during the same period. However, the decline in the participation rates for men 45 and older ended in the mid-1980s. The labor force participation rates of older men in 2000 is slightly higher than it was in 1985.

The trend toward earlier and earlier retirement has been primarily a male dominated event. In contrast, the proportion of older women who are in the labor force remained relatively stable during the 1960s and 1970s and has been increasing throughout the past two decades. This is a reflection of the increased proportion of each succeeding cohort of women who have established more permanent working careers.

What has caused the ending of the trend toward early retirement among men? Several economic factors seem to be playing a role in this change. First, changes in pension coverage from defined benefit plans to defined contribution plans means that fewer workers are covered by pension plans with early retirement incentives. The more recent growth in cash balance plans also means that participants in these plans do not face the early retirement incentives that are imbedded in traditional defined benefit plans.

Second, important changes in Social Security have also provided increased incentives for older persons to remain employed. The reduction in the earning test for persons over 65 and then its elimination means that older workers are able to continue working and still receive their Social Security benefits. More recently, the gradual increase in the age of normal retirement is lowering the benefits for all retirees thus encouraging older persons to delay retirement.

Third, rapid economic growth of the past decade has changed the attitudes of many employers toward retaining older workers. Instead of encouraging early retirement through buyouts and early retirement windows, some companies are now trying to actively retain older workers because they were having difficulty

finding replacements for retirees. Low unemployment rates, rapid economic growth, increased demand for workers combined with a more slowly growing labor force forced companies to reconsider their human resource policies. The shift toward defined contribution and cash balance pension plans is just one manifestation of such changes.

Fourth, increasingly companies are attempting to entice workers to remain on the job at least part time with the adoption of formal and informal phased retirement programs. These programs allow workers to remain on their career jobs while working fewer hours. Some workers find such options appealing. Still other workers are moving from career jobs to bridge jobs with new employers in order to delay complete retirement.

Is the current pattern of a more stable retirement age a permanent change from the trend toward early retirement or merely a pause in an inevitable decline in the age of retirement? Some argue that the current situation is merely a pause associated with the economic expansion. These analysts predict that as economic growth slows companies will once again resort to encouraging older workers to retire and retirement ages will begin to fall. Other researchers point to the structural changes in pensions, social security, and increasing life expectancy and argue that these changes are real and will continue to encourage older workers to remain in the labor force.

### ***Trends in Plan Design***

As noted above, there has been a major shift away from defined benefit plans, largely with final average pay formulas, to defined contribution and cash balance plans. Large employers usually provide a multi-layer retirement program, featuring a combination of a base benefit offered to all employees and paid for by the employer supplemented by a matched savings program, such as a 401(k) or 403(b) program Exhibit I shows the benefit pattern by type of employer. The base layer is increasing cash balance or defined contribution.

*continued on page 16*

## The Changing Retirement Landscape

*continued from page 15*

### Exhibit I Retirement Plan Trends - Benefit Pattern by Type of Employer

Type	Large	Medium	Small
Public Sector	Traditional pensions plus retiree health	Same	Traditional pensions in pooled arrangement
Business- Stock owned by public	Employer paid benefit plus 401(k) plus some stock ownership and retiree health (in about half of companies)	<i>Defined contribution plan including 401(k) features</i>  May allow continuation of medical to age 65	Possible chance for ownership of business  If pension, probably defined contribution
Business – privately owned	Employer paid benefit plus 401(k) and retiree health (in about half of companies)	Defined contribution plan including 401(k) features  May allow continuation of medical to age 65	Possible chance for ownership of business  If pension, probably defined contribution
Not for profits	Pension plan plus tax sheltered annuity	Tax sheltered annuity	Tax sheltered annuity

Exhibit II shows the type of plan based on the 2000 summary of William M. Mercer's Trebase database. This database includes over 600 companies, and includes medium and larger companies, with the minimum size being 500 employees. 34% of *Fortune's* top 250 organizations and 28% of the *Fortune* 500 are included. The database consists primarily of Mercer clients, and is not a random sample of all businesses. The database would include companies in the first two columns of Exhibit I, and would be largely for-profit businesses.



**Exhibit II  
Retirement Plan Trends - Types of Plans**

<b>DB and DC Plans</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
Both DB and DC Plans	74%	73%	74%	71%	67%	64%
DB Only	3%	3%	2%	2%	1%	1%
DC Only	21%	23%	24%	27%	32%	35%
Unknown	2%	1%				

Traditional defined benefit plans, particularly those with liberal early retirement subsidies encourage retirement at specific ages, whereas cash balance and defined contribution plans are much more age neutral. Exhibit III shows the trend away from traditional final average pay defined benefit plans to cash balance. It shows types of defined benefit plans from the Mercer database. Another trend is to move more money into the matched savings program and decrease the size of the base retirement benefit.

<b>Exhibit III Retirement Plan Trends - Distribution of DB Plans by % of Plans</b>				
<b>Type of Plan</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
Final Average	74%	68%	65%	65%
Career Average	9%	9%	8%	7%
Career Average with Upgrade	4%	4%	4%	3%
Cash Balance	7%	12%	14%	15%
Service Credit	5%	6%	7%	7%
<i>Retirement Equity</i>	1%	2%	2%	3%

***Mercer Survey Results***

In 2000, William M. Mercer, Incorporated surveyed employers to learn about their goals with regard to an aging workforce, and about their programs for supporting phased retirement. In our survey, more than half of the respondents (55 percent) said they have no specific goals with regard to the employment of older workers. Other respondents cited multiple goals. Those organizations with older workforces were no more likely to have specific goals than those with younger workforces. The incidence of particular goals is shown on the next page. Many of the companies in the survey are pursuing both types of targeted retention efforts listed in the table. The need to retain quality older workers is important to many employers in the current period of economic growth.

## The Changing Retirement Landscape

*continued from page 17*

### Exhibit IV

#### Goals With Regard to Employment of Older Workers

Target retention efforts to workers with special expertise or key relationships	30%
Target retention efforts to individuals or groups with hard-to-replace skills	29%
Encourage all older workers to stay on	16%
Enable early retirement	10%
Target early retirees from other companies to fill open positions	7%

### Phased Retirement Programs

Although formal phased retirement programs are quite rare, they seem to be of growing interest to employers. A variety of approaches can be used to help people phase out before collecting retirement benefits. Twenty-three percent of employers offered at least one program to help people phase out. These programs were generally also made available to other employees seeking alternative work schedules so that there were not exclusively phased retirement programs. Some organizations are using multiple programs. There are the programs being used by the 23 percent of respondents who provide at least one program.

### Exhibit V

#### Approaches to Supporting Phased Retirement — Respondents with Formal Programs

<i>Reduced hours or schedules</i>	47%
<i>Special assignments</i>	45%
<i>Temporary work</i>	42%
<i>Consulting work</i>	42%
<i>Job sharing</i>	17%
<i>Telecommuting</i>	10%

### Rehiring Retirees

Thus far, we have focused on phasing out work before retirement benefits are collected. An alternative would be to allow employees to retire and collect benefits, and then return to work later. Some businesses have been quietly rehiring retirees, often as consultants, temporary or part-time employees. A company considering rehiring retirees as a method of phased retirement needs to be sure that a bona fide employment termination took place, and that the arrangement is not simply a continuation of the prior job. In the Mercer study, 41 percent of the surveyed organizations said they have no policy regarding the rehire of retirees. Rehiring policies were most prevalent among government (89 percent) and higher education organizations (88 percent). Of the 59 percent of the entire survey group that reported having a policy:

- 63% will rehire retirees as part-time or temporary workers (benefits-eligible if sufficient hours are worked);
- 61% will rehire retirees as independent contractors or consultants (not benefits-eligible);
- 24% percent will rehire retirees full-time after a waiting period;
- 15% maintain a pool of retirees for temporary work; and
- 4% prohibit rehire of retirees.

### Retirement Benefits for Rehired Retirees

When a company with a defined benefit or cash balance plan rehires retirees on a benefit-eligible basis, the company needs to address the issue of suspending any pension benefits already in payment, as is legally required in the case of early retirees (rehired before they have

reached the plan’s normal retirement age). Of the 117 respondents in this category that provided details about suspension of benefits:

- 51% suspend benefits both before and after normal retirement age;
- 21% pay lump-sum benefits, hence suspension is not an issue;
- 19% do not suspend benefits for those after normal retirement age;
- 2% let rehires choose between suspension and waiver of plan participation; and
- 7% use a combination of strategies.

**Comparisons with Other Studies**

Other studies have also found rehiring to be much more common than programs designed to help people phase out on the front end. A 1999 AARP/EBRI study conducted by Mathew Greenwald included telephone interviews with 65 companies included in the 100 best companies for working mothers, listed in *Working Mother* magazine. This is what it found:

**Exhibit VI**  
**Comparison of Mercer Survey with AARP Results**

Experience	Number of Companies
Currently offers phased retirement	1
Had phased retirement in the past	3
Considered phased retirement	4
Hires back retirees	40
Offers part-time and/or flexible schedules	20
Reports no related experience	13

**Benefits of Phased Retirement Programs for Employer and Employees**

Looking at these patterns, businesses are now seeing an opportunity to address the labor shortage by cultivating the fastest-growing segment of the population—older workers—through flexible phased retirement programs. The benefits for both employers and employees are significant. Programs provide a way of retaining institutional knowledge and specialized skill, boosting productivity by keeping highly experienced workers rather than hiring lower-skilled ones, lowering hiring and training costs, as well as attracting the best employees over time. Benefits to employees include a greater sense of control over the transition from work to retirement, lower risk of economic insecurity, and more social support.

**Conclusion**

As the Baby Boom cohort ages, Americans are increasingly choosing to leave the labor force in steps. Individuals are creating their own personalized phased retirement programs either with their career companies or through finding new jobs. Businesses facing long-term labor shortages find that they need to adapt to the aging workforce. At present, the preferences of individuals and the formal phased retirement programs offered by businesses are out of step. At the same time, an increasing number of businesses are rehiring retirees one at a time and introducing general flexible work options.

This is an area of human resource management which is evolving and where there is a great deal of uncertainty. Formal phased retirement may very well become much more important in the future. Regulatory constraints make it difficult to offer formal phased retirement programs in conjunction with some types of retirement plans. However, there is substantial interest in making policy and regulatory changes to allow the development of phased retirement programs. There is a great potential for innovative approaches. The area should be watched closely and businesses need to evaluate what approaches will best meet their needs.

**The Authors:**

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## 401(k) Tax Trap?

by Ho Kuen Ng

It is almost a universally accepted fact that tax-deferred savings are good. Deferral of taxable income and deferral of taxable investment earnings until they are distributed seem to be good ideas to lower taxes. Many articles have been written and numerical examples constructed to show people who are not as mathematically oriented the advantages of such savings. We will report on a recent paper that gives surprising results.

In the article "Tax Assistance to Qualified Retirement Savings Plans: Deferral or Waiver?" *Journal of Actuarial Practice*, Vol. 2, No. 1, 1994, Robert L. Brown studied whether taxes are deferred or waived. In this paper, the author called it a tax deferral if taxes paid with or without a certain tax provision are the same on an accumulated value basis. He called it a tax waiver if taxes paid with a certain tax provision are smaller than taxes paid without that provision, again on an accumulated value basis. Under very simple assumptions, the author showed that the deductibility of contribution is a tax deferral, whereas the nontaxation of investment income until distribution is a tax waiver for an individual or a tax subsidy from the government.

Mark W. Campbell gave a discussion of Brown's paper in the *Journal of Actuarial Practice*, Vol. 2, No. 2, 1994. He pointed out that Brown's conclusion followed from, and was only because of, the assumptions made. He proceeded to change the assumptions and drew different conclusions. For example, based on a certain set of assumptions, he concluded that the deferral of the taxation of investment income until distribution in fact

provides gains to both plan participants and the government.

It should be noted that both papers discussed above are based on very simple economic assumptions and a simplified tax system. In Working Paper 01-08 "Does participating in a 401(k) raise your lifetime taxes?" of the Federal Reserve Bank of Cleveland, Jagadeesh Gokhale, Laurence J.

Kotlikoff and Todd Neumann used a more elaborate set of assumptions and a much more realistic tax system to study the effects of participation in 401(k) plans on employees at various income levels. Specifically the authors consider the percentage change in lifetime taxes and spending on a present value basis. Everything else being the same, an increase in lifetime taxes corresponds to a decrease in lifetime spending, and conversely. The results are interesting.

The authors used the Economic Security Planner (ESPlanner), a financial planning program that makes detailed calculations on federal income tax, state income tax and social security benefit. The program can take into account factors such as housing, bequest, college expenses, life insurance, itemized deductions, exemptions, etc. that Brown and Campbell could not have done using only simple mathematical calculations.

In the simplest case, if tax rates are constant and social security benefits are not subject to tax, then participating in 401(k) plans results in a reduction in lifetime taxes. This is not surprising,



and can be easily and algebraically proven.

For more detailed analysis, the authors considered a family consisting of a husband and a wife at the same age, with a child born when they are 25 years of age, and another child born when they are 30 years of age. They purchase their home at age 25 by making a 20% down payment and taking out a mortgage at 8%. Their earnings grow at the rate of 1% per year in real terms. The couple begins participating in a 401(k) plan at age 25, deferring 13.5% of their incomes and receiving a match equal to 3% of their incomes. As comparisons, the same family is considered under the alternative assumption that their employers pay them as incomes the amounts that are not contributed to a retirement plan.

The first surprising finding is that if the hypothetical family has income not exceeding \$50,000, their lifetime taxes in fact increase if the real rate of return is 6% or more. Such increase in taxes increases further if a higher rate of return is achieved. On the other hand, for a couple with income at \$200,000 or more,

lifetime taxes are reduced based on a real return of 4%, 6% or 8%. For households with even higher income, they still enjoy a tax reduction, but such reduction may decrease as their incomes increase because their 401(k) contributions are limited by IRC section 415. In other words, if section 415 were repealed or substantially increased, the result would be more beneficial to the very high-income participants with no corresponding benefit to their low-income coworkers. One may ask why this is so.

For a low-income family, the accumulation of plan contribution and investment income and their subsequent distribution may push the family into a higher marginal income tax rate, whereas a family that is already at the top tax bracket will not suffer such a consequence. However there are two other important, but not often considered, factors that affect lower-income workers. One, more of their social security bene-

deferrals in amounts that exceed the increase in lifetime taxes, then they should participate to take advantage of the match, but they may be better off if they defer income only to the extent that the maximum match is obtained.

The timing of contribution was also studied. The authors compared the results when a couple contributes for 25 years from age 25 to 50 with those when the same couple contributes from age 40 to 65. It was found that in the latter instance, even low-income couples have tax savings in most cases.

The authors also made comparisons between traditional IRA contributions and Roth IRA contributions. The main reason for the difference between the two is that contribution to a Roth IRA is after-tax and investment income in it is tax-free. The results are most striking. Traditional IRA contributions and subsequent withdrawals may increase lifetime taxes for low-income families when contribution limits are increased. On the

effect, according to this paper, is that such tax provisions benefit high-income families more than low-income families, and in fact may hurt low-income families. This result seems to be contrary to the intent of lawmakers.

With the passage of the Economic Growth and Tax Relief Reconciliation Act, low-income families now have an additional incentive to save. They are entitled to a nonrefundable tax credit of up to 50% on a contribution of \$2,000. It would be interesting if the authors could re-analyze the situation based on this additional detail.

EGTRRA also has catch-up provisions for older participants. One wonders how the results would change if a couple delays contribution to retirement plans and uses the catch-up provisions to make higher contribution when they become eligible.

Another perspective that is worth considering is the utility of money. People have different perceptions as to the importance of the ready availability of money, the amount of available money and the time when available money is spent. In their paper, the authors considered the cases when a couple desires a 10% higher and a 10% lower living standard in retirement. It would be interesting if the authors could analyze the situation based on different utility functions instead of a straight present value calculation.

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*For Working Paper 01-08 of the Federal Reserve Bank of Cleveland, and electronic copy is at: <http://www.clev.frb.org/Research/Workpaper/2001/Wp0108.pdf>.*

*"The increase in contribution limits and the nondiscrimination rules are supposed to encourage more people to defer and save for retirement."*

fits will be taxed. Two, the reduction of taxable income due to 401(k) deferrals also reduces tax exemptions and mortgage deductions. In fact, if such a family only had earnings from employment, had no home and no children, and were exempt from participation in the social security system, their 401(k) plan would provide them with a reduction in lifetime taxes.

Based on the above finding, should a low-income couple not contribute to their 401(k) plan? The authors suggested that if this couple's employers match their

other hand, Roth IRAs bestow tax benefits at all income levels.

The authors considered many more alternative assumptions. Readers are encouraged to read the paper for all the interesting conclusions and analysis. The results, though surprising, are not unreasonable, and the authors gave detailed explanations of them.

This paper brings policy issues into question. The increase in contribution limits and the nondiscrimination rules are supposed to encourage more people to defer and save for retirement. But the

## Cash Balance Papers

by Thomas B. Lowman

*Editor's Note: The Society of Actuaries made a call for papers on the topic of Cash Balance plans. This call resulted in eight papers on different aspects of cash balance plans. These papers were presented at the Dallas Spring meeting of the SOA. The following is a summary of each of the papers with some of my own comments. You can obtain copies of the papers by contacting the Society of Actuaries.*

### **Economic Design of Cash Balance Pension Plans by Jeremy Gold**

This paper "challenges common sense, actuarial intuition, and current practice." It proposes that it is best to invest all plan assets in fixed income securities and to tie participants' cash balance interest credits to equity indexes. The rationale for this has to do with the tax benefits to the shareholders of the plan sponsor. The author admits that there are "economic frictions" such as regulatory constraints that limit the application of this model. However, it provides actuaries with an alternative view that is worth understanding. For his effort, Jeremy Gold was awarded first prize in the call for papers.

### **Emergence of Hybrid Pensions and Their Implications for Retirement Income Security in the Twenty-First Century, by Robert L. Clark and Sylvester J. Schieber**

This paper covered a wide range of issues related to the conversion from traditional plans to hybrid plans. Issues covered range from (1) why employers make the change to (2) the wear away problem and (3) defining winners and losers in the conversion process. One of the most impressive parts of the paper is the extensive amount of data on actual plan conversions. The authors were awarded an honorable mention prize for their paper.

### **The Guaranteed Investment Defined Contribution Plan, by Carl L. Frammolino**

The concept presented was the creation of a floor offset arrangement using a cash

balance plan and a money purchase plan. The Money Purchase plan's contribution rate would match the Cash Balance plan's pay credit. The paper has an extensive amount of detail on the compliance issues related to this design. While many commented on an employer's reluctance to adopt such a design, the value to employees was clear. The author was awarded an honorable mention prize for his paper.

### **The Cash Balance Funding Method, by Raymond Murphy**

This paper examined the idea of setting the Normal Cost equal to adjusted Pay Credits and the Actuarial Liability equal to the Account Balance. This more conservative funding method essentially said that investment gains should not be anticipated. This theme existed in some form in a few other papers. The author was awarded an honorable mention prize for his paper.

### **Saving Social Security with a Cash Balance Plan, by Jonathan Barry Forman**

An overview of the problems with the current Social Security system is presented along with a discussion of the need for reform. This is followed by a discussion of the use of a Cash Balance design to reform the system and how such designs have been actually used in other countries. The main criticism of the article was simply a need to hear more including a more specific proposal and more detail of how well Cash Balance works or does not work in the Social Security systems of other countries.

### **The Role of Cash Balance and Traditional Defined Benefit Plans in Managing Retirement Risks, by Karen Nowiejski**

Utility theory has been part of the SOA syllabus for several years. This paper defines a utility function to compare three types of plans: defined contribution plans, traditional defined benefit plans and cash balance plans. It covers the various types of risks faced by participants in each of these three types of plans. This paper was a brave attempt



*Here the 1st prize winner receives his award for his story on the Cash Balance Call for Papers at a recent conference held by the Pension Section.*

at a new concept that needs further development.

### **Cash Balance Plans in a Traditional Benefit World, by Daniel R. McMonagle**

This paper compares Cash Balance plans to Traditional plans in both their design and compliance aspects. It covers the controversial issue of age discrimination in Cash Balance plans and probably contains more opinions than any other paper. Also covered was a discussion of how current liability is determined, for which an alternative view was presented by a commentator at the seminar.

### **Who Carries What Risk For Cash Balance Pension Plans, by Thornton Parker**

This paper focused on the problem of depending on stock values with the coming retirement of the baby boomers. This relates to the future supply and demand for stocks. In a cash balance environment the author questions the use of leverage (assuming high investment returns based on past equity markets vs. lower interest credits). While many of the recommendations made by the author are worth considering, they relate more to defined benefit plans in general than to Cash Balance plans specifically.

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## Dead on Time or Late Again?

### Does mortality really matter for Pension Plan Valuations?

by Gene Kalwarski and Peter Hardcastle

*Editor's Note: The editor attended Gene Kalwarski's presentation at the 2001 Enrolled Actuaries Meeting at which the effect of improving mortality was compared to other sources of gain and loss, namely rates of return, payroll inflation and award of cost of living increases. That study used the Social Security Administration's mortality improvement assumptions. This article extends this work to examine the impact of updating mortality tables from those used recently to the latest draft mortality study recently published by the Society of Actuaries.*

#### Introduction:

The crises with Social Security systems around the world rest, to a large degree, on a declining support ratio, partly the result of improvements in mortality. For a 'pay as you go' (PAYGO) system mortality improvement projections are critically important. To test and measure the sensitivities, the U.S. Social Security Administration produces low, intermediate and high solvency projections using different mortality assumptions. It is noteworthy that all three solvency projections use improving mortality tables. This contrasts with what we see for actuarial funding valuations, where the use of year-by-year improvements in mortality is not common, and the mortality tables in everyday use are often those developed for more than a decade ago.

At the 2001 EA meeting Milliman compared the baseline of the current year SSA mortality table with the three projected mortality tables to test whether allowing for mortality improvement had a material impact on the results of a valuation. The methodology used (which we continue to follow in this article) was to look at three populations (young, mature and old) valued under the aggregate

funding method at various levels of plan funding. We summarize the methodology at the end of this article.

The conclusions from the EA meeting work were as follows:

- The better funded a system is the less sensitive or noticeable mortality losses are, as annual asset gains become increasingly larger, relatively speaking.
- The impact of improving mortality increases:
  - The younger the participants are
  - The longer the delay to a change in the mortality table, reflecting increased longevity.
- The impact is usually less significant than economic factors besides investment returns, (payroll inflation, cost of living increases)
- Nevertheless it is prudent to anticipate changes in mortality
- External factors also add pressure for change (plan option factors, public disclosure, etc.)

At the EA meeting these conclusions were drawn from a baseline of the mortality rates used by Social Security for the current year. Since many pension plans are using mortality tables developed for the 1980s and 1990s this paper investigated if the conclusions still hold true with an outdated mortality table. For this purpose we will examine the effect on our valuations of assuming that population mortality is in accordance with the recent RP2000 tables with cohort projection (as published by the Society of Actuaries in July 2000) while the valuation mortality is one of the following tables:

- UP 84 minus two years
- GAM 71
- RPA (GAM 83)
- UP 94
- UP 94 with cohort projection



#### Analysis:

We studied this issue in both static and dynamic terms. Our static analysis compares the relative difference in liabilities between various tables, for a typical plan<sup>1</sup> with a young, mature, and old population.<sup>2</sup> We then compare those differences to differences that would result with various differences between salary increase assumptions and discount rates. This type of analysis (present value based), while enlightening as far as the long term impact, does not reveal what may happen year to year, as the gradual mortality improvements get recognized in the annual valuation process. So finally, utilizing forecast valuations, we further examine the mortality improvement impact dynamically, in terms of emerging gains and losses that would occur from using out-dated tables, and compare these to corresponding annual gains or losses in pay increases and actual investment returns, with different levels of funding (assets to liabilities)

#### 1. Static Analysis: Impact on the present value of future benefits by plan maturity

The table on page 24 shows the value of the PVB for our three sample populations valued using the various mortality tables.

*continued on page 24*

<sup>1</sup> The plan is salary related, with a five-year final average earnings formula and no integration. Also, to magnify the potential mortality impact for this analysis, it is further assumed that there is a 3% automatic annual post retirement pension increase for all retirees.

**Dead on Time or Late Again?***continued from page 23*

	INDEX OF PRESENT VALUE OF FUTURE BENEFITS		
	Young	Mature	Old
RP2000	1,000	1,000	1,000
UP 84-2	950	958	964
GAM71	948	947	946
RPA	1,004	1,009	1,011
UP 94	987	979	968
UP 94 Projected	1,055	1,038	1,026

The above table shows that the maximum error in the PVB is about 5.5%. Also, the variation is greatest for the young population with the exception of GAM71 and the unprojected UP 94 table. But there are other potential sources of gain (loss) in a funded system, for example the rate of return achieved on plan assets. We can change the valuation interest rate to equate the above PVBs and then consider how material is the difference.

	EQUIVALENT RETURN ASSUMPTION		
	Young	Mature	Old
RP2000	8.00%	8.00%	8.00%
UP 84-2	7.79%	7.73%	7.66%
GAM71	7.78%	7.65%	7.48%
RPA	8.02%	8.05%	8.10%
UP 94	7.95%	7.86%	7.71%
UP 94 Projected	8.21%	8.23%	8.23%

Judging from the experience of pension plans over the last 40 years, the above differences in return assumption are all well within an acceptable range. Alternately, the pay increase assumption could be changed.

	EQUIVALENT PAY INCREASE ASSUMPTION		
	Young	Mature	Old
RP2000	5.00%	5.00%	5.00%
UP 84-2	5.34%	5.53%	6.18%
GAM71	5.35%	5.67%	6.75%
RPA	4.97%	4.89%	4.65%
UP 94	5.08%	5.26%	6.01%
UP 94 Projected	4.65%	4.54%	4.18%

<sup>2</sup> The populations have the following characteristics:

	Young	Mature	Old
Active Average Age	36	46	55
Active Average Past Service	8	13	17
Proportion of PVB for Actives	80%	60%	40%



The table on page 24 shows that for the young and mature sample populations the differences in the pay increase assumptions required to equate the PVBs is well within the range of experience of pension plans over the last 40 years. However, because of the leverage effect of the inactive population, the old sample population shows significantly larger pay increases are needed to equate PVBs.

2. *Dynamic Analysis: Impact in terms of annual emergence of gains and losses*

While the static analysis gives some insight into the relationships between the mortality tables, using the "wrong" assumption from one valuation to the next results in a stream of experience gains and/or losses as the actual population dies quicker or slower than the assumption. The old tables are not uniformly heavier or lighter than RP2000 so the incidence of gains and losses depends to some extent on the make-up of the population as well as the assumption. The following table measures the present value of the gain (loss) that will emerge over the first five years after the valuation as a percentage of the liability booked at that valuation using each mortality table.

	GAIN (LOSS) ARISING IN NEXT FIVE YEARS		
	Young	Mature	Old
RP2000	0.00%	0.00%	0.00%
UP 84-2	1.04%	-0.30%	-0.68%
GAM71	-0.89%	-1.19%	-1.44%
RPA	0.53%	31.00%	26.00%
UP 94	-1.92%	-1.52%	-1.62%
UP 94 Projected	0.49%	0.28%	0.24%

In every case the error emerging over the five years following the valuation is less than 2% of the liability. Again these differences are small compared to the error observed between the return on typical actuarially smoothed valuations of assets and the valuation interest rate. Of course, the impact of error in the interest rate assumption depends on the level of funding. For a poorly funded system the impact is less than for a well funded system. To examine this we looked at the mature population and assumed that the fund's assets were equal to 40% (poorly funded), 60% (intermediate), 80% (well funded) and 100% (extremely well funded) of the present value of future benefits, as measured on the RP2000 assumptions. We then assumed that returns averaged 9% over the next five years rather than the valuation rate of 8% and computed the gains that would emerge from the investment experience so that we can compare these with the gains and losses in the table above. The ratio of the investment gain to the absolute mortality gain / loss is shown below.

	Importance of 1% p.a. Asset Gain to Mortality Experience			
	Poorly Funded	Intermediate	Well Funded	Extremely Well Funded
RP2000	N/A	N/A	N/A	N/A
UP 84-2	570%	850%	1130%	1420%
GAM71	140%	220%	290%	360%
RPA	520%	780%	1050%	1310%
UP 94	110%	160%	220%	270%
UP 94 Projected	560%	840%	1110%	1390%

## Dead on Time or Late Again?

*continued from page 23*

Our final comparison is to look at the cost of switching to the correct mortality table after five years. This is of itself a static projection but with a five-year delay.

	INDEX OF PRESENT VALUE OF FUTURE BENEFITS (2005)		
	Young	Mature	Old
RP2000	1,000	1,000	1,000
UP 84-2	945	951	955
GAM71	944	938	933
RPA	1,005	1,010	1,013
UP 94	987	976	962
UP 94 Projected	1,058	1,044	1,033

The point of this table is to compare it to the earlier table, so that we can see if delaying the switch in the mortality assumption might cause a bigger shock to the fund when the change is made. Thus the final table is the ratio of the above table to the first table, which represents the incremental impact of delaying the update.

	INDEX OF PRESENT VALUE OF FUTURE BENEFITS (2005)		
	Young	Mature	Old
RP2000	0.00%	0.00%	0.00%
UP 84-2	0.48%	0.78%	0.97%
GAM71	0.41%	0.94%	1.42%
RPA	-0.06%	-0.07%	-0.21%
UP 94	-0.01%	0.29%	0.67%
UP 94 Projected	-0.32%	-0.60%	-0.64%

As can be seen, delaying the update does not automatically result in a larger impact to the plan.

### Conclusions:

The conclusions presented at the EA meeting are largely supported by this analysis.

- The better funded a system is the less sensitive or noticeable mortality losses are, as annual asset gains become increasingly larger, relatively speaking.
- The impact is less significant than economic factors besides investment returns, (payroll inflation, cost of living increases)

We also continue to believe that it is prudent to anticipate changes in mortality and that a move to a cohort projected mortality table should be considered. The assumptions we use in our valuations should be "best estimates" after all.

We leave you with a caveat. The above analysis assumes that the mortality will exactly follow the RP2000 table with projection. As we know experience rarely follows assumptions exactly. Therefore one result that the reader should not necessarily draw is that UP94 will give rise to mortality gains. Indeed, the committee involved with constructing the table has noted that significant differences in mortality exist between white and blue collar sub-populations, which would indicate a heavier table than RP2000 is required for some plans.

So, does mortality really matter for pension plan valuations? Yes; but not as much as we actuaries might like to think.

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## *Pension Section Council Minutes - June 15, 2001, San Francisco Hilton Hotel*

**Attendees:** Bruce Cadenhead (chairperson), Paul Angelo, Adrien LaBombarde, Tom Lowman, Marilyn Oliver, SOA staff: Judy Anderson, Lois Chinnock. Present by phone: John Kalnberg, Zenaida Samaniego

1. Bruce Cadenhead opened the meeting with a welcome and call for additional agenda items.
2. The minutes of the March 18, 2001 meeting were approved.
3. The treasurer's report was accepted as submitted.
4. **The Dallas meeting symposium/seminar/sessions were reviewed.** John Kalnberg stated that the "Changing Patterns of Retirement Systems" seminar was very well received. 50 – 60 attended. Tom Lowman was enthusiastic about the Cash Balance Pension Plans Symposium, especially the final session on current developments. Between 50 – 110 attended the sessions. Marilyn reported that the mortality sessions were also well received. The estimation techniques session may be put online. The reception was ok. Zenaida Samaniego agreed to be the section representative to the 2002 Spring Program Committee.
5. Judy Anderson reported on the planned sessions for the Annual Meeting in New Orleans. The Retirement Systems Practice Area is sponsoring or co-sponsoring 14 sessions. The session on public plans will be videotaped. Adrien LaBombarde agreed to moderate the lump sums session.
6. **The upcoming 2001 seminars were discussed.** The Retirement Implications of Demographic & Family Change Seminar will be held November 29-30 in Orlando. The Council decided to do a tax law seminar during Power Week December 3-7. Adrien LaBombarde will champion it. He will also write a blurb for the June *Pension Section News* about the Web discussion on the principle elements of the new tax law and then will write a tax article for the next newsletter. In February Tom Lowman and Paul Angelo will lead a seminar on negotiating benefits in Orlando with 3-4 speakers including a lawyer, and hopefully Sid Abrams, Bob Sugarman and Chris Bone. It

was suggested that perhaps the Section could do a public sector seminar as part of the spring meeting in San Francisco.

The council decided not to accept an invitation to participate in the Product Development Symposium in 2002.

7. The council discussed doing a Webcast on pension topics in the future. Tom Lowman will contact government people to let them know we have this availability if they have an idea or something new to communicate — perhaps non-ASPA type topics like changing patterns, asset smoothing methods or social security.
8. **Council of Section Chairpersons**  
Bruce stated that the section will need a Web liaison to replace Sylvia and him to work with Debbie Jay, SOA Web Designer, on the section's Web page. Bruce will represent the section on the Task Force of Sections/Practice Areas which will meet for the first time August 1.
9. Marilyn Oliver has had discussions with a company that might be willing to do the missing tables for *Economic Statistics for Employee Benefits* for no charge, with the assurance that the section will not re-sell them, but there has been no definite agreement. Marilyn stressed the importance of these tables. Judy Anderson maintains most of Tables 1-7 online. She will talk to Jeff Allen and Clay Baznik about moving responsibility for the tables to our communications department and will report back on the next conference call.
10. **Research**  
30-Year Treasury Project – The POG has received two proposals, with a possibility of one more. The POG will decide on the researcher by the end of July. (The Pension Section has committed up to \$20,000 to this project.)
11. **Practice Area Report - Key Issues**  
Judy Anderson went through the Key Issues for the Retirement Systems Practice Area, asking the council members to think about these issues — are there issues missing? Are there too many? Will these issues aid in session planning? If the emphasis is placed on the first 5, will membership support be lost? She asked the Council members to consider these issues and discuss on the next conference call.

### **12. Pension Basics Course**

Adrien LaBombarde proposed that he would have an update on the Pension Basics Course each meeting. He will make changes and updates and do editorial functions, etc. at no charge. He will charge for new content and questions at the end of the course. The section council approved a motion to support a new deliverable (addition) for each council meeting. Adrien will have a draft of a quarterly report for the next conference call. He will move ahead with the work until he is off the council. After that he will continue to work on new content. The council can perhaps get volunteers to help with certain sections. Every newsletter will have something on the basics course. At the September meeting the council will vote on budgetary issues.

### **13. Requests for Sponsorship/Input**

The council voted not to co-sponsor the Wharton School Program. The Section has been invited to review the revised Chapter V in the *Dynamic Financial Condition Analysis Handbook*. Bruce will ask Zenaida to do it or to find someone to do it.

### **14. Newsletter/Pension Forum**

The June issue of the *Pension Section News* will be out next week. The section will do two *Pension Forum* issues this year — both on asset valuation methods. They will be put online.

### **15. Web Page**

Judy Anderson distributed the draft of the Web page content, asking the council to review it and make suggestions for possible additions or subtractions before the September meeting. Lois was asked to send the draft to the absent council members. The Council decided to add sections on publications of private consulting firms.

### **16. Next Meetings**

The next conference calls will be Tuesday, July 17 at 11:00 a.m. Central Time and Wednesday, August 22 at 11:00 a.m. Central Time. The next meeting will be 9:30 a.m. – 4:00 p.m. at O'Hare Airport Chicago. Judy will do her presentation of the SOA structure.

## Capital Market Assumptions — A 2000 Update

by Timothy C. Burns

*Editor's Note: Historical return data provided in this article taken from Stocks Bonds Bills and Inflation 2000 Yearbook (Ibbotson Associates).*

Perhaps the most critical investment decision made by a plan sponsor is the asset allocation decision. This decision is often made after extensive quantitative modeling is performed using a variety of inputs related to investments and plan liabilities and cash flows. The most fundamental of these inputs is the set of capital market assumptions relative to each of the asset classes being considered for the portfolio. The attributes of an asset class that are important to this modeling process are future expectations for:

- Returns
- Risk (volatility of returns generally expressed as standard deviation)
- Correlation with other asset classes

A set of return assumptions must also be developed by the plan actuary to measure plan obligations. The components of these return assumptions must be identified and developed to comply with Actuarial Standards of Practice #27 *Selection of Economic Assumptions for Measuring Pension Obligations*. Given the parallels in the development of the return assumptions for both investment and actuarial purposes, we thought it would be beneficial to provide an update on the set of capital market assumptions developed by our firm and utilized in the asset allocation process. These capital market assumptions have appeared previously in the Pension Section News (November 1998, June 1996, September 1991, September 1989). The prior articles laid out Global Portfolio Strategies' process for developing the capital market assumptions as well as the return, risk and correlation estimates.

The 2000 Capital Market Assumptions developed by the firm's Capital Markets Committee for asset allocation policy development is presented in Exhibit #1. I will also provide some insight into the assumptions and considerations implicit in some of the expected return data presented. This can be useful as a collateral source for judging the reasonableness of the assumption development processes you may be involved with.

The development of forward-looking capital market assumptions has been traditionally grounded in historical data. As was described in the previous articles, the real work here involves determining:

- which historical relationships reflected in that data have any predictive value going forward
- what future conditions may alter or impact the historically implied relationships.

A "building block" approach is used in developing return expectations. This approach begins by developing an expected inflation rate and an expected real risk free rate of return. Investment risk premiums are then developed based on the fundamental risk attributes of each asset class. Inherent in this process are a review of historical data and a strategic forecast of future changes in the economy and the capital markets, focusing on secular as opposed to cyclical changes that might reasonably be expected. By our definition, these assumptions are considered a strategic forecast over an "any 10-year" period. As such, they are meant to cover several business cycles and generally presume markets are stable and in equilibrium. While the committee is cognizant of current market conditions such as valuation levels, they strive to ground the strategic forecasts on fundamental rather than cyclical economic and capital market relationships.

To begin the process an estimate for inflation is developed. The point estimate of 2.25% reflects a reduction from the long-term historical rate of 3.1% (1926–1999) and a compound annual rate of 2.9% in the 90s. The premise behind this downward future bias included factors such as the impact of demographics, the increased efficiency in capital markets, a long-term increase in productivity due to technology, increased global competition and a monetary regime committed to managing inflation.

A real risk free rate of 2.25% was projected. This rate is higher than the historical norm (.7% from 1926–1999) but more in line with the period since the early 80s when the effects of the Fed's shift in focus from responding to inflation to proactively managing it were becoming apparent. Real short rates serve to facilitate the smooth functioning of the economy by regulating the flow of capital. The Fed has historically viewed a real rate of 1.75% to 2.0% as appropriate for maintaining savings and credit demand equilibrium. The committee's projection is in line with this estimate with a slight premium reflecting the increased relative importance of the capital markets vs. the banking system and projected future growth in demand and credit use. This rate is consistent with a strategic forecast characterized by strong investment spending and rising productivity growth. The higher real rate might also include an uncertainty premium associated with investor's fears about future inflation.

In the fixed income asset classes the committee projected risk premiums associated with each asset class. Generally these spreads remained within the historical ranges used by the committee with perhaps a slight narrowing

due to a projected reduction in volatility in both economic growth and credit markets.

Since the last set of assumptions was published, several new asset classes were added in recognition of their distinct investment characteristics and role in the market. In particular, mortgage-backed and asset-backed securities were split out of the corporate debt category. These are securities that are collateralized by mortgages and non-mortgage instruments such as automobile loans, credit cards, and home-equity loans respectively. Mortgage-backed securities were accorded a spread over intermediate corporates recognizing their duration and optionality differential. Asset-backed securities, with slightly shorter average duration and less optionality were projected on par with intermediate corporates. Both high yield fixed income and real estate were positioned similarly between domestic equity and long corporates given the hybrid nature of their returns.

Despite substantial short-term volatility, stocks returns over inflation have been quite stable over long periods of time, averaging about 7%. The committee projected that this fundamental relationship would remain intact over a long future horizon, attributing a modest increase of .75% due to projected increased equity demand, the impacts of fiscal policy and deregulation and expected productivity gains. The equity premium is then calculated as 5.5%. This is the difference between the projected rate of return on large cap stocks and T-bills. There is substantial debate currently over whether the equity risk premium might decrease substantially in the future given recent valuations in the markets and some underlying fundamental changes regarding investors understanding and appetite for risk. Some of these contrary factors may be considered in your analysis. The small cap equity premium remained within the historical range used by the committee. International returns were forecast neutral to currency returns, consistent with the strategic horizon.

In the end, the process of forecasting expectations requires significant judgements in terms of relevant past history and future trends. Utilizing experts up front and reviewing the forecasts underlying the assumptions for internal consistency can help you gain comfort in the process. Performing additional sensitivity testing on the back end can aid in assessing the reliability of the modeled portfolio over a range of possible future outcomes.

*Timothy C. Burns, CPA, CFA, was senior vice-president at Global Portfolio Strategies, Inc., the asset allocation subsidiary of CIGNA Retirement and Investment Services in Hartford, CT. He can be reached at equityallocation@aol.com.*

2000 Assumptions for Expected Return and Standard Deviation/Correlations

Correlations-Historical

Asset Class	Any 10-Year Return	Any 10-Year Standard Deviation	T-Bills	Inter. Gov't Bonds	Inter. Corp. Bonds	Long-Term Gov't Bonds	Long-Term Corp. Bonds	Int'l. Bonds	Asset Backed	Mortgage Backed	High Yield Bonds	Emergin g Mkt. Bonds	Comm. Real Estate	Large Cap Equities	Mid-Cap Equities	Small Cap Equities	Int'l Equities	Emergin g Mkt. Equities	Private Equity	
T-Bills	4.60%	1.76%	1.00																	
Intermediate Gov't Bonds	6.50%	4.00%	0.14	1.00																
Intermediate Corp. Bonds	6.25%	6.25%	0.08	0.93	1.00															
Long Term Gov't Bonds	6.65%	4.60%	0.32	0.91	0.89	1.00														
Long Term Corp. Bonds	6.65%	7.65%	0.32	0.89	0.86	0.93	1.00													
International Bonds	6.75%	6.21%	0.06	0.37	0.27	0.31	0.23	1.00												
Asset Backed	6.25%	7.20%	0.16	0.91	0.93	0.84	0.84	0.27	1.00											
Mortgage Backed	6.60%	8.08%	0.06	0.91	0.92	0.87	0.92	0.27	0.86	1.00										
High Yield Bonds	8.60%	13.33%	-0.03	0.37	0.62	0.39	0.63	-0.04	0.46	0.45	1.00									
Emergin g Mkt. Bonds	9.60%	17.24%	0.08	0.16	0.30	0.13	0.28	-0.09	0.14	0.24	0.50	1.00								
Commercial Real Estate	8.60%	13.79%	0.19	-0.21	-0.19	-0.13	-0.16	-0.16	0.07	-0.19	-0.20	-0.10	1.00							
Large Cap Equities	10.00%	17.76%	-0.06	0.26	0.38	0.33	0.41	-0.06	0.21	0.30	0.61	0.69	0.10	1.00						
Mid-Cap Equities	10.60%	18.76%	-0.06	0.26	0.36	0.31	0.36	-0.10	0.09	0.28	0.56	0.67	-0.06	0.94	1.00					
Small Cap Equities	11.50%	20.50%	-0.04	0.16	0.26	0.19	0.25	-0.13	-0.03	0.19	0.56	0.63	-0.08	0.84	0.94	1.00				
International Equities	10.25%	17.97%	-0.09	0.17	0.24	0.20	0.22	0.48	0.03	0.17	0.29	0.43	0.09	0.50	0.48	0.45	1.00			
Emergin g Markets	13.25%	26.74%	0.00	-0.03	0.08	-0.07	0.06	-0.04	-0.13	0.04	0.35	0.72	-0.21	0.52	0.55	0.67	0.48	1.00		
Private Equity	13.25%	26.74%	-0.03	-0.16	-0.10	-0.11	-0.08	-0.11	-0.11	-0.12	0.09	0.47	0.06	0.28	0.26	0.31	0.20	0.33	1.00	

The inflation rate for the normal ten-year period is 2.25%.

The Standard Deviation data is for the "any ten year" period.

Correlations are for the longest time period available for each asset class; however, some correlations have been adjusted due to limitations of available information.



## NEWS from the Society of Actuaries

475 N. Martingale Rd., Suite 800, Schaumburg, IL 60173, Ph: 847-706-3500, Fax 847-706-3599, [www.soa.org](http://www.soa.org)

**FOR IMMEDIATE RELEASE: August 21, 2001**

**CONTACT: Linda Heacox 847/706-3528**

**[lheacox@soa.org](mailto:lheacox@soa.org)**

**SUBJECT: Retirement issues symposium**

### **SYMPOSIUM ADDRESSES ISSUES CREATED AS BABY BOOMERS RETIRE**

SCHAUMBURG, Ill. -- The Baby Boom generation is approaching retirement age in very different economic and social conditions than those of their parents. Changes in the way people work, increases in the number of divorced and single people, increases in longevity after retirement and other factors create new strains upon public and private retirement systems and the workforce. Some issues have been addressed in part by the social insurance system but many problems and potential problems remain unresolved. These topics will be the focus of the *Retirement Implications of Demographic and Family Change Symposium*, November 29-30, 2001 at the Walt Disney World Swan Resort, Lake Buena Vista, Florida, hosted by the Society of Actuaries and cooperating organizations.

Nineteen papers will be presented by authors from a range of disciplines from actuarial science to economics to law. Topics range from phased retirement to the changing family structure and its impact on Social Security to a case study of Latin American experience with privatization of social security. Demographic patterns, health benefits, labor force trends, long-term care insurance and other such "hot" topics will be examined.

Members of cooperating organizations are eligible for a reduced attendance fee for the two-day symposium. Cooperating organizations include: WorldatWork (prize sponsor), AARP, American Academy of Actuaries, American Society of Pension Actuaries, Association of Canadian Pension Management, Canadian Institute of Actuaries, Canadian Pension and Benefits Institute, Center On An Aging Society, Conference of Consulting Actuaries, Employee Benefit Research Institute, Health Care Financing Administration, International Foundation of Employee Benefit Plans, National Academy of Social Insurance, Pension Benefit Guaranty Corporation, Pension Research Council, Pension and Welfare Benefits Administration, and the U.S. Social Security Administration.

Register before November 5, 2001 and save \$50.00. Cost to members of cooperating organizations is \$775.00. For nonmembers it is \$825.00. To register, visit the Society of Actuaries online at [www.soa.org](http://www.soa.org) and click on "Meetings /Seminars" then scroll down the right side of the page to "Seminars." Or, call 847-706-3500 and ask for the Continuing Education department for more information. Room reservations can be made by phoning the Walt Disney World Swan at 407-934-3000.

Joint Board  
for the  
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Department of  
Labor  
  
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of the  
Treasury

Department of the Treasury  
Internal Revenue Service  
Washington, DC 20224

June 1, 2001

## ***CONTINUING PROFESSIONAL EDUCATION NOTICE***

The regulations for the Joint Board for the Enrollment of Actuaries require an Enrolled Actuary to complete 36 hours of continuing professional education (CPE) credit each enrollment cycle to qualify for renewal of enrollment. Core subject matter must comprise at least 18 hours. For newly enrolled actuaries who were enrolled during the current enrollment cycle, lesser requirements apply.

For the current cycle, the period during which these CPE hours must be fulfilled extends from January 1, 1999, to December 31, 2001. Note the CPE hours must be met three months prior to the end of the enrollment cycle, which is March 31, 2002.

Enrolled actuaries are required by the regulations to retain, for a period of three years after the end of an enrollment cycle, the following supporting documentation regarding CPE:

- 1) The name of the sponsoring organization
- 2) The location of the program
- 3) The title of the program and description of its content
- 4) The dates attended
- 5) The name of the instructor, discussion leader or speaker
- 6) The certificate of completion and/or signed statement of the hours of attendance from the sponsor
- 7) The total core and noncore credit hours

The Joint Board conducts random audits of claims for CPE credit, which includes the review of the documents listed above. The Joint Board urges you to pay close attention to those sections of the regulations that discuss the criteria for courses or programs to fulfill the CPE requirements.

Please note that the regulations provide that teaching, publishing articles and certain other activities may earn a limited number of CPE hours. Similar record keeping requirements apply to these activities.

## “Real” Continuing Education in the “Virtual” World

by John Riley, Managing Director of Continuing Education

Class is in session ...in cyberspace! Seven new courses are open for enrollment at the SOA Virtual Campus. Three of these offerings — *The Art of the Expert Witness*, *Recent Trends in Retirement Benefits Design*, and *Lump Sums* — are recommended for enrolled actuary credit. The SOA Virtual Campus is located at the bottom right-hand corner of the [www.soa.org](http://www.soa.org) home page.

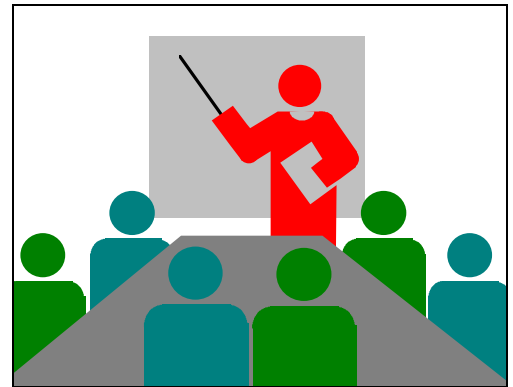
*The Art of the Expert Witness* represents SOA’s most ambitious, interactive web-based program to date. Students learn the fundamental role of an expert witness and how to prepare their resume. They get opportunities to practice with testimony in the courtroom setting, choosing among responses while being cross-examined. The course is available for \$175 and takes approximately three hours to complete (noncore credit). It runs on Flash Plug In software, which can be downloaded free of charge at the SOA Virtual Campus site.

The other new courses are on-line productions of “live” SOA Annual Meeting 2000 sessions. They contain color visuals, text transcripts and streaming audio of the presentations. These programs run on a Shockwave software platform that is also available for free download at the Campus. An example, *Tailoring Products and Services for the Bancassurance Market*, is available free of charge. The other programs, which run between 60 and 90 minutes, cost \$75 each.

*Recent Trends in Retirement Benefits Design* (60 minutes noncore) reviews the impact of several critical IRS regulations, such as discrimination testing (TRA86). *Lump Sums* (90 minutes core) covers the legal requirements for calculating distributions and Qualified Domestic Relations Orders (QDROs) and the implications of lump sum payments on retirement income adequacy.

### EA Questionnaires

Audio tapes and accompanying questionnaires are available for EA credit from 1999, 2000 and 2001. These are tapes and questionnaires from Spring and Annual Meeting sessions, teleconferences and seminars. Check the SOA Web site [www.soa.org](http://www.soa.org) and click meetings and seminars; once there, scroll down to EA Questionnaires and click to open the order form.



## PBGC’s Question and Answer Corner

*Editor’s Note: The following Q&A was prepared by PBGC. It may be of interest to those preparing PBGC premium filings. For more information, please call Ms. Jane Pacelli at (202) 326-4080, ext. 6775.*

### Question:

Certain plans are required to take into account the occurrence of “significant events” in calculating unfunded vested benefits for purposes of the variable-rate premium. Significant event 7 (described in § 4006.4(d)(2)(vii)) is “[a]ny other event or trend that results in a material increase in the value of unfunded vested benefits.” Does this include investment losses on a plan’s assets if those losses result in a material increase in the value of the plan’s unfunded vested benefits?

### Response:

A plan need not recognize under significant event 7 investment losses sustained in the ordinary course of business, provided that the plan’s assets are invested in accordance with applicable legal requirements.