



SOCIETY OF ACTUARIES

Pension Section News

2004 Status of the Social Security and Medicare Programs

Editor's Note: The following excerpt is taken from STATUS OF THE SOCIAL SECURITY AND MEDICARE PROGRAMS, A SUMMARY OF THE 2004 ANNUAL REPORTS, A MESSAGE TO THE PUBLIC from the Social Security and Medicare Boards of Trustees. The complete report can be found at <http://www.ssa.gov/OACT/TRSUM/trsummary.html>

Each year the Trustees of the Social Security and Medicare trust funds report on the current status and projected condition of the funds over the next 75 years. This message summarizes the 2004 Annual Reports.

The fundamentals of the financial status of Social Security and Medicare remain problematic under the intermediate economic and demographic assumptions. Social Security's current annual cash surpluses will soon begin to decline and then turn into rapidly growing cash deficits toward the end of the next decade as the baby-boom generation retires. The financial outlook for the Medicare Hospital Insurance (HI) Trust Fund that pays hospital benefits has deteriorated significantly from last year, with annual cash flow deficits beginning this year and expected to grow rapidly after 2010 as baby boomers begin to retire. The growing annual cash deficits in both programs will lead to exhaustion in trust fund reserves for HI in 2019 and for Social Security in 2042. In addition, the Medicare Supplementary Medical Insurance (SMI) Trust Fund that pays for physician services and the new prescription drug benefit will require substantial increases over time in both general revenue transfers and premium charges.

As the reserves in Social Security and HI are drawn down and SMI general revenue financing requirements continue to grow, the pressure on the federal budget will intensify. We do not believe the currently projected long run growth rates of Social Security and Medicare are sustainable under current financing arrangements.

Social Security

The annual cost of Social Security benefits represents 4.3 percent of gross domestic product (GDP) today and is projected to rise to 6.6 percent of GDP in 2078. The projected 75-year actuarial deficit in the combined Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI) Trust Funds is 1.89 percent of taxable payroll, down slightly from 1.92 percent in last year's report. The program continues to fail our long-range test of close actuarial balance by a wide margin. Projected OASDI tax income will begin to fall short of outlays in 2018 and will be sufficient to finance only 73 percent of scheduled annual benefits by 2042, when the combined OASDI trust fund is projected to be exhausted.

Social Security could be brought into actuarial balance over the next 75 years in various ways, including an immediate increase in payroll taxes of 15 percent or an immediate reduction in benefits of 13 percent (or some combination of the two). To the extent that changes are delayed or phased in gradually, greater adjustments in scheduled benefits and revenues would be required. Ensuring the sustainability of the system beyond 2078 would require even larger changes.

contents

2004 Status of the Social Security and Medicare Programs	1
Dan Arnold Retires as Editor by Lois Chinnock.....	2
Chairperson's Corner by Ian Genno.....	3
Defined Benefit Plans Are More Successful with Bonds by Mark Ruloff.....	5
OASDI Trust Fund	7
HI Trust Fund	15
SMI Trust Fund	17
Beyond the Cash Balance: the DA Plan by Thomas Zavist.....	22
How Should Retirement Policy Be Reformed?	24
Section 404 Is Not Only About Deductibility Anymore by Arthur L. Conat.....	30

Pension News

Issue Number 56 • September 2004

Published by the Pension Section Council of the Society of Actuaries
475 N. Martingale Road, Suite 600
Schaumburg, IL 60173-2226

phone: (847) 706-3500

fax: (847) 706-3599

world wide web: <http://www.soa.org>

This newsletter is free to section members. A subscription is \$15.00 for nonmembers. Current-year issues are available from the Communications Department. Back issues of section newsletters have been placed in the SOA library and on the SOA Web site: (www.soa.org). Photocopies of back issues may be requested for a nominal fee.

2003-2004 SECTION LEADERSHIP

C. Ian Genno, Co-Chairperson
Sarah W. Wright, Co-Chairperson
Tonya B. Manning, Vice-Chairperson
Michael L. Pisula, Treasurer
Anne Button, Secretary
Elizabeth S. Byrd, Council Member
Arthur L. Conat, Council Member
K. Eric Freden, Council Member
Kenneth Kent, Council Member

Arthur J. Assantes, Newsletter Editor
Hooker & Holcombe
65 LaSalle Road
West Hartford, CT 06107
phone: (860) 521-8400
fax: (860) 521-3742
e-mail: ajassantes@hhconsultants.com

Clay Baznik, Publications Director
e-mail: cbaznik@soa.org

Lois Chinnock, Sections Manager
e-mail: lchinnock@soa.org

Erica Barraca, Graphic Designer
e-mail: ebarraca@soa.org

Facts and opinions contained herein are the sole responsibility of the persons expressing them and should not be attributed to the Society of Actuaries, its committees, the Pension Section or the employers of the authors. We will promptly correct errors brought to our attention.

Copyright © 2004 Society of Actuaries.
All rights reserved.
Printed in the United States of America.

Dan Arnold Retires as Editor

by Lois Chinnock

Back in 1989, Dan Arnold took over the publishing of the *Pension Section News*, as well as the *Pension Forum* and the rest is, as they say, history. For 14 years, he marshaled authors and contributors to produce consistently excellent section newsletters and *Pension Forum* issues. During that time his goals remained constant: to publish four newsletter issues per year on a regular schedule, to publish key information annually on new government limits (IRS, PBGC, LABOR), actuarial assumptions contained in PBGC annual valuation and SSI Trustee Reports and EA three-year-cycle educational information. He included additional articles to provide the readership with an even greater wealth of information on a wide variety of topics. Longer articles and papers were produced on a regular basis in the *Pension Forum*. He credits actuaries with sending him a constant stream of material for publication over the course of his tenure.



Looking back, Dan points out that probably the most unusual articles he published in the newsletter were articles written in both English/French and English/Spanish that reflected the SOA's desire to reach out to the international actuarial community.

Today Dan continues to be active in various volunteer efforts, now centered in his local community. He is an AARP Tax-Aide volunteer, acting as the local coordinator for volunteer counselors who provide free assistance to low-income tax payers; he is the membership director and member of the Board of the Hartford Track Club, a 400+ member running club; he is the manager of a new West Hartford Learning Center for the international SeniorNet nonprofit organization and is also secretary of the Bloomfield Amateur (Ham) Radio Club and Bloomfield Amateur Radio Emergency Net Service.

Since his retirement, Dan has also been doing some traveling. Dan, his wife Jane, daughter Kathryn and her husband Zeke hiked through the Canadian Rockies for a week last year and just recently he returned from a trip to France with his son Andy.

In addition to their volunteer activities and traveling, Dan and Jane keep very busy with their family of four grown children, six grandchildren and a seventh due in August.

The Pension Section wishes Dan many happy years of retirement and many thanks for a job well done! ♦

Articles Needed for the News

Your participation is 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, etc. If you would like to submit an article or be an associate editor, please call Arthur Assantes, 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.

Preferred Format

In order to efficiently handle articles, please use the following format when submitting articles:

Please e-mail your articles as attachments in either MS Word (.doc) or Simple Text (.txt) files. We are able to convert most PC-compatible software packages. Headlines are typed upper and lower case. Please use a 10-point Times New Roman font for the body text. Carriage returns are put in only at the end of paragraphs. The right-hand margin is not justified.

If you must submit articles in another manner, please call Erica Barraca, (847) 706-3549, at the Society of Actuaries for assistance.

Please send a hard copy of the article to:

Arthur J. Assantes, FSA
Hooker & Holcombe, Inc.
65 LaSalle Road
West Hartford, CT 06107
Phone: (860) 521-8400
Fax: (860) 521-3742
e-mail: ajassantes@hhcounselants.com

Chairperson's Corner

by Ian Genno

The spring and summer have been busy and productive periods for the Pension Section Council. We have continued our initiatives to deliver services to section members in the form of research projects and tools, publications and meetings/seminars. Council members have also participated actively in ongoing discussions regarding the future organizational structure of the SOA, focusing on identifying the most important services to support pension practitioners and how those services can be managed in the most effective way. Here's a quick summary of what we've been doing on your behalf.

Research

Work has been completed on an important new software tool that will help pension actuaries address the "risk of ruin" for individual pension plan members. In an environment where individuals are increasingly called upon to manage their own assets during their retirement years (because of the increasing prevalence of defined contribution plans, as well as lump sum payouts of defined benefit entitlements), the risk of depleting one's retirement savings prematurely can be significant. Traditional approaches for managing this risk included buying an annuity (which many retirees unfortunately regard as an undesirable option) and seeking the advice of a financial planner (which often involves testing several sets of investment return and lifespan assumptions, on a deterministic basis). Working with several members of the Pension Section and the Individual Life Insurance and Annuity Product Development Section, Moshe Milevsky (a faculty member in the business school at York University in Toronto) has built a practical tool to enable actuaries to address the risk of ruin for individuals managing their own retirement assets using robust stochastic methodologies. The software and related documentation are on the SOA Web site at <http://www.soa.org/lccm/content/areas-of-practice/special-interest-sections/pension/retirement-probability-analyzer-software> — take a look! While, at first blush, one might think that this issue is only of relevance to actuaries who work directly with individuals to provide financial planning services, it in fact can be very useful to actuaries working with pension plan sponsors. By helping plan sponsors understand the

risks faced by members who cash out lump sums, and the risks faced by members with defined contribution coverage, we can help develop better employee education and communication programs as well as better plan designs, and have a better understanding of the actual mechanics of converting a lump sum at retirement into an ongoing income stream.

We are also pursuing several other research initiatives — some of which are intended to provide practical information or tools with immediate application for pension practitioners, and others which are envisioned to offer some "blue sky" thinking on topics of longer term importance to the pension community:

- Retirement rate assumptions: As a follow-up to the 2003 SOA pension plan turnover study, we believe it would be helpful for actuaries to have some general guidance on the selection of retirement rate assumptions. Building generic tables of retirement rates (similar to tables for disability, termination and mortality rates) can be a fruitless exercise because of the myriad of factors that vary from one pension plan to another — including differences by industry, work environment, pay level, pension formula, early retirement provisions, availability of postretirement benefit coverage, current economic conditions, etc. Instead of building traditional tables, we plan to review current literature on the subject, test several hypotheses against available data and develop a summary that offers actuaries some guidance on the selection of retirement rate assumptions and the associated implications.
- Pre-retirement influences: On a related note, Linda Smith Brothers, ASA at the University of Wisconsin is currently conducting a literature search to explore the various factors that influence an employee's decision to retire.
- Phased retirement: A team of experts from the academic and consulting communities is being assembled to explore phased retirement, with a view to developing practical recommendations for implementing programs in the current regulatory environment. After brainstorming in the summer, the team will propose initiatives

(continued on page 13)



Ian Genno, FSA, FCIA, is a principal with Towers Perrin in Toronto. He can be reached at Ian.Genno@TowersPerrin.com.

Pension Section Council Contacts:

Anne M. Button, FSA anbutton@deloitte.com
Secretary

Betsey Byrd, ASA betsey.byrd@watsonwyatt.com

Arthur L. Conat, ASA art.conat@ey.com

K. Eric Freden, FSA efreden@segalco.com

C. Ian Genno, FSA, FCIA
ian.genno@towersperrin.com
Co-Chair

Ken Kent, FSA, ken.kent@mercer.com

Tonya Manning, FSA, tonya_manning@aoncons.com
Vice-Chair and Pension Section News Liaison

Mike Pisula, FSA, mpisula@msn.com
Treasurer and SOA Spring Meeting Pension Program Liaison

Sarah W. Wright, FSA, swright@segalco.com
Co-Chair

Medicare

As we reported last year, Medicare's financial difficulties come sooner—and are much more severe—than those confronting Social Security. While both programs face essentially the same demographic challenge, health care costs per enrollee are projected to rise faster than the wages per worker on which the payroll tax is paid and on which Social Security benefits are based. As a result, while Medicare's annual costs are currently 2.7 percent of GDP, or about 60 percent of Social Security's, they are now projected to surpass Social Security expenditures in 2024 and reach almost 14 percent of GDP in 2078, more than twice the percent for Social Security in that year.

The projected 75-year actuarial deficit in the Hospital Insurance (HI) Trust Fund is now 3.12 percent of taxable payroll, up significantly from 2.40 percent in last year's report mainly due to higher actual and projected hospital expenditures, as well as lower actual and projected taxable payroll, and new Medicare legislation. The fund now fails our test of short-range financial adequacy, as assets drop below the level of the next year's projected expenditures within 10 years—in 2012. The fund also continues to fail our long-range test of close actuarial balance by a wide margin. The projected date of HI Trust Fund exhaustion has moved forward significantly to 2019, from 2026 in last year's report, and projected HI tax income falls short of outlays beginning this year, as compared to 2013 in last year's report. HI could be brought into actuarial balance over the next 75 years by an immediate 108 percent increase in program income or an immediate 48 percent reduction in program outlays (or some combination of the two). However, as with Social Security, adjustments of far greater magni-

tude would be necessary to the extent changes are delayed or phased in gradually, and continuation of the program after 2078 would require substantial changes.

Part B of the Supplementary Medical Insurance (SMI) Trust Fund, which pays doctors' bills and other outpatient expenses, and the new Part D, which pays for access to prescription drug coverage, are both projected to remain adequately financed into the indefinite future because current law automatically sets financing each year to meet next year's expected costs. However, this automatic provision will result in a rapidly growing amount of general revenue financing—projected to rise from 0.9 percent of GDP today to 6.2 percent in 2078—as well as substantial increases over time in beneficiary premium charges.

Conclusion

Though highly challenging, the financial difficulties facing Social Security and Medicare are not insurmountable. But we must take action to address them in a timely manner. The sooner they are addressed the more varied and less disruptive can be their solutions. The problem of finding ways to allow older Americans access to high quality medical care is daunting and likely to demand frequent legislative adjustments in the future, as it has since Medicare was first enacted. With informed public discussion and creative thinking that relates the principles underlying these programs to the economic and demographic realities, as well as to the changing needs and preferences of working and retired households, Social Security and Medicare can continue to play a critical role in the lives of all Americans. ♦

While both programs face essentially the same demographic challenge, health care costs per enrollee are projected to rise faster than the wages per worker on which the payroll tax is paid and on which Social Security benefits are based.



Defined Benefit Plans are More Successful with Bonds

by Mark Ruloff

Recent meetings on financial economics have promoted the idea of an all-bond asset allocation. Financial economics calls us to take a corporate-centric, rather than plan-centric approach to pension asset allocation selection. This promotes tax and other advantages of an all-bond asset allocation. Also, “On the Risk of Stocks in the Long Run,” by Zvi Bodie, demonstrated by the cost of short-fall insurance (a put on the pension portfolio with a strike price equal to full funded liability), that stocks are actually more risky in the long term. However, we can also learn about the risk of investing in stocks by using some traditional actuarial tools, like measuring the “probability of ruin.”

It is commonly known that actuarial liabilities and normal costs are lower using a discount rate based on higher equity returns as compared to lower bond returns. However, if we factor in the probability of ruin (which we learned during our actuarial exams, but rarely use with pension trust funds), we will find that a plan that avoids ruin costs less with a large bond asset allocation and uses lower expected rate of return assumptions.

Cost Without Reflecting Risk

I took a sample plan that I commonly use and did some traditional pension actuarial calculations assuming two asset allocations, a 60 percent large cap stock and 40 percent long-term corporate bond portfolio and a 100 percent long-term corporate bond portfolio (the bonds were not chosen to exactly match the liability duration). I worked with a public plan in order to avoid all the ERISA funding constraints. Based on historical returns of 10.42 percent for stocks and 5.69 percent for bonds, I assumed an 8.61 percent return for my 60/40 asset mix and a 5.69 percent return for my 100 percent bond asset mix. Not surprisingly, the traditional entry age normal costs of the plan were less under the 60/40 portfolio than under an all-bond portfolio. The resulting entry age normal costs as a level percent of pay (rounded up to the nearest 50bps) were 4.5 percent and 8.5 percent, respectively.

The Price of Risk is Ruin

While “ruin” in the insurance business is commonly defined as not having enough assets to cover liabilities, this test would probably be considered too strict in the current pension environment. Therefore, I will not define ruin at such a level even though I think it is a worthy goal. Instead, I will define ruin as not having enough assets to make the upcoming years’ benefit payments.

There are two primary issues that can cause ruin. One would be an issue directly related to the plan that would cause the plan sponsor to terminate the plan. The other

would be an issue directly related to the plan sponsor, but outside of the plan, that would cause the termination of the plan. I decided to only study the first case here.

To test the possibility of ruin, I ran a 100-year stochastic forecast with 1,000 trials. I set the starting assets of my plans at the value of the entry age normal liabilities and set the contribution policy to the cost as a percentage of pay levels mentioned above. My capital market assumptions factored in the 20.44 percent standard deviation of the stock return and 8.61 percent standard deviation of bond return; again these were based on historical information. The standard deviation for the 60/40 allocation was 13.49 percent. I assumed a level population with new hires replacing active employees who decrement and included a 3 percent growth in the active population. However, I made no adjustment to the contribution rate to reflect a possible higher cost level for new hires. Table 1 on page 6 shows the number of times ruin occurred out of the 1,000 trials in 10-year increments of the forecast.

Although only one of the 1,000 bond trials with higher contributions faced ruin in the 100-year forecast, over 56 percent of the 60/40 allocation trials with lower contributions did. While the only ruin for the all-bond allocation, occurred in the 99th year, the ruins for the 60/40 allocation occurred as early as 20 years. Obviously, if one wanted to have a defined benefit plan that would survive rather than face ruin, the 8.5 percent of pay contribution and all-bond allocation is a better option.

A first thought might be that we could avoid these cases of ruin by adjusting the contribution level, as is commonly done in practice. However, the resulting necessary extremely large contribution levels would also cause the employer to want to terminate the plan. For example, the plan sponsor might be willing to vary the contribution to be normal cost plus 10-year amortization of the unfunded liability but only as long as the contribution level stayed below 15 percent of pay. Using that as the new definition of ruin, over 61 percent of the 60/40 asset allocation trials hit ruin over the forecast.

Although the method used above for determining contribution levels may be the actual way contributions are determined, this may not produce a good scientific test. There are several moving variables: the contribution rate, the starting asset value and the asset allocation. A better scientific test on the asset allocation is to keep the contribution rate and the starting asset value constant and just move the asset allocation. Therefore, I set the contribution rate to 8.5 percent, used the larger starting asset value and tested both of these allocations again. I also considered a 100 percent stock allocation for good measure. The results are shown in Table 2.

(continued on page 6)

Obviously, if one wanted to have a defined benefit plan that would survive rather than face ruin, the 8.5 percent of pay contribution and all-bond allocation is a better option.

Table 1: Number of "Ruins" in 1,000 Trials										
Year	10	20	30	40	50	60	70	80	90	100
8.5% of pay contributions										
All bonds	0	0	0	0	0	0	0	0	0	1
4.5% of pay contributions										
60/40	0	1	46	199	322	379	437	483	529	561

Table 2: Number of "Ruins" in 1,000 Trials										
Year	10	20	30	40	50	60	70	80	90	100
8.5% of pay contributions										
All stock	0	0	3	8	10	12	12	12	13	14
All bonds	0	0	0	0	0	0	0	0	0	1
60/40	0	0	0	2	5	6	7	7	7	9

Even with the same larger contribution level, the allocations to stocks caused more ruins than the all-bond allocation.

To complete this, I decided to test what the contribution level would need to be to have only one ruin in the 100-year forecast with the 60/40 allocation. The resulting contribution level was between 9.5 percent and 10 percent.

Not Reflecting Risk in Cost is the Root of the Problem

As we can see from the figures mentioned earlier, the largest part (98 percent, (561-9)/561) of the causes of "ruin" is the calculation of the lower funding level, as it does not reflect risk. This issue is also the source of why some individuals erroneously conclude that a large asset allocation to stocks is the low-risk investment for pension plans. Once an insufficient contribution level has been determined, studies of the optimal low-risk investment are flawed. These studies, which use insufficient funding levels, will not show the low-risk asset allocation but instead will seek out an asset allocation that attempts to compensate for the insufficient funding. More risk will be taken in the asset allocation to reach for higher returns. We could find that the best chance to accumulate a million dollars for retirement when saving only a dollar a year is to buy lottery tickets. However, we should not consider lottery tickets the low-risk investment and there are probably other less risky savings and investment options.

These common studies may also show only a few cases of "ruin" over short periods like 10 years or less. However, a significant amount of "ruins" will appear over longer forecasts, especially in 100-year forecasts, as more will have a long bear market during the forecast. This risk may appear to be thought of as small, showing up as low as the worst one percentile. However, in a 100-year forecast, one percentile events may really imply that every trial reached "ruin." Therefore, it is important to look at individual trial results. I believe if you study this carefully you will find that the question is not so much *if* ruin will occur but *when*.

We should also note that a bear market is not something that we could insure against on the same basis as having a house insured against fire. The law of large numbers applies to

insuring against a house fire, as each event is generally independent of another. However, having a bear market attack a pension plan is not independent from a bear market attacking another pension plan. Therefore, when plans reach this point, there may be mass termination of plans. This should be considered by the PBGC when trying to insure pension plan benefits.

Choice Reflecting Risk

Looking back at our testing of the probability of ruin, our choices seem to be:

- Large stock allocations with apparent lower contributions, but with periods of defined benefit plans going into ruin;
- Large bond allocations (or other low-risk options) with stable higher contributions and solvent plans
- Large stock allocations with even higher contributions (but still with periods of underfunding on a termination basis).

In conclusion, current funding, accounting and "ongoing" liability measures promote the use of stocks by reflecting the increased returns, but not the risk. The resulting inadequate funding forces investment managers into large allocations to stocks in an attempt to compensate for the lower funding. Ultimately, this leads to more cases of "ruin." When fully reflecting the risk, we discover that solvency and stable sufficient contributions are best achieved with a large allocation to bonds and by using rate of return assumption that does not consider an equity risk premium (without the risk). ♦



Mark Ruloff, FSA, is vice president at Wintech in Greenwich, Conn. He can be reached at mruloff@winklevoss.com.

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 2004 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds. Copies of the OASDI 2004 Annual Report are available from the Social Security Administration's Office of the Actuary at actuary@ssa.gov.

The future income and cost of the OASDI program will depend on many demographic, economic 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, program cost 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 factors and their interrelationships are inherently uncertain, a range of estimates is shown in this report on the basis of three sets of assumptions, designated as intermediate (alternative II), low cost (alternative I) and high cost (alternative III). The intermediate set represents the Board's best estimate of the future course of the population and the economy. In terms of the net effect on the status of the OASDI program, the low cost is the most optimistic, and the high cost is the most pessimistic.

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

The values for each of the demographic, economic and program-specific factors are assumed to move from recently experienced levels or trends, toward long-range ultimate values over the next five to 30 years. The ultimate values assumed after the first five to 30 years for both the demographic and the economic factors are intended to represent average experience or growth rates. Actual future values will exhibit fluctuations or cyclical patterns, as in the past.

Economic Assumptions

The basic economic assumptions are embodied in three alternatives that are designed to provide a reasonable range of effects on Social Security's financial status. The intermediate assumptions reflect the Trustees' consensus expectation of moderate economic growth throughout the projection period. The low cost assumptions represent a more optimistic outlook, with relatively strong economic growth. The high cost assumptions represent a relatively pessimistic scenario, with weak economic growth and two recessions in the short-range period. Based on the latest estimates, the economy is assumed to be below its potential level of output and employment in the latter half of 2003.

Under all three sets of assumptions the economy is assumed to move back to the sustainable, potential level of output by the end of the short-range period. Economic cycles are not included in the assumptions beyond the first five to 10 years of the projection period because they have little effect on the long-range estimates of financial status.

This report also includes a stochastic projection that provides a probability distribution of possible future outcomes that is centered around the Trustees' intermediate assumptions. Additional economic assumptions and modeling are required for these projections. These are discussed in Appendix E.

The principal demographic and economic assumptions for the three alternatives that are summarized in tables V.A1 and V.B1. Additional economic factors that are critical to the projections of the future financial status of the combined OASI and DI Trust Funds are summarized in table V.B2.

Stochastic Projections (excerpts from Appendix E of the report)

Significant uncertainty surrounds the estimates under the intermediate assumptions, especially for a period as long as 75 years. This appendix presents a way to illustrate the uncertainty of these estimates. It is intended to supplement the traditional methods of examining such uncertainty and to illustrate the potential value of new techniques.

The results presented in this section reflect the intermediate assumptions and methods of the 2004 Trustees Report.

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

(continued on page 8)

Table V. A1—Principal Demographic Assumptions, Calendar Years 1940-2080

Calendar year	Total fertility rate ¹	Age-sex-adjusted death rate ² per 100,000 by age			Net immigration	
		Total	Under 65	65 and over	Legal ³	Other ⁴
Historical Data:						
1940	2.23	1,779.1	673.0	9,569.0		
1945	2.42	1,586.6	601.8	8,522.4		
1950	3.03	1,435.6	499.4	8,028.3	170,594	
1955	3.50	1,334.2	442.8	7,612.2	209,779	
1960	3.61	1,330.9	436.9	7,626.7	201,276	
1965	2.88	1,304.6	430.0	7,464.0	232,400	
1970	2.43	1,224.3	422.6	6,870.7	278,928	
1975	1.77	1,099.0	369.5	6,236.4	294,303	
1980	1.82	1,035.9	331.9	5,993.6	410,348	
1985	1.84	984.2	303.6	5,777.6	433,449	
1990	2.07	934.0	289.4	5,474.0	501,065	
1991	2.06	921.5	286.2	5,395.7	548,000	
1992	2.04	909.0	280.2	5,337.9	620,986	
1993	2.02	930.8	283.1	5,492.7	644,696	
1994	2.00	918.8	280.5	5,413.8	583,390	
1995	1.98	916.6	277.3	5,419.4	573,719	
1996	1.98	903.0	266.1	5,388.4	662,284	
1997	1.97	887.8	253.6	5,353.5	571,800	
1998	2.00	880.8	246.9	5,345.5	489,360	
1999	2.01	887.0	245.0	5,407.9	523,037	
2000	2.06	878.2	243.3	5,349.5	677,579	400,000
2001 ⁵	2.03	874.0	239.2	5,344.4	798,126	400,000
2002 ⁵	2.01	869.9	236.2	5,332.3	797,801	400,000
2003 ⁵	2.02	866.1	233.4	5,321.9	562,500	400,000
Intermediate:						
2005	2.01	858.4	228.0	5,298.2	750,000	400,000
2010	2.00	831.0	216.4	5,159.3	625,000	400,000
2015	1.99	798.9	206.0	4,974.5	600,000	350,000
2020	1.97	766.8	196.5	4,783.2	600,000	350,000
2025	1.96	736.0	187.6	4,598.4	600,000	300,000
2030	1.95	706.9	179.2	4,423.2	600,000	300,000
2035	1.95	679.7	171.4	4,258.8	600,000	300,000
2040	1.95	654.1	164.1	4,104.9	600,000	300,000
2045	1.95	630.1	157.2	3,690.5	600,000	300,000
2050	1.95	607.6	150.8	3,825.0	600,000	300,000
2055	1.95	586.4	144.7	3,697.5	600,000	300,000
2060	1.95	566.5	138.9	3,577.6	600,000	300,000
2065	1.95	547.7	133.5	3,464.5	600,000	300,000
2070	1.95	529.9	128.3	3,357.8	600,000	300,000
2075	1.95	513.1	123.5	3,256.9	600,000	300,000
2080	1.95	497.2	118.9	3,161.5	600,000	300,000
Low Cost:						
2005	2.04	869.9	231.4	5,366.3	925,000	550,000
2010	2.08	866.5	225.9	5,377.4	875,000	550,000
2015	2.11	854.4	220.1	5,321.7	850,000	500,000
2020	2.15	839.8	214.3	5,244.7	850,000	500,000
2025	2.18	824.6	208.7	5,162.7	850,000	450,000
2030	2.20	809.7	203.3	5,080.4	850,000	450,000
2035	2.20	795.2	198.1	5,000.5	850,000	450,000
2040	2.20	781.3	193.1	4,923.4	850,000	450,000
2045	2.20	767.9	188.4	4,849.1	850,000	450,000
2050	2.20	755.0	183.8	4,777.4	850,000	450,000
2055	2.20	742.6	179.5	4,708.2	850,000	450,000
2060	2.20	730.6	175.3	4,641.4	850,000	450,000
2065	2.20	719.1	171.3	4,576.9	850,000	450,000
2070	2.20	707.9	167.4	4,514.6	850,000	450,000
2075	2.20	697.2	163.7	4,454.4	850,000	450,000
2080	2.20	686.8	160.1	4,396.3	850,000	450,000

Table V. A1—Principal Demographic Assumptions, Calendar Years 1940-2080 continued

Calendar year	Total fertility rate	Age-sex-adjusted death rate ² per 100,000 by age			Net immigration	
		Total	Under 65	65 and over	Legal ³	Other ⁴
High Cost:						
2005	1.99	846.9	224.5	5,230.1	600,000	250,000
2010	1.92	794.1	205.5	4,939.3	472,500	250,000
2015	1.86	740.3	189.0	4,623.2	472,500	200,000
2020	1.80	689.3	174.1	4,317.8	472,500	200,000
2025	1.74	642.2	160.7	4,033.8	472,500	200,000
2030	1.70	599.0	148.4	3,772.5	472,500	200,000
2035	1.70	559.5	137.2	3,533.4	472,500	200,000
2040	1.70	523.4	127.1	3,314.7	472,500	200,000
2045	1.70	490.3	117.7	3,114.4	472,500	200,000
2050	1.70	460.0	109.2	2,930.7	472,500	200,000
2055	1.70	432.2	101.4	2,762.0	472,500	200,000
2060	1.70	406.6	94.2	2,606.8	472,500	200,000
2065	1.70	383.1	87.6	2,463.9	472,500	200,000
2070	1.70	361.4	81.5	2,332.1	472,500	200,000
2075	1.70	341.3	76.0	2,210.3	472,500	200,000
2080	1.70	322.8	70.8	2,097.7	472,500	200,000

¹The total fertility rate for any year is the average number of children who would be born to a woman in her lifetime if she were to experience the birth rates by age observed in, or assumed for, the selected year, and if she were to survive the entire childbearing period. The ultimate total fertility rate is assumed to be reached in 2028.

²The age-sex-adjusted death rate is the crude rate that would occur in the enumerated total population as of April 1, 2000, if that population were to experience the death rates by age and sex observed in, or assumed for, the selected year.

³Historical estimates of net legal immigration assume a 25 percent reduction in legal immigration due to legal emigration. Estimates do not include persons legalized under the Immigration Reform and Control Act of 1986.

⁴Net other annual immigration is estimated to have been between 225,000 and 550,000 persons for years 1980 through 1999.

⁵Preliminary or estimated.

Table V. B1—Principal Demographic Assumptions

Calendar Year	Average annual percentage increase in—						Real-wage differential ¹
	Productivity (Total U.S. economy)	Earnings as a percent of compensation	Average hours worked	GDP price index	Average annual wage in covered employment	Consumer Price Index	
Historical Data:							
1960 to 1965	3.2	-0.2	-0.2	1.4	3.2	1.2	2.0
1965 to 1970	1.9	-4	-7	4.1	5.8	4.2	1.6
1970 to 1975	2.1	-7	-9	6.6	6.6	6.8	-2
1975 to 1980	1.0	-6	-2	7.3	8.7	8.9	-3
1980 to 1985	1.6	-2	-1	5.3	6.7	5.2	1.4
1985 to 1990	1.2	.0	-1	3.3	4.7	3.8	.9
1990 to 1995	1.1	-1	.4	2.5	3.6	3.0	.6
1995 to 2000	2.0	.7	.2	1.7	5.5	2.4	3.1
1993	.2	-1.0	1.1	2.4	1.9	2.8	-9
1994	1.0	-4	.8	2.1	4.1	2.5	1.7
1995	.3	1.0	.9	2.2	4.3	2.9	1.4
1996	2.1	1.2	.0	1.9	4.0	2.9	1.2
1997	1.5	1.2	.7	1.9	5.7	2.3	3.5
1998	1.9	.4	.9	1.2	6.2	1.3	4.9
1999	2.0	.2	.5	1.4	5.2	2.2	3.0
2000	2.4	.3	-1.2	2.1	6.4	3.5	2.9
2001	1.4	-3	-1.2	2.4	2.2	2.7	-6
2002	3.8	-5	-1.0	1.1	.3	1.4	-1.1
2003	3.4	-3	-1.2	1.6	1.9	2.3	-4
Intermediate:							
2004	2.7	-3	.0	1.1	3.6	1.2	2.4
2005	1.8	-1	.0	1.1	4.3	1.5	2.8
2006	1.9	-1	.0	1.6	3.9	2.0	1.9
2007	1.9	-1	.0	2.1	4.0	2.4	1.5
2008	1.8	-1	.0	2.4	4.2	2.8	1.4
2009	1.8	-1	.0	2.5	4.1	2.8	1.3

(continued on page 10)

Table V. B1—Principal Demographic Assumptions continued

Calendar Year	Average annual percentage increase in—						Real-wage differential ¹
	Productivity (Total U.S. economy)	Earnings as a percent of compensation	Average hours worked	GDP price index	Average annual wage in covered employment	Consumer Price Index	
Intermediate cont.							
2010	1.7	-.1	.0	2.5	4.1	2.8	1.3
2011	1.7	-.1	.0	2.5	4.0	2.8	1.2
2012	1.6	-.1	.0	2.5	4.0	2.8	1.2
2013	1.6	-.2	.0	2.5	3.9	2.8	1.1
2010 to 2015	1.6	-.2	.0	2.5	4.0	2.8	1.2
2015 to 2080	1.6	-.2	.0	2.5	3.9	2.8	1.1
Low Cost:							
2004	2.8	-.3	.0	.9	3.7	1.0	2.7
2005	2.1	.0	.0	.7	4.1	1.1	3.0
2006	2.2	.0	.0	.9	3.7	1.3	2.4
2007	2.2	.0	.0	1.3	3.7	1.7	2.0
2008	2.1	.0	.1	1.4	3.7	1.8	1.9
2009	2.0	.0	.1	1.5	3.6	1.8	1.8
2010	2.0	.0	.1	1.5	3.6	1.8	1.8
2011	1.9	.0	.1	1.5	3.5	1.8	1.7
2012	1.9	-.1	.1	1.5	3.5	1.8	1.7
2013	1.9	-.1	.1	1.5	3.5	1.8	1.7
2010 to 2015	1.9	-.1	.1	1.5	3.5	1.8	1.7
2015 to 2080	1.9	-.1	.1	1.5	3.4	1.8	1.6
High Cost:							
2004	1.2	-.4	-.1	2.4	2.5	2.5	-.1
2005	2.6	-.1	-.1	2.2	6.0	2.6	3.4
2006	1.7	-.1	-.1	1.9	4.2	2.3	1.9
2007	.1	-.3	-.1	3.4	3.1	3.8	-.7
2008	1.9	-.2	-.1	5.0	5.9	5.3	.6
2009	2.0	-.2	-.1	5.2	7.5	5.5	2.0
2010	1.2	-.3	-.1	4.4	5.5	4.7	.8
2011	1.2	-.3	-.1	3.6	4.5	3.9	.5
2012	1.2	-.2	-.1	3.5	4.5	3.8	.7
2013	1.3	-.2	-.1	3.5	4.3	3.8	.5
2010 to 2015	1.3	-.2	-.1	3.5	4.4	3.8	.6
2015 to 2080	1.3	-.3	-.1	3.5	4.4	3.8	.6

¹The 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.

Table V. B2—Additional Economic Factors

Calendar Year	Average annual unemployment rate ¹ (percent)	Average annual percentage increase in—			Average annual interest rate ² (percent)
		Labor force ³	Total employment ⁴	Real GDP ⁵	
Historical data:					
1960 to 1965	5.5	1.3	1.6	5.0	4.0
1965 to 1970	3.9	2.2	2.1	3.4	5.9
1970 to 1975	6.1	2.5	1.5	2.7	6.7
1975 to 1980	6.8	2.7	2.9	3.7	8.5
1980 to 1985	8.3	1.5	1.5	3.1	12.1
1985 to 1990	5.9	1.7	2.0	3.2	8.5
1990 to 1995	6.6	1.0	.9	2.4	7.0
1995 to 2000	4.6	1.5	1.8	4.0	6.2

Calendar Year	Average annual unemployment rate ¹ (percent)	Average annual percentage in—			Average annual interest rate ² (percent)
		Labor force ³	Total employment ⁴	Real GDP ⁵	
Historical data cont.					
1993	6.9	.8	1.3	2.7	6.1
1994	6.1	1.4	2.2	4.0	7.1
1995	5.6	1.0	1.4	2.7	6.9
1996	5.4	1.2	1.4	3.6	6.6
1997	4.9	1.8	2.2	4.4	6.6
1998	4.5	1.0	1.4	4.3	5.6
1999	4.2	1.2	1.5	4.1	5.9
2000	4.0	2.3	2.5	3.8	6.2
2001	4.8	.8	.0	.3	5.2
2002	5.8	.8	-.3	2.4	4.9
2003	6.0	1.2	.9	3.1	4.1
Intermediate:					
2004	5.7	1.3	1.7	4.4	4.4
2005	5.5	1.6	1.7	3.6	4.8
2006	5.6	1.3	1.3	3.2	5.1
2007	5.5	1.1	1.1	3.0	5.6
2008	5.5	1.0	1.0	2.8	5.9
2009	5.5	.9	.9	2.7	5.9
2010	5.5	.8	.8	2.6	5.9
2011	5.5	.8	.8	2.4	5.9
2012	5.5	.6	.6	2.3	5.8
2013	5.5	.6	.6	2.2	5.8
2010 to 2015	5.5	.6	.6	2.2	5.8
2015 to 2080	5.5	.2	.2	1.8	5.8
Low Cost:					
2004	5.4	1.4	2.0	4.9	4.4
2005	5.4	1.7	1.8	3.9	4.6
2006	5.2	1.5	1.6	3.9	4.9
2007	5.1	1.2	1.4	3.6	5.3
2008	5.0	1.1	1.3	3.5	5.4
2009	4.8	1.1	1.2	3.3	5.5
2010	4.7	1.0	1.1	3.2	5.5
2011	4.6	.9	1.1	3.1	5.5
2012	4.5	.6	.6	2.7	5.5
2013	4.5	.4	.4	2.4	5.5
2010 to 2015	4.5	.6	.7	2.7	5.5
2015 to 2080	4.5	.6	.6	2.6	5.5
High cost:					
2004	6.4	1.0	.6	1.7	4.5
2005	6.5	1.3	1.2	3.7	6.1
2006	6.1	1.3	1.7	3.4	5.5
2007	6.5	.9	.4	.4	5.6
2008	7.3	.6	-.2	1.7	7.7
2009	6.6	.9	1.6	3.6	8.8
2010	6.4	.9	1.1	2.2	7.2
2011	6.5	.7	.6	1.7	6.2
2012	6.5	.8	.8	1.9	6.0
2013	6.5	.8	.8	2.0	6.0
2010 to 2015	6.5	.6	.6	1.8	6.0
2015 to 2080	6.5	.0	.0	1.1	6.0

¹Unadjusted civilian unemployment rates are shown through 2013. Thereafter, the rates are adjusted to the age-sex distribution of the civilian labor force in 2002.

²The average annual interest rate is the average of the nominal interest rates, which, in practice, are compounded semiannually for special public-debt obligations issuable to the trust funds in each of the 12 months of the year.

³The U.S. civilian labor force concept is used here.

⁴Total of civilian and military employment in the U.S. economy.

⁵The real GDP (gross domestic product) is the value of total output of goods and services in 1996 dollars.

(continued on page 12)

Background

The Trustees Report has traditionally shown additional estimates using a low-cost and a high-cost set of specified assumptions to reflect the presence of uncertainty. These additional estimates provide a range of possible outcomes for the projections. However, they provide no indication of the probability that actual future experience will be inside or outside the range of these estimates. This appendix presents the results of a model, based on stochastic modeling techniques, that estimates a probability distribution of future outcomes of the financial status of the combined OASI and DI Trust Funds. It should be noted that this model is in its early stages of development. Future improvements and refinements to the model are expected. In particular, future revisions are expected to reflect a fuller range of uncertainty about the future, as is discussed below.

Methodology

More detail on this model, and stochastic modeling in general, is available on the Internet.¹ Each time-series equation is designed such that, in the absence of random variation, the value of the variable would equal the value assumed under the intermediate set of assumptions.

For each simulation of the model, values of the variables listed above are determined by using Monte Carlo techniques to randomly assign the year-by-year variations.

Each simulation produces an estimate of the financial status of the combined OASI and DI Trust Funds. Results shown in this section, based on the 5,000 simulations of the model, reflect the distribution of results.

The results from this model should be interpreted with caution and with a full understanding of the inherent limitations. Results are very sensitive to equation specifications, degrees of covariance among variables and the historical periods used for the estimates.

The historical period available for most variables is relatively homogeneous and does not reflect many substantial shifts. The time-series modeling reflects what occurred in the historical period. As a result, the variation indicated in this appendix should be viewed as the minimum plausible potential variation for the future. Substantial shifts, as predicted by many experts and as seen in prior centuries, are not fully reflected in the current model.

Results

Table VI.E1 displays long-range actuarial estimates for the combined OASDI program resulting from using both the deterministic and stochastic approaches. Actuarial estimates included in the table are for the long-range period, 2004-78. Stochastic estimates are shown

¹The Internet address is: www.socialsecurity.gov/OACT/stochastic/index.html.

Table V.1.E.1—Long-Range¹ Estimates Relating to the Actuarial Status of the Combined OASDI Program [Comparison of deterministic results and stochastic results]

	Traditional deterministic model			Stochastic model				
	Inter-mediate	Low Cost	High Cost	Median 50th percentile	80-percent confidence interval		95-percent confidence interval	
					10th percentile	90th percentile	2.5th percentile	97.5th percentile
Actuarial balance	-1.89	0.41	-4.96	-1.98	-3.25	-0.85	-4.02	-.033
Open group unfunded obligation (in trillions)	\$3.7	-\$1.1	\$10.3	\$4.0	\$7.1	\$1.5	\$9.2	\$0.4
First year cost exceeds tax income	2018	2022	2013	2018	2014	2021	2013	2023
Year assets become exhausted	2042	²	2031	2042	2035	2056	2032	2071
Annual cost in 75th year (percent of taxable payroll)	19.29	14.01	27.23	19.78	16.08	24.70	14.38	27.88
Annual cost in 75th year (percent of GDP)	6.62	5.20	8.61	6.78	5.52	8.46	4.95	9.54

¹75-year period: 2004-78.

²The fund is not estimated to be exhausted within the projection period.

for the median (50th percentile) and for the 95-percent and 80-percent confidence intervals. For comparison, deterministic estimates are shown for the intermediate, low cost, and high cost assumptions. Each stochastic estimate displayed in the table does represent the results of one stochastic simulation. However, for a given percentile, the stochastic estimates shown for the different long-range actuarial measures are generally not from the same stochastic simulation.

Hypertext versions of the 2004 Social Security and Medicare Trustees Reports as well as “A Summary of the 2004 Annual Reports” are available on the Internet at the following addresses:

Social Security (OASDI):<http://www.ssa.gov/OACT/TR/TR04/index.html>

Medicare (HI and SMI):<http://www.cms.hhs.gov/publications/trusteesreport/2004/>

Summary:<http://www.ssa.gov/OACT/TRSUM/trsummary.html>

Other information about Social Security benefits and services is available at: <http://www.ssa.gov> or by calling toll-free 1.800.772.1213

Other information about Medicare benefits and services is available at: <http://www.cms.hhs.gov> or by calling toll-free 1.800.663.4227. ♦

Chairperson’s Corner • from page 3

for the Pension Section Council and the Research Committee to consider.

- Solving the portability problem: The Pension Section Council is considering a call for papers to identify potential solutions to address the various practical problems facing plan sponsors and members relating to portability of pension benefits.
- Cash balance plan survey: The Research Committee is preparing to conduct a comprehensive survey of cash balance plans in the United States, examining a variety of aspects including prevalence, design, transition, financing, and communication.
- Rational retirement age: The notion of age 65 as the “normal retirement age” dates back to the 19th century, when life expectancies were far shorter than today. In addition to longer life expectancies after retirement, employees approaching retirement age today are healthier, working conditions are significantly different and individuals’ economic needs during the years leading up to and immediately following retirement reflect different priorities and commitments to dependent children and elderly parents. These considerations call into question the relevance of age 65 as the pivot point for private and public retirement plans. To help support future discussion within the broader community of legislators, plan sponsors and the general public, we believe that some basic research could help bring greater intellectual rigor to the question of what the right retirement age is. This could take into account macroeconomic and societal issues, questions of affordability of retirement, and methodologies for the qualitative and quantitative assessment of an individual’s ability to work productively (e.g., applying approaches used to assess the ability to work for individual claimants under disability plans, on a broader population basis).

- “Paternalism versus orphanism”: From studying for actuarial exams (and, for those of us with a few grey hairs, from design work with plan sponsors in decades past), we’re all familiar with the concept of paternalism as a rationale supporting employers’ fundamental design, communication and management decisions for pension and postretirement benefit plans. In recent years, however, employees have increasingly demanded greater control over their own financial security, and many employers have expressed concerns over their ability and responsibility to provide full, automatic, guaranteed benefit coverage and protection to employees and retirees. As the pendulum swings toward greater autonomy and self-reliance for individual employees and retirees, what are the longer term financial and societal implications? Is there a risk that the pendulum could swing too far—and, if so, what are the consequences? The Pension Section Council has contemplated this “blue sky” question, and is starting to reach out to others outside the actuarial community to spark some discussion and debate.

Publications

Several items are being developed for publication—in some cases, in traditional print form; in other cases, electronically:

- *Pension Forum*: Two issues of the *Pension Forum* are confirmed for release this year—one focusing on the bond yield curve (with perspectives on how yield curves are developed and practical aspects of using yield curves to value pension liabilities), and another centered on ASOP 27. A third issue will follow as soon as practical, to highlight the remaining papers from the 2003 Financial Economics Symposium that have not yet been published in other journals.

(continued on page 14)

- Web site for the general public on retirement issues: Employer-sponsored retirement plans can be difficult for the general public to understand. Yet such plans are an integral component of the U.S. and Canadian retirement systems. An enhanced public understanding of how typical plans are designed and delivered could contribute to their future growth and sustainability. The Pension Section Council is exploring the feasibility of developing and supporting a Web site for the general public that would provide simple, understandable information on issues relating to the delivery and security of retirement income (including employer-sponsored plans). While further discussion is still required to confirm the intended content in more detail, we anticipate the Web site may include information on topics such as the various ways that

webcasts offered by the SOA, CIA, CCA, etc. Our goal is to find the most effective way to offer pension actuaries value-added continuing education opportunities that are clearly distinct from other available alternatives.

Our initial conclusions are that we should move away from offering a broad "cafeteria style" array of session topics at SOA meetings, in favor of sponsoring:

- An increased number of webcasts on topics of current interest (which are easier and more cost effective for actuaries to attend, and are quicker and less expensive for the SOA to organize), and
- One or two seminars that focus on specific topics in depth, embedded within the traditional SOA Spring or Annual Meeting. (This will ensure we continue to offer actuaries an opportunity to attend face-to-face meetings for networking purposes as well as to participate more fully in discussions and debates than is feasible through a webcast. Our focus, however, will be to ensure that the seminar content is sufficiently distinct from other actuarial organizations' meetings, and is of appropriate depth for a more experienced audience.)

We are currently planning several upcoming webcasts, and envision embedding a symposium at the 2005 Spring Meeting on the practical application of financial economics in pension consulting.



retirement income can be provided, the types of risks associated with different retirement plan designs, the concept of the time value of money, investment and longevity risks, etc. Once the scope and feasibility of this initiative have been explored more fully by a working group, the Council will make a decision on whether and how to proceed.

And, as always, we continue to publish the Pension Section News on a quarterly basis, to provide letters and short articles on topics of current interest, presented in a practical, easily digested and non-academic manner.

Meetings and Seminars

Following the SOA Spring Meeting in Anaheim, the Pension Section Council has reviewed feedback from this year's attendees as well as general trend information on Spring Meeting attendance. We have discussed the type of content that employers and pension actuaries are asking for the most, the time and cost constraints that many actuaries face, and the variety of other meetings, seminars and

Governance

Although our energies have primarily been focused on the initiation of relevant research and continuing education services to Pension Section members, Pension Section Council members have also participated actively in the SOA's governance review and organizational restructuring. Although (at the time of writing this article) it is still too early to describe exactly what the new SOA structure will look like for pension actuaries, we are confident that it will be more streamlined and more accessible than the current structure, and that the Society's ability to deliver value-added services to pension actuaries will be enhanced even further. The Pension Section Council, the Retirement Systems Practice Advancement Committee, and the various retirement-related SOA committees and task forces have an enviable track record of accomplishments which we believe can be preserved and enhanced even further. We expect you'll see more news on this over the balance of this year and early in 2005.

So ... the spring and summer have been busy and productive periods for the Pension Section Council! We hope you are continuing to derive value from the Society's services to pension actuaries, and we continue to welcome your comments and suggestions on how we can serve you better. ♦

HI Trust Fund

Actuarial Methodology and Principal Assumptions

Editor's Note: The following excerpt is taken from Section III.A, "Actuarial Methodology and Principal Assumptions for the Hospital Insurance Cost Estimates," in the 2004 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds. All questions on the Medicare Trustees Report should be emailed to dmmce@cms.hhs.gov. To expedite this process, please mention "Trustees Report" in your request.

This section describes the basic methodology and assumptions used in the estimates for the HI and SMI trust funds under the intermediate assumptions. In addition, projections of HI and SMI costs under two alternative sets of assumptions are presented.

Assumptions

The economic and demographic assumptions underlying the projections of HI and SMI costs shown in this report are consistent with those in the 2004 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.

Cost Projection Methodology

The principal steps involved in projecting the future HI costs are (1) establishing the present cost of services provided to beneficiaries, by type of service, to serve as a projection base; (2) projecting increases in HI payments for inpatient hospital services; (3) projecting increases in HI payments for skilled nursing, home health and hospice services covered; (4) projecting increases in payments to managed care plans; and (5) projecting increases in administrative costs. The major emphasis is directed toward expenditures for fee-for-service inpatient hospital services, which accounted for approximately 71 percent of total benefits in 2003.

Projection Base

To establish a suitable base from which to project the future HI costs, 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, 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 HI incurred costs differ from the increases in cash expenditures shown in the tables in section II.B (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. 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. Additional complications are posed by changes in legislation or regulation, or in administrative or reimbursement policy, the effects of which cannot always be determined precisely.

The process of allocating the various types of HI payments made to the proper incurred period—using incomplete data and estimates of the impact of administrative actions—presents difficult problems, and the solutions to these problems can be only approximate. Under the circumstances, the best that can be expected is that the actual HI incurred cost 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.

Fee-for-Service Payments for Inpatient Hospital Costs

Almost all inpatient hospital services covered by HI are paid under a prospective payment system. 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 fiscal year 2004, the prospective payment rates have already been determined. For fiscal years 2005 and later, current statute mandates that the annual increase in the payment rate per admission equals the annual increase in the hospital input price index for those hospitals submitting required quality measure data. For this report, we assume all hospitals will submit these data.

Increases in aggregate payments for inpatient hospital care covered under HI can be analyzed in five broad categories, all of which are presented in table III.A1 on page 16.

To establish a suitable base from which to project the future HI costs, the incurred payments for services provided must be reconstructed for the most recent period for which a reliable determination can be made.

(continued on page 16)

Table III.A1—Components of Historical and Projected Increases in HI Inpatient Hospital Payments¹

Calendar year	Labor			Non-Labor			Input price index	Unit input intensity allowance ²	Units of service		
	Average hourly earnings	Hospital hourly earnings differential	Hospital hourly earnings	CPI	Hospital price differential	Non-labor hospital prices			HI enrollment	Managed care shift effect	Admission incident
Historical data:											
1994	1.6%	1.3%	2.9%	2.5%	-0.4%	2.1%	2.6%	-0.6%	1.8%	-1.0%	2.4%
1995	3.2%	-0.8%	2.4%	2.9%	0.5%	3.4%	2.8%	-0.7%	1.7%	-2.0%	2.4%
1996	4.9%	-2.4%	2.4%	2.9%	-1.1%	1.8%	2.2%	-0.5%	1.4%	-2.7%	2.6%
1997	4.2%	-2.3%	1.8%	2.3%	-0.8%	1.5%	1.7%	-0.5%	1.1%	-3.2%	2.3%
1998	5.3%	-2.6%	2.6%	1.3%	2.5%	3.8%	3.1%	-2.6%	1.0%	-3.1%	0.4%
1999	4.8%	-1.7%	3.0%	2.2%	-0.1%	2.1%	2.7%	-2.2%	0.8%	-1.8%	1.5%
2000	6.4%	-2.4%	3.8%	3.5%	-0.5%	3.0%	3.5%	-2.2%	1.3%	0.4%	-0.1%
2001	3.5%	1.7%	5.3%	2.7%	0.3%	3.0%	4.4%	-1.0%	1.0%	2.3%	1.2%
2002	2.7%	2.2%	5.0%	1.4%	0.1%	1.5%	3.7%	-1.1%	1.1%	2.1%	-0.2%
2003	3.2%	0.9%	4.1%	2.3%	1.3%	3.6%	3.9%	-0.4%	1.2%	0.8%	0.3%
Intermediate estimates:											
2004	3.3%	0.5%	3.8%	1.2%	1.8%	3.0%	3.5%	0.0%	2.0%	0.1%	0.1%
2005	3.9%	0.2%	4.1%	1.5%	0.5%	2.0%	3.3%	0.0%	1.5%	-1.6%	0.9%
2006	3.8%	0.2%	4.0%	2.0%	0.4%	2.4%	3.4%	0.0%	1.6%	-11.0%	0.2%
2007	3.9%	0.2%	4.1%	2.4%	0.3%	2.7%	3.6%	0.0%	1.8%	-4.6%	-0.1%
2008	4.1%	0.1%	4.2%	2.7%	0.2%	2.9%	3.7%	0.0%	2.0%	-1.4%	-0.3%
2009	4.1%	0.1%	4.2%	2.8%	0.1%	2.9%	3.7%	0.0%	2.1%	-2.4%	-0.3%
2010	4.1%	0.1%	4.2%	2.8%	0.0%	2.8%	3.7%	0.0%	2.2%	-0.2%	-0.4%
2015	3.9%	0.0%	3.9%	2.8%	0.0%	2.8%	3.5%	0.0%	2.9%	0.3%	-0.4%
2020	3.9%	0.0%	3.9%	2.8%	0.0%	2.8%	3.5%	0.0%	3.1%	0.3%	-0.1%
2025	3.9%	0.0%	3.9%	2.8%	0.0%	2.8%	3.6%	0.0%	2.7%	0.2%	0.2%

¹Percent increase in year indicated over previous year, on an incurred basis.

²Reflects the allowances provided for in the prospective payment update factors.

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

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. Non-labor factors—the increase in the hospital input price index that is attributable to factors other than hospital workers’ hourly earnings, such as the costs 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 covered HI hospital admissions); and
 5. Other sources—a residual category, reflecting all other factors affecting hospital cost increases (such as intensity increases).
- Table III.A1 shows the estimated historical values of these principal components, as well as the projected trends used in the estimates. Unless otherwise indicated, the following discussions apply to projections under the intermediate assumptions. ◆

SMI Trust Fund

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

Editor's Note: The following excerpt is taken from Section III.B, "Actuarial Methodology and Principal Assumptions for Cost Estimates for the Supplementary Medical Insurance Program," in the 2003 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds. All questions on the Medicare Trustees Report should be emailed to dmmce@cms.hhs.gov. To expedite this process, please mention "Trustees Report" in your request.

This section describes the basic methodology and assumptions used in the estimates for the HI and SMI trust funds under the intermediate assumptions. In addition, projections of HI and SMI costs under two alternative sets of assumptions are presented.

Assumptions

The economic and demographic assumptions underlying the projections of HI and SMI costs shown in this report are consistent with those in the 2004 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.

Cost Projection Methodology

Estimates under the intermediate assumptions are calculated separately for each category of enrollee and for each type of service. The estimates are prepared by establishing the allowed charges or costs incurred per enrollee for a recent year (to serve 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 expenditures, an allowance is made for the delay between receipt of, and payment for, the service.

(1) Projection Base

To establish a suitable base from which to project the future Part B costs, 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 nonrecurring effects of any changes in regulations, legislation or administration, 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 Part B incurred cost differ from the increases in cash expenditures.

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 physician-administered drugs, free-standing ambulatory surgical center facility services, ambulance, and supplies) are paid through organizations acting for the Centers for Medicare & Medicaid Services (CMS). These organizations, referred to as "carriers," determine whether billed services are covered under Part B and establish the allowed charges for covered services. A record of the allowed charges, the applicable deductible and coinsurance, and the amount reimbursed after reduction for coinsurance and the deductible is transmitted to CMS.

The data are tabulated on an incurred basis. 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.

Intermediary Services

Reimbursement amounts for institutional services under Part B are paid by the same "fiscal intermediaries" that pay for HI services. Institutional care covered under Part B includes 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).

Currently, there are separate payment systems for almost all the Part B institutional services. For these systems, the intermediaries determine whether billed services are covered under Part B and establish the allowed payment for covered services. A record of the allowed payment, the applicable deductible and coinsurance, and the amount reimbursed after reduction for coinsurance and the deductible is transmitted to CMS.

For those services still reimbursed on a reasonable-cost basis, the costs for covered services are determined on the basis of provider cost reports. Reimbursement for these services occurs 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

(continued on page 18)

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.

Managed Care Services

Managed care plans with contracts to provide health services to Medicare beneficiaries are reimbursed directly by CMS 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.



(2) Fee-for-Service Payments for Aged Enrollees and Disabled Enrollees without End-Stage Renal Disease

Disabled persons with end-stage renal disease (ESRD) have per-enrollee costs that are substantially higher and quite different in nature from those of most other disabled persons. Hence, Part B 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.

Physician Services

Medicare payments for physician services are based on a fee schedule, which reflects the relative level of resources required for each service. 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 Medicare Economic Index (MEI),¹ plus a performance ad-

¹The MEI is a measure of inflation in physician practice costs and general wage levels.

justment reflecting whether past growth in the volume and intensity of services met specified targets under the sustainable growth rate mechanism. Table III.B1 shows the projected MEI increases and performance adjustments for 2005 through 2013. The physician fee updates shown through 2004 are actual values. The modified update shown in column four reflects the growth in the MEI, the performance adjustment and legislative impacts, such as the addition of preventative services.

The projected physician fee schedule expenditures should be considered unrealistically low due to the current law structure of physician payment updates under the sustainable growth rate system (SGR). The SGR requires that future physician payment increases be adjusted for past actual physician spending relative to a target spending level. Consequently, the system would have led to large negative reductions in physician fee schedule rates for 2004 and 2005. To avoid these reductions, the Medicare Modernization Act (MMA) established minimum updates of 1.5 percent for 2004 and 2005. However, the target spending level was not adjusted, and actual physician expenditures, therefore, are expected to continue to exceed the SGR targets. This situation causes projected physician updates to be about -5 percent for seven consecutive years, beginning in 2006. The result is a cumulative reduction in the payment rates for physician services of more than 31 percent from 2005 to 2012. In contrast, the MEI is expected to increase by 19 percent over the same time frame. Multiple years of significant reductions in physician payments per service are very unlikely to occur before legislative changes intervene, but these payment reductions are required under the current law SGR system and are included in the physician fee schedule projections.

Per capita physician charges also have changed 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 fifth column of table III.B1 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 III.B1, table III.B2 shows the estimates of the incurred reimbursement for carrier services per fee-for-service enrollee.

DME, Laboratory and Other Carrier Services

As with physician services, over time unique fee schedules or reimbursement mechanisms have been established for virtually all other non-physician carrier services. Table III.B1 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 III.B1, table III.B2 shows

Table III.B1—Components of Increases in Total Allowed Charges per Fee-for-Service Enrollment for Carrier Services (in percent)

Calendar year	Physician fee schedule					Total increase ⁴	CPI	DME	Lab	Other carrier
	Increase due to price changes				Residual factors					
	MEI	MPA ¹	Physician update ²	Modified update ³						
Aged:										
1993	2.7	-1.3	1.4 ⁵	1.4	-1.5	-0.1	2.8	20.1	2.6	7.2
1994	2.3	7.0	7.0 ⁵	6.8	1.3	8.2	2.5	7.7	-2.7	9.5
1995	2.1	7.5	7.5 ⁵	7.3	1.5	8.9	2.9	16.1	-4.0	5.4
1996	2.0	-1.2	0.8 ⁵	0.8	-0.1	0.7	2.9	6.1	-8.0	13.7
1997	2.0	-1.4	0.6 ⁵	0.6	3.7	4.3	2.3	12.0	-5.2	14.9
1998	2.2	1.2	2.3 ⁵	2.8	1.4	4.2	1.3	-2.1	-9.3	10.1
1999	2.3	0.0	2.3	2.6	1.4	4.1	2.2	5.2	0.1	10.9
2000	2.4	3.0	5.5	5.8	3.8	9.8	3.5	10.4	7.7	14.4
2001	2.0	3.0	4.8	5.2	4.2	9.6	2.7	12.8	7.0	16.1
2002	2.6	-7.0	-4.8	-4.0	5.7	1.5	1.4	13.6	7.5	16.7
2003	3.0 ⁶	-1.1 ⁶	1.7 ⁶	1.5	4.4	5.9	2.3	14.7	6.2	14.8
2004	2.9	-1.4	1.5	3.8	3.0	7.0	1.2	-2.7	4.2	9.0
2005	2.7	-1.2	1.5	1.5	3.4	5.0	1.5	-0.6	6.5	12.0
2006	1.9	-7.0	-5.2	-5.2	5.3	-0.2	2.0	4.1	3.3	13.2
2007	2.2	-7.0	-5.0	-5.7	5.5	-0.5	2.4	4.4	2.9	12.5
2008	1.8	-7.0	-5.3	-5.4	5.3	-0.4	2.7	4.5	2.8	12.1
2009	2.4	-7.0	-4.8	-4.8	3.0	-1.9	2.8	0.2	5.4	11.2
2010	2.4	-7.0	-4.8	-4.8	3.0	-1.9	2.8	6.1	5.4	10.0
2011	2.4	-7.0	-4.8	-4.8	3.0	-1.9	2.8	6.0	5.4	9.0
2012	2.4	-7.0	-4.8	-4.8	3.0	-1.9	2.8	6.1	5.4	8.8
2013	2.3	-4.3	-2.1	-2.1	3.0	-1.9	0.8	2.8	6.0	8.8
Disabled (excluding ESRD):										
1993	2.7	-1.3	1.4 ⁵	1.4	6.4	7.9	2.8	18.0	5.5	30.4
1994	2.3	7.0	7.0 ⁵	6.8	4.7	11.8	2.5	7.2	0.5	0.1
1995	2.1	7.5	7.5 ⁵	7.3	1.2	8.5	2.9	18.2	-2.3	3.9
1996	2.0	-1.2	0.8 ⁵	0.8	-1.2	-0.4	2.9	4.8	0.0	8.8
1997	2.0	-1.4	0.6 ⁵	0.6	1.5	2.1	2.3	14.7	-4.5	7.9
1998	2.2	1.2	2.3 ⁵	2.8	2.0	4.9	1.3	2.7	-5.9	10.9
1999	2.3	0.0	2.3	2.6	-0.1	2.5	2.2	1.6	2.1	10.1
2000	2.4	3.0	5.5	5.8	1.9	7.8	3.5	9.2	2.7	10.3
2001	2.0	3.0	4.8	5.2	5.0	10.5	2.7	14.6	8.1	18.9
2002	2.6	-7.0	-4.8	-4.0	8.2	3.9	1.4	21.3	12.3	22.5
2003	3.0 ⁶	-1.1 ⁶	1.7 ⁶	1.5	5.3	6.8	2.3	16.2	7.8	21.4

¹Medicare performance adjustment.

²Reflects the growth in the MEI, the performance adjustment and legislation that impacts the physician fee schedule update. The legislative impacts are -2.3 percent in 1994, -2.1 percent in 1995, -1.1 percent in 1998 and -0.2 percent in 2001-2003. For 2004 and 2005, the Medicare modernization act established a minimum update of 1.5 percent.

³Reflects the growth in the MEI, the performance adjustment and all legislation affecting physician services, for example, the addition of new preventative services enacted in 1997 and 2000. The legislative impacts would include those listed in footnote 2.

⁴Equals combined increases in allowed fees and residual factors.

⁵For this year there were separate updates for surgery, primary care and other physician services. This value is the weighted average of these updates.

⁶The physician payment price changes for 2003 occurred on March 1, 2003.

(continued on page 20)

Table III.B1—continued

Calendar year	Physician fee schedule				Residual factors	Total increase ⁴	CPI	DME	Lab	Other carrier
	Increase due to price changes									
	MEI	MPA ¹	Physician update ²	Modified update ³						
2004	2.9	-1.4	1.5	3.8	3.0	6.9	1.2	-2.8	4.1	8.5
2005	2.7	-1.2	1.5	1.5	3.4	4.9	1.5	-0.6	6.3	10.6
2006	1.9	-7.0	-5.2	-5.2	5.2	-0.3	2.0	4.0	2.9	11.6
2007	2.2	-7.0	-5.0	-5.7	5.4	-0.6	2.4	4.4	2.7	11.2
2008	1.8	-7.0	-5.3	-5.4	5.2	-0.5	2.7	4.5	2.7	11.1
2009	2.4	-7.0	-4.8	-4.8	3.0	-1.9	2.8	0.1	5.3	10.4
2010	2.4	-7.0	-4.8	-4.8	3.0	-1.9	2.8	6.1	5.4	9.5
2011	2.4	-7.0	-4.8	-4.8	3.0	-1.9	2.8	6.0	5.4	8.7
2012	2.4	-7.0	-4.8	-4.8	3.0	-1.9	2.8	6.1	5.4	8.5
2013	2.3	-4.3	-2.1	-2.1	3.0	0.8	2.8	6.0	5.4	8.5

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 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.

Intermediary Services

Over the years, legislation has been enacted to establish new payment systems for virtually all Part B intermediary services. A fee schedule was established for tests performed in laboratories in hospital outpatient departments. The Balanced Budget Act of 1997 (BBA) implemented a prospective payment system (PPS), which began 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 III.B3.

Based on the increases in table III.B3, table III.B4 (not shown) 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 enrollee, together with applicable legislated limits on payment updates.

(3) Fee-for-Service Payments for Persons with End-Stage Renal Disease

See SMI 2004 Annual Report.

(4) Managed Care Costs

Part B experience with managed care payments has generally shown a strong upward trend. However, in recent years, there has been a slowdown in the number of Medicare beneficiaries choosing to enroll in managed care plans—and, in 2001, 2002 and 2003, an overall reduction in this number. Capitated plans currently account for approximately 95 percent 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 capitation amounts. The projection of future per capita amounts follows the requirements of the Medicare Modernization Act (MMA) and the Balanced Budget Act of 1997 in regard to the Medicare Advantage capitation amounts, which increase at rates based on the per capita growth for all of Medicare and, beginning in 2006, on the amounts bid by Medicare Advantage plans. Table III.B6 shows the estimated number of Part B beneficiaries enrolled in a managed care plan and the aggregate incurred reimbursements associated with those enrollees.

A substantial increase in Medicare Advantage enrollment is projected in 2006 as the provisions of the MMA give higher payments to Medicare Advantage plans. The higher payments provide incentives for expansion of coverage areas and for the provision of additional benefits to plan enrollees. In addition, preferred provider plan demonstrations are being conducted from 2003 through 2005 that will increase total managed care enrollment for those years, and regional preferred provider plans are beginning in 2006 and later.

(5) Administrative Expenses

The ratio of administrative expenses to benefit payments has declined to about 2 percent in recent years and is projected to continue to decline in future years. Projections of administrative costs are based on estimates of changes in average annual wages. ♦

Table III.B2—Incurred Reimbursement Amounts per Fee-for-Service Enrollee for Carrier Services					
Calendar year	Fee-for-service enrollment [millions]	Physician fee schedule	DME	Lab	Other carrier
Aged:					
1992	28.469	\$832.98	\$71.84	\$90.09	\$106.71
1993	28.683	\$834.94	\$87.49	\$92.30	\$118.65
1994	28.657	\$908.50	\$94.76	\$89.78	\$130.30
1995	28.387	\$992.64	\$109.77	\$86.36	\$137.56
1996	27.807	\$999.97	\$116.26	\$79.50	\$156.39
1997	27.040	\$1,038.17	\$130.43	\$75.28	\$179.81
1998	26.267	\$1,090.24	\$127.51	\$68.25	\$198.31
1999	25.983	\$1,135.06	\$133.80	\$68.38	\$217.79
2000	26.161	\$1,251.53	\$148.00	\$72.90	\$251.51
2001	26.976	\$1,348.78	\$164.31	\$76.84	\$285.80
2002	27.647	\$1,348.85	\$176.63	\$79.34	\$319.18
2003	27.957	\$1,326.20	\$186.78	\$81.95	\$352.35
2004	28.277	\$1,317.93	\$198.86	\$86.15	\$390.68
2005	28.648	\$1,336.97	\$211.16	\$90.73	\$431.11
2006	28.931	\$1,380.01	\$224.56	\$95.73	\$473.10
2007	29.324	\$1,439.46	\$239.00	\$101.10	\$515.72
2008	29.784	\$1,505.34	\$254.38	\$106.76	\$559.64
2009	30.250	\$1,567.22	\$270.77	\$112.74	\$607.42
2010	30.668	\$1,618.00	\$288.25	\$119.04	\$659.45
2011	31.190	\$1,659.73	\$306.91	\$125.69	\$716.14
Disabled (excluding ESRD):					
1992	3.026	\$631.57	\$96.66	\$64.00	\$89.54
1993	3.243	\$686.00	\$115.34	\$67.41	\$121.28
1994	3.470	\$771.40	\$124.24	\$67.73	\$121.61
1995	3.643	\$837.99	\$146.84	\$66.36	\$126.65
1996	3.777	\$834.81	\$153.54	\$66.46	\$137.88
1997	3.840	\$854.52	\$176.59	\$63.51	\$148.72
1998	3.918	\$896.18	\$181.17	\$59.72	\$165.10
1999	4.020	\$929.33	\$185.83	\$61.45	\$183.09
2000	4.129	\$1,028.31	\$208.71	\$64.56	\$206.28
2001	4.337	\$1,109.26	\$234.36	\$68.91	\$239.03
2002	4.540	\$1,112.24	\$251.99	\$71.77	\$268.13
2003	4.677	\$1,092.71	\$266.32	\$74.06	\$295.50
2004	4.833	\$1,085.41	\$283.42	\$77.81	\$327.25
2005	4.989	\$1,100.63	\$300.84	\$81.91	\$360.77
2006	5.131	\$1,135.70	\$319.82	\$86.40	\$395.60
2007	5.269	\$1,184.31	\$340.29	\$91.21	\$431.00
2008	5.397	\$1,238.12	\$362.11	\$96.30	\$467.49
2009	5.524	\$1,288.64	\$385.35	\$101.67	\$507.20
2010	5.653	\$1,330.00	\$410.14	\$107.34	\$550.43
2011	5.774	\$1,364.06	\$436.59	\$113.33	\$597.53

Table III.B3—Components of Increase in Recognized Charges and Costs per Fee-for-Service Enrollee for Intermediary Services (in percent)				
Calendar year	Outpatient hospital	Home health agency ¹	Outpatient lab	Other intermediary
Aged:				
1993	7.1	19.2	4.6	26.2
1994	9.0	22.6	7.6	19.2
1995	10.3	23.1	0.7	20.2
1996	8.8	8.0	5.9	17.8
1997	7.4	1.6	8.7	12.0
1998	-1.4	2,990 ^{2,3}	4.1	-4.0
1999	9.7	-1.3 ^{2,3}	12.8	-20.8
2000	-0.6	15.1 ³	5.4	19.7
2001	12.5	-50.6 ³	0.6	14.2
2002	-1.3	5.8 ³	13.0	20.6
2003	4.9	-2.1 ³	6.8	3.8
2004	5.6	6.5	4.7	8.2
2005	6.8	6.2	7.1	9.0
2006	7.2	7.6	3.4	4.2
2007	7.7	7.1	0.6	6.1
2008	7.8	6.2	3.2	5.0
2009	7.8	5.3	5.3	5.2
2010	7.8	4.6	5.4	4.5
2011	7.3	4.3	5.4	4.5
2012	7.2	3.9	5.4	4.4
2013	7.2	3.7	5.4	4.4
Disabled (excluding ESRD):				
1993	11.2	--	-2.1	19.0
1994	12.5	--	-0.3	4.5
1995	10.5	--	-6.6	-5.4
1996	4.8	--	-12.1	25.8
1997	6.1	--	5.4	18.1
1998	-3.9	-- ^{2,3}	0.3	-6.2
1999	8.0	-2.5 ^{2,3}	13.4	-12.2
2000	3.6	13.0 ³	6.8	-11.1
2001	13.2	-44.1 ³	7.1	-6.1
2002	5.6	10.6 ³	15.7	28.4
2003	5.0	-2.8 ³	6.8	4.3
2004	5.5	5.4	4.6	5.2
2005	6.8	5.6	7.1	6.0
2006	7.0	5.1	3.2	-1.4
2007	7.6	6.2	0.6	6.0
2008	7.7	6.4	3.2	6.0
2009	7.8	5.4	5.3	6.0
2010	7.8	5.4	5.4	6.0
2011	7.3	5.3	5.4	6.0
2012	7.2	5.2	5.4	6.0
2013	7.2	5.2	5.4	6.0

¹From July 1, 1981 to Dec. 31, 1997, home health agency (HHA) services were almost exclusively provided by Part A. However, for those Part B enrollees not entitled to Part A, the coverage of these services was provided by Part B. During that time, since all Part B disabled enrollees were entitled to Part A, their coverage of these services was provided by Part A.

²Effective Jan. 1, 1998, the coverage of a majority of HHA services for those individuals entitled to Part A and enrolled in Part B was transferred from Part A to Part B. As a result, as of Jan. 1, 1998, there was a large increase in Part B expenditures for these services for the aged enrollees, and Part B coverage for these services resumed for disabled enrollees.

³Does not reflect the impact of adjustment for monies transferred from the Part A trust fund for HHA costs, as provided by the Balanced Budget Act of 1997.

Beyond Cash Balance: the DA Plan

by Thomas Zavist

Pension plans have seen many problems over the years—corporate raiders seizing pension assets, volatile funding requirements due to contribution holidays and deficit reduction contributions, volatile financial accounting, insolvent trusts, high premiums, lump sum subsidies and whipsaw. All these problems can be traced to a single source—the notional concept of an accrued benefit distinct from the current funding of a retirement benefit. When you disconnect the liabilities of a pension plan from its assets, you create a quandary—what to do with the excess or shortfall. Inevitably, the decision is to get rid of it as quickly as possible, which causes volatile annual cost.

A traditional defined benefit (DB) pension plan has both liability volatility, due to changing discount rates, and asset volatility. Switching to cash balance reduces volatility. A cash balance pension plan defines its liabilities by a formula. If you ignore whipsaw, the liability of a cash balance plan at plan termination is equal to the sum of the cash balance accounts of every participant—an amount which has no volatility. Under the April 2, 2004, proposed interpretation of FAS 87, the liability for a cash balance plan with variable interest credits is also equal to the sum of the cash balance accounts.¹ By design, therefore, a cash balance plan has asset volatility only and no liability volatility, although whipsaw may keep a cash balance plan from completely living up to its design. (Whipsaw is a legal requirement to provide larger lump sums when interest rates are low.)

Some experts, including Mark Beilke who spoke at the October 2003 meeting of the American Society of Pension Actuaries, have predicted an international movement to comprehensive income accounting this decade. (This means immediate recognition of asset and liability changes—no bases and no corridor.) Each year assets and liabilities will be marked to market, which will aggravate expense volatility for publicly traded companies with DB pension plans, unless liabilities are tied to assets.

The Need for Equity Investment

From 1926 through 1988, stocks outperformed bonds by 5 percent on average each year.² Some have suggested investing pension plan assets entirely in bonds as a solution to comprehensive income volatility.³ Compounding the 5 percent difference, a better solution is to terminate a DB plan, since investing a dollar for 30 years in equities in a defined contribution (DC) profit sharing or §401(k) plan gives you four times as much money on average as investing a dollar in fixed income securities in a pension plan. It is difficult to argue with a factor of four. Like the workers they cover, pension plans have a competitive need to invest in the stock market. If DB plans were to abstain from stocks, they would make the DC plan a comparatively better retirement savings vehicle. Bonds may tie invest-

ments to liabilities, but they are no solution in the long run. Since retirement savings are consumed over a lifetime in retirement, timing risk is not as great a concern as longevity risk in the context of retirement planning. Earning a higher return alleviates the risk of longevity, which is the main risk in retirement.

The Need for New Plan Designs

As they face increasing volatility, publicly traded companies will move away from both traditional and cash balance pension plans and into DC plans, unless consultants advocate a DB pension plan design that ties the liabilities of the pension plan more closely to its equity investments. While no sponsor wants to be the first to try something new, consultants have managed to convince sponsors to switch to cash balance, so it is possible to convince plan sponsors to try something new. It is merely difficult—not impossible. What is easy is convincing them to switch to DC.

Equity-Linked Cash Balance Plans

There are a couple of ways to link assets and liabilities in a pension plan. One way is to have a cash balance plan with an interest crediting rate tied to the investment goals of the pension trust. To avoid back-loading, the cash balance plan must have a low normal retirement age, such as five years of service (which is the point at which participants vest and gain a right to an immediate annuity at termination). In *Cooper v. IBM Personal Pension Plan*, a federal court has ruled in essence that making the same contribution on behalf of two participants of different ages is fair in a DC plan but unfair age discrimination in a DB plan.⁴ Besides solving any back-loading problem, defining a low normal retirement age in the plan document, after the fashion of NationsBank, eliminates whipsaw and age discrimination issues.⁵

A cash balance plan with interest credits linked to benchmark indices is not the only way to reduce volatility, and it may not be the best. For example, every cash balance plan has a career average formula, which benefits employees who quit at the expense of employees who work to retirement. Although they reduce volatility, cash balance plans do not reward long service as much as traditional plans do. To reduce volatility, employers who reward long service must look beyond traditional plans, beyond DC and beyond cash balance.

Defined Allocation Plans

Revenue Ruling 69-427 has steered pension plans in the United States in the wrong direction since 1969. The ruling applied to a particular pension plan with a normal retirement benefit defined by a formula, and it prohibited the plan from paying disability and early retirement benefits in an amount equal to the funded portion of the normal retirement benefit.⁶



Thomas M. Zavist, FSA, EA, is vice president and actuary at the consulting firm of Stanley, Hunt DuPree & Rhine, Inc. in North Carolina. He can be reached at tzavist@shdr.com.

The plan sponsor wanted to pay benefits before retirement according to the amount funded, and the IRS objected. By disconnecting benefit accrual from funding, the IRS nurtured the notional concept of an accrued benefit—a concept which became codified in the Employee Retirement Income Security Act (ERISA) of 1974 as a participant's right to a specific dollar amount. The cash balance plan stretches the concept of accrued benefit by tying it to an investment index. The logical next step is to tie the accrued benefit directly to the particular assets of a pension trust. To do so under current law requires making use of provisions designed for a money purchase plan but technically available to any pension plan.

Putting strict statutory interpretation aside for a moment and focusing on public policy, imagine what would have happened if the IRS had ruled the other way in 1969. The IRS would have legitimated a pension plan with the following characteristics:

- **Financial Security.** Employees who work until normal retirement receive an annuity for life according to their years of service for their employer and their average pay—giving them a secure source of income for the rest of their life.
- **Cost Stability.** Annual contributions to the pension plan are reasonably level year to year. Investment gains and losses are spread over future working life until normal retirement.
- **Exclusive Benefit.** All assets of the trust go to plan participants. No assets revert to the employer.
- **Fund Solvency.** The pension plan is always fully funded. The employer can choose to terminate it at any time and distribute the assets of the trust to participants with no further obligation to contribute.
- **Investment Prudence.** The employer makes the investment decisions and can help employees realize the long-term advantage of equity investment.

Call the pension plan design a *defined allocation plan*, i.e., a DB plan that defines each participant's benefit by a formula allocating the assets of the pension trust among the participants. Pensioners have assets based on the fixed pensions they are receiving, and remaining assets are allocated among employees and participants with deferred benefits. Instead of legitimating the plan design, the IRS prohibited it—in one particular instance. The IRS did not disqualify every imaginable defined allocation plan, however.

Returning to strict statutory interpretation, the main hurdle to overcome in a defined allocation (DA) plan design is to have definitely determinable benefits. In order to have definitely determinable benefits, a pension plan in which liabilities depend directly on assets must not have discretionary contributions. In Revenue Ruling 69-427 and later rulings, the IRS has considered contributions that are actuarially determined (rather than being fixed) as being discretionary.⁷ Therefore, to avoid disqualification, a pension plan in which liabilities equal assets must have all actuarial assumptions and methods defined in the plan document. The document must specify a single annual contribution that falls within an actuarially determined contribution range. To my knowledge this has never been tried.

Another hurdle a DA plan must overcome is to be sure never to use forfeiture to increase benefits. This is a significant issue for a defined allocation plan, because it cannot rely on separate accounts or benefits determined separately for each participant to protect it against using one participant's forfeiture to increase another's benefit. Pensioners are allocated assets according to the benefits they are receiving. Remaining assets are allocated among remaining participants, and the DA plan document defines the accrued benefit in relation to the assets allocated. The allocation is conceptually similar to the individual aggregate funding method, but it is not restricted to the individual aggregate method. The accrued benefit is tied to a variable—the asset allocation—much as a cash balance accrued benefit can be tied to a variable interest credit. A defined allocation plan has other compliance hurdles that require skillful design to overcome.

A defined allocation plan is similar to a target benefit plan, but it is not a target benefit plan, because it is a DB plan rather than a DC plan. Thus, for example, you can convert a traditional DB plan into a defined allocation plan, just as you can convert a DB plan into a cash balance plan. You can also have subsidized ancillary benefits, window benefits, etc.

Conclusion

Although the defined allocation concept may be too novel for many plan sponsors, it may be suited to some. In particular it combines low volatility with flexibility to assign benefits and investment risk innovatively to meet the objectives of employers, employees and the general public. An equity-linked cash balance plan with a low normal retirement age is only slightly less imaginative.

Pension plans have a need to invest in equities. Forthcoming accounting changes will aggravate volatility problems that publicly traded companies already face. The mainstream solution will be to terminate DB plans and replace them with enhanced DC plan contributions. Pension actuaries must be ready to advocate radical pension plan designs or else focus their attention on non-profit and governmental entities and privately held corporations. ♦

¹Financial Accounting Standards Board. 2004. "Interpretation of FASB Statement No. 87." *Project Updates*. http://www.fasb.org/project/interpretation_st87.shtml.

²Maginn, John L. Donald L. Tuttle. 1990. *Managing Investment Portfolios: a Dynamic Process*. 2nd Ed. Table 2-2.

³Ralfe, John. Cliff Speed. Jon Palin. 2004. "Pensions and Capital Structure: Why Hold Equities in the Pension Fund?" http://www.soa.org/library/monographs/Retirement_Systems/m-rs04-1/m-rs04-1_03.pdf.

⁴United States District Court for the Southern District of Illinois. 2003. *Kathi Cooper, Beth Harrington, and Matthew Hillesheim, Individually and on Behalf of All Those Similarly Situated, Plaintiffs, vs. the IBM Personal Pension Plan and IBM Corporation, Defendants*. http://www.ilsd.uscourts.gov/Opinions/Cooper_v_IBM_Order.pdf.

⁵Tax Analysts. 1999. "News Analysis—Pension Downsizing, Continued." *Tax Policy Readings*. <http://www.taxanalysts.com>.

⁶Internal Revenue Service. 1969. *Revenue Ruling 69-427*. <http://www.irs.gov>.

⁷Internal Revenue Service. 1969. *Revenue Ruling 69-427*. 1972. *Revenue Ruling 72-97*. 1978. *Revenue Ruling 78-403*. <http://www.irs.gov>.

A defined allocation plan is similar to a target benefit plan, but it is not a target benefit plan, because it is a DB plan rather than a DC plan.

How Should Retirement Policy Be Reformed? Don't Speak All Together, Please

Reinventing the Retirement Paradigm: Wharton Conference focuses on Retirement Policy and Changing Retirement Policy

Edited and reprinted with permission from knowledge@wharton, an online publication of the Wharton School University of Pennsylvania. Originally published as two articles, "How Should Retirement Policy Be Reformed? Don't Speak All Together" on May 19, 2004 and "Redefining Retirement in the 21st Century" on June 16, 2004. For more information go to <http://knowledge.wharton.upenn.edu/> (registration is required). Knowledge@Wharton, May 19, 2004 <http://knowledge.wharton.upenn.edu/article/986.cfm>

Retirement Policy Reform

Changing demographics, the high cost of pension benefits and workers' continued failure to save enough for old age are all driving changes in the nation's retirement prospects, according to speakers at a recent Wharton Impact Conference titled, "Reinventing the Retirement Paradigm."

"The median American household needs to save at least 15 percent per year more than it is doing now to reach a reasonable retirement target," said Olivia Mitchell, executive director of The Pension Research Council at Wharton and a co-sponsor of the conference. "However, the majority of Americans do not recognize the shortfall nor make amends." Meanwhile, Mitchell added, retirement is being reformulated, with more people working after 55 than in the past—a natural reaction to longer, healthier life spans.

In the policy arena, changes in international accounting rules will have an impact on pension plans even as government pension systems around the world are being forced to reduce benefit promises and encourage delayed retirement, said Mitchell. She co-hosted the two-day conference with Robert L. Clark, professor of business management and economics at North Carolina State University.

The Tail Wagging the Dog

The conference, which drew 130 experts from government, academia and the private sector, opened with broad ideas about retirement policy reform. James Klein, president of the American Benefits Council, a group representing major employers and designers of benefit programs for plan sponsors, emphasized that the pension system must revolve around trust. "The greatest achievement of our retirement system is that millions of people and thousands of plan sponsors give vast sums of money to third

parties, confident [the money] will be prudently managed and will grow and provide benefits decades into the future," he said. "That confidence is not based on naïveté but rather on faith in the regulatory structure we have [where] we know people will be held accountable."

Klein said that trust has eroded somewhat, in part, because of complex pension laws designed to protect workers but that some plan sponsors believe have been irregularly enforced. He suggested a tradeoff in which regulators give plan sponsors more flexibility in how plans are designed and run; in exchange, the regulated community would accept harsher penalties for violating rules. Klein also proposed a negotiated system of rule-making. Now, he said, regulators take input on regulations and then come back with a final set of rules, with no room for back-and-forth trade-offs. Under a negotiated system, "the substantive results might be better, but even if not, the parties would have greater faith in the system knowing they were more involved in the process."

Finally, pension policy should strike a better balance of tax and labor policy against the goals of revenue creation and retirement security. "For too long we have had the tax policy tail wagging the retirement policy dog," said Klein, adding that "the real conflict up to now is the tension between tax legislation enacted for revenue purposes as opposed to tax legislation enacted for retirement security purposes."

110 Pension Plan Choices

Pamela Perun, an independent consultant on retirement income policy issues, presented a paper titled, "Reality Testing for Pension Reform," co-authored with C. Eugene Steuerle of The Urban Institute. She began with a quote from humorist Dave Barry who said that he could not figure out a statement about his pension benefits "no matter how many beers I drink." Noted Perun: "We do have a problem with complexity." She pointed to differences within types of plans as well as between plans, and then showed a chart listing 110 individual private pension plan types that will be available by 2006.

Perun discussed two current reform proposals, the Pension Preservation and Savings Expansion Act (PPSEA) and Bush administration proposals, which rely on lifetime savings accounts (LSAs) and retirement savings accounts (RSAs). She said the PPSEA tinkers with

just about every aspect of pension law and increases complexity but is likely to pass in some form. The Bush proposals are simpler, but have been criticized as favoring wealthier savers. "Neither proposal is satisfactory," said Perun, who argued for an alternative that favors adding incentives for a simple defined contribution plan for employee savings, and uniform social security treatment along with a savings tool for low-wage workers. "We don't need more innovative savings tools. We just need one that works," said Perun. "The true reality test for pension reform is how well does it increase retirement plan assets of middle, moderate and low-income families and how much does it cost?"

Rep. Earl Pomeroy, a Democrat from North Dakota, told the conference that Congress tends to think in two-year bursts, which is a problem when it comes to legislating pension reform. "This mismatch in long-term liabilities and short-term fiscal planning has never been starker in any period in our history," he noted. "Our children will pay the price."

Keith P. Ambachtsheer, president and founder of KPA Advisory Service of Toronto, suggested that pension funds could be better managed. He examined Cost Effectiveness Measurement's database on 256 pension funds for 10 years prior to 2002 and found little variance in terms of asset mix among the different portfolios. The old view, which favored a 60-40 or 70-30 asset mix between equities and bonds, worked well in the 1980s and 1990s when equities performed better than bonds. But economic upheaval in 2000 through 2002 showed the standard asset mix left defined pension plans vulnerable. In the old paradigm, Ambachtsheer said, plan managers took a great deal of long-horizon risk but little short-term risk. "If you really think you're good at short-horizon risky strategies, why only do a little bit of it?" he asked. He suggested a new paradigm based on what he called defensible investment beliefs, including the notion of a varying equity risk premium. He also said there is a need to restate investment policy in terms of the balance sheet, not just assets, and the risk tolerance of stakeholders.

\$2.1 Trillion in Public Pension Assets

Gary Anderson, executive director of the Texas Municipal Retirement System, and Keith Brainard, research director for the National Association of State Retirement Administrators, argued that public pension funds play a significant role in retirement income security. Defined benefit plans are the primary retirement benefit for about 90 percent of public employees, said Anderson, adding that about 10 percent of the U.S. workforce is employed by state and local governments.

The public plans do offer flexibility, including short vesting periods, the opportunity to buy service credits, return-to-work opportunities and lump-sum early retirement options. Anderson noted that governments act not only as employers, but also as policy makers, and consequently need to set a good example in operating their own pension plans. "These people are secure and not dependent on government programs in their retirement years. I think that's a good example to set. Public sector plans have not gotten the recognition we deserve for the innovations we've made and the impact on the retirement status of our country." According to Brainard, more than \$2.1 trillion in public pension assets are an important source of liquidity and stability for financial markets. "Public pension assets serve as an important source of entrepreneurial capital funding because of their long-term horizon. They create economic stimulus for generating and distributing investment returns greater than what individual investors would accrue in defined contribution plans."

Approximately \$40 billion in public pension assets are invested in venture capital, he added. Using studies that indicate public defined benefit plans returned more than 10 percent from 1983 to 2002, while defined contribution plans returned 6.5 percent, he extrapolated that the difference amounted to \$203 billion in added assets for the U.S. economy in 2002.

Ronald Albahary, chief investment officer of Merrill Lynch's Retirement Group, wondered how the numbers on public pension funds would look if the analysis had been done in 1966-1983, instead of what he called "the golden age of equities." With rising health care costs, Albahary said, the standard advice that retirees need to save enough to provide 70 to 80 percent of their working income to maintain their standard of living after retirement could be faulty. He, like others, is concerned about the mismatch between the asset and liability side of the balance sheet, pointing out that hedge funds have not been embraced among private pension fund managers even though they have been used by foundations and endowments.

Joseph Miskel, vice president of retirement advisory solutions at Merrill Lynch, said he, too, believes an asset-centric management strategy can create problems for private pension plans. "I think we fall short in implementing strategies that focus more on the performance of the liabilities." According to Miskel, hedge funds should be used along with other alternatives, including collars, matched futures accounts and alternatives to fixed income investment called equity participation notes. He warned that companies need to take better stock of the effect of pension plans on their corporate finances. "Without the corporation there is no pension. What if a corporation continually

(continued on page 26)

The public plans do offer flexibility, including short vesting periods, the opportunity to buy service credits, return-to-work opportunities and lump-sum early retirement options.

pours cash into the pension fund and creates a credit risk for the plan or for plan participants?"

Douglas Fore, principal research fellow at the TIAA-CREF Institute, told the conference that important new pension accounting rules have been formulated in Europe and are being imposed on U.S. companies as the International Accounting Standards Board (IASB) and the U.S. Financial Accounting Standards Board (FASB) seek convergence. "Pension accounting in the United States has widely been recognized as one of the most backward areas of all accounting and is in dire need of reform. Everybody knows we got ourselves in a terrible mess the last few years. The accounting rules are part of this," said Fore. The old accounting rules allowed companies to smooth out rate-of-return assumptions over time, creating a strong pro-equity bias, he noted. "In the '90s, this didn't matter at all; the stock market did the heavy lifting for everybody. But when the tide turned in March 2000 things [changed] dramatically." The prior smoothing had made the situation even worse, he said. At the end of 1999, defined benefit plans of the S&P 500 firms were overfunded by \$350 billion. Four years later, the same pension plans were underfunded by the same amount.

Fore also commented on the FASB's revisions of FAS 132, noting, "What was very opaque is much clearer." British authorities, in the development of FRS 17, went through a similar change, but they did it at a time when companies were reeling from the 2000 stock slump, leading many companies to back off from defined benefit plans. "In essence defined benefit plans have been frozen to new entrants in the U.K.," said Fore. "They have been substituted for defined contribution plans." The scandals at Enron and other U.S. firms, he added, have led to an international attack on U.S. Generally Accepted Accounting Principles (GAAP), which have already led to changes in accounting for stock options and will likely change insurance accounting rules.

Pet Insurance Over Financial Planning

In the wake of all these changes—and the continued lack of a savings cushion for the bulge of retiring baby boomers, William J. Arnone, a partner in Ernst & Young's human capital practice, suggested it is now time to remove the word baby from the phrase "baby boomer." "We have not learned the lessons," he said. "Someone's going to pay the price for our acting in less than an adult manner." Arnone, who runs investor education programs for employers, said companies began offering financial literacy programs in the early 1980s as they encouraged workers to take early retirement. "The rationale was that if these older employees did the calculations, they would conclude they were better off (taking early retirement). I

think we're going to have a resurgence, only now they are going to conclude, 'I cannot retire as soon as I thought I could.'" No more than 20 percent of large employers initiated financial education programs, added Arnone. His own firm used to offer financial planning in its flexible benefits program, but many other choices, including pet insurance, were more popular.

Among investors who manage their own retirement accounts, some of the common problems include: questionable asset allocation, failure to rebalance periodically and an overconcentration in employer stock. Approximately 20 percent of defined contribution participants have outstanding loans and many cash out at time of termination. "The latest, biggest, hottest thing now is professionally managed 401(k) plans," he said.

Martha Priddy Patterson, a director at Deloitte Consulting, said she is concerned about the possibility that the accounting changes will lead to a decline in defined benefit plans in the United States. "There have been so many pressures on defined benefit plans that I am opposed to anything else that will, in any way, adversely affect them," said Patterson. Tax rules inhibit funding defined-benefit plans, she added. "It's increasingly hard to stuff money in the plan when you have a boom year to ride out the bust years." Patterson also said the phrase "pension surplus" on balance sheets is confusing. "A lot of people I thought of as sophisticated don't understand that the big number there on the financials doesn't mean the employer can do anything with it [the employer] wants," she said. Patterson is also concerned that a rise in interest rates will lead to a termination of defined-benefit plans. She pointed out that even if companies provide financial education, by the time employees are in the workforce, it's too late. "It should be cradle to grave." Another reason she said employers may be reluctant to provide financial education is that they are concerned about liability and privacy issues.

One more problem that hasn't been addressed is "when the boomers retire with their 401(k) lump sum—more money than they have ever seen in their lives—the financial thieves will be knocking themselves down to separate those individuals from their money," said Patterson, who urged states to form financial-fraud task forces to combat the problem now. Arnone, however, suggested the money those thieves would seek may not amount to much: The average 401(k) balance for workers over age 55 is just above \$70,000 and the median is \$30,000. "The lump sums are not there."

Anna Rappaport, of Mercer Human Resource Consulting, is concerned that given too much choice, workers choose not to save. "I want us to remember there are situations where defined benefit plans are an efficient option. "Many people are covered by them and, despite their decline, I'd like to see us try to make

them work better rather than giving up and leaving it to the individual. I think that will produce a much better retirement future.”

Fore pointed out that many employers, if they could, would try to get out of their defined benefit plans. “There are winners and losers with these plans. Younger workers subsidize older workers who do stay. It is a multigenerational commitment. On the other hand, well-run defined-benefit plans, year after year, can contribute to the firm’s bottom line. GE has done that. They would not get out. They understand how to do it.”

The implications of retirement funding can extend well beyond retirees’ own portfolios, Rappaport added. “What will happen to the economy when the boomers stop spending money because they’re afraid of outliving their defined contribution plan? We’re in a heap of trouble in this country.”

Redefining Retirement in the 21st Century

The demographics of today’s workforce, employee expectations about retirement and the types of retirement options offered are all in a state of flux, making retirement policy a moving target for those charged with researching and administering pension plans. That was a second major theme of the “Reinventing the Retirement Paradigm” conference.

One Option: “Phased Retirement”

According to Patrick Purcell, an economist with the Congressional Research Service of the Library of Congress, 27 percent of the population will be over 65 by 2035 compared to 17 percent now. Growth in the population aged 20-54 will accelerate briefly, then fall sharply, which will have implications for employers trying to fill jobs. Among men, 90 percent between the ages of 20 to 54 are employed but it drops to 68 percent for men aged 55 to 64. For women aged 20 to 54, 75 percent are working, but after age 55 employment drops to 55 percent.

Overall, pension coverage has remained at 50 percent for more than 40 years, but there has been a substantial shift from defined benefit plans, which provide guaranteed lifetime benefits to employees, to defined contribution plans such as 401(k)s, which provide savings incentives but leave their management up to employees. In 2001, only one in five workers in the private sector was in a defined benefit plan, although Purcell said defined benefit plans tend to get more attention because they are offered at larger, more visible firms. Many defined benefit plans subsidize early retirement, while defined contribution plans are generally age-neutral. “That’s a vestige of another time when we needed to move older workers out,” Purcell said.

He discussed the idea of “phased retirement,” in which older workers continue with their employers on a part-time basis. To make that work financially, many workers need to

unlock some early retirement benefits. That, however, is problematic; defined-benefit plans often require an employee to stop working before receiving benefits. Meanwhile, legislation has been introduced that would allow phased retirement plans, but it has not generated much interest, Purcell said, asking the question: “Should tax subsidies that have been created to promote pensions be extended to include people who have not yet retired? Do we really want to make that fundamental change?” He expects that strong workforce participation levels among those aged 55 to 64 will continue, with health insurance coverage being a major driver.

Katharine G. Abraham, professor of survey methodology at the University of Maryland, suggested that changing workforce demographics have made companies more interested in employing older people. “Employers are concerned about the ability to recruit workers,” said Abraham, adding that policy makers are worried about “the solvency of Medicare and the Social Security system.” She also noted that while many employees say they would like to continue to work beyond retirement age, few actually end up doing so.

Looming Labor Shortages

According to research by Abraham and Susan Houseman, senior economist at the W. E. Upjohn Institute for Employment Research, only a quarter of older workers surveyed said they planned to stop working entirely at retirement age. Of the rest, 18 percent said they planned to work fewer hours, 5 percent said they wanted to change jobs and the rest said they did not have plans. When interviewed two years later, two-thirds of the people who planned to stop work actually did so, but most of those who planned to work fewer hours had not followed through. Abraham said the disconnect may have to do with the employment that is available. “Most of them are doing exactly what they were doing before or stopped working altogether.”

Houseman noted that perhaps those who reduced their hours were working more than 40 hours to begin with, so the reduction in hours did not reduce their salary. Other workers had been working two jobs and cut one out. “They are not fundamentally renegotiating their employment,” she said.

The research also indicated that those with pension plans were more likely to plan to retire; within that group, workers with a defined benefit plan were more likely to quit than those with a defined contribution plan. “Becoming eligible to receive a defined benefit greatly increases the probability of retirement,” said Houseman, adding that health insurance is also a factor. Those covered by a plan or through their spouse’s employer were more likely to reduce hours, and those with medical plans covering them in retirement were more likely to stop working.

The self-employed were more likely than other workers to continue working and less likely to stop altogether, although Houseman said that could be because self-em-

(continued on page 28)

There are winners and losers with these plans. Younger workers subsidize older workers who do stay. It is a multigenerational commitment.

ployment comes with inherent flexibility. Other factors that can influence retirement plans include a change in health status or assets, such as job loss and/or the decline in 401(k) portfolios.

Research also indicates that workers do not understand their finances or don't incorporate them into retirement planning until they are right up against the decision point, according to Houseman. She suggested that the gap between people who would like to continue to work, but work less in retirement, and those who actually do may indicate a need for new policies to help older workers transition to full retirement. "We already have programs to assist older workers who are unemployed or dislocated. There may be broader need for this kind of policy."

Rappaport noted that many companies have dropped prohibitions against rehiring retirees to fill gaps in their labor force. "The action is heavily around the rehiring of retirees. There is a lot of that happening out in the private sector."

She said that as the first wave of baby boomers begins to take early retirement, certain industries—like aerospace, utilities and health care—are already facing severe labor shortages. "Phased retirement is important to workers and employers," said Rappaport, "and in the case of aerospace, to the national security of this country."

She advised employers to analyze the demographic makeup of their workforce and find out where they have gaps developing. Individuals, too, should evaluate their resources, financial options and skills. "People work after retirement for very different reasons. There is a significant number of people who do it out of economic need, whether for health care or for money... We're in a situation where our policy actions can give people the opportunity to create their own future."

Impact of Baby Boomers

In a panel on "Managing the Retirement Promise," Janemarie Mulvey, assistant director of the Research Information Center at Watson Wyatt Worldwide, discussed strategies to retain older workers that balance the promise of retirement income with changing workforce demographics.

She pointed out that the Employee Retirement Income Security Act (ERISA) guarantees pension benefits that are already accrued, but does not require employers to continue to provide pension benefits in the future. Employers offer pensions voluntarily to minimize turnover and receive certain tax benefits, she noted, but also pointed out that pensions are growing increasingly more costly to administer, with costs tripling since 1981. As a result, she said, 64 percent of companies with fewer than 1,000 workers dropped defined benefit plans between 1990 and 2002. For companies larger than that, 11 percent dropped their defined benefit plans.

Mulvey also noted that 21 percent of defined benefit participants are in hybrid plans that combine elements of de-

defined-benefit and defined-contribution plans and that cater to a more mobile workforce. However, she said, many employers are not able to offer such plans because of regulatory constraints. A common criticism of hybrid plans is that they are a way for employers to cut employee benefits, but Watson Wyatt data indicate hybrid plans add costs to employers and protect older workers.

By 2020 all baby boomers will be over age 55, with strong implications for the labor markets, Mulvey said, adding that by 2010 the United States will experience a 6.6 percent shortfall of workers which will grow to 13 percent in 2020. Meanwhile, many retirement plans encourage workers to leave before age 65. A study of data gathered from 50 large employers showed that women over age 55 with early retirement plans retired a year earlier than other female workers, while men with those plans left eight months earlier. If a company offers medical benefits for early retirees, the numbers increase, with women retiring two years earlier and men 1.5 years sooner. In companies with more restrictive medical plans, such as caps on service, there is a smaller effect, said Mulvey.

Still, even with a labor shortage looming, employers are reluctant to change their incentive plans, particularly for those closest to retirement. Rather than cut early retirement benefits, Mulvey suggested that employers consider two incentives—elder care programs to help assist with the care of older relatives, and phased retirement programs that allow older workers to cut back on their hours without losing benefits. Of those surveyed, 25 percent of the women who retired early were responsible for caring for an older relative, she noted. "These are the softer side of benefits, but they matter and they're not too costly to implement." While men seemed less responsive to phased retirement programs, Mulvey said many men are retiring early and returning to their employers on a contract basis.

Comparing Pension Benefits

Workforce issues could have broader economic implications, according to Steven A. Nyce, senior retirement research associate with the Research and Information Center of Watson Wyatt Worldwide. "If we do not find enough workers and if productivity is not high enough, it's likely companies will not be able to meet the consumption in society and the result will be higher inflation... For decades on end we have enjoyed prosperous growth," he said. "What's going on in outsourcing is some of the reaction to the labor shortage and it might mitigate some of the inflation down the road."

David McCarthy, a researcher and faculty member at Imperial College in London, studied the portfolio value of pension plan types. He said there are three economic perspectives at play in determining occupational pension type: labor market conditions, portfolio theory and corporate finance, which is most relevant for defined benefit plans. Laws

and taxes also play a role, but they add so much complexity he left them out of the model. "The optimal pension choice is influenced by all three areas," said McCarthy. "Companies need to take both the labor-market effects and the employee-portfolio effects into account when designing compensation strategies." For many people in the United States and other countries, their pension is an extremely important asset, up to 40 percent to 60 percent of their total assets, he added.

Economists have developed life-cycle models that indicate defined benefit plans are less desirable for younger workers than for older employees. McCarthy compared pension benefits to being paid in movie tickets. He said he usually goes to two movies a month, so the first two tickets would be worthwhile. The third ticket, and those paid to him after that would have less value. The same would be true of pension benefits; at a certain point they become less meaningful.

But where is that point? McCarthy developed a model to measure the effects of various pension plans, although he cautioned that his work does not take into account two large sources of pension risk in defined-benefit plans—early separation and employer insolvency. "Results indicate that even for the most generous DB (defined benefit) pensions offered to younger workers, required productivity increases are small from the point of view of lifetime income, but large relative to the value of the pension. However, for older workers and less generous DB pensions, the required productivity increases are small relative to both the cost of the pension and lifetime income," McCarthy's paper states.

Donald Elbaum, director of actuarial studies in the treasurer's office of Ford Motor Co., said the idea of reducing early retirement subsidies is gaining ground in national pension plans around the world and in private schemes. The changes have been driven largely by cost as retirees live longer. "In the United States there are some regulatory obstacles that could present themselves in trying to reduce early retirement benefits already accrued. To some degree your hands are tied." To change the packages for future employees would require that companies strike a balance between flexibility and the ability to select certain employees for the benefits without violating nondiscrimination rules.

Elbaum also said researchers may want to consider how the current boom in offshore employment may impact the economy and pensions, and he pointed out that the tightening of the labor pool will first manifest itself among younger workers. "When someone retires at Ford we don't replace them with someone coming in the door. In some sense, the first battleground will be trying to find strategies for retention of employees in the early years when turnover is high."

According to Elbaum, defined benefit plans are not highly valued by younger workers. He said Ford took that into account when it closed its 50-plus early retirement program to new employees, replacing those benefits with a cash plan. Structuring employment to allow more part-time work might keep some people in the workforce, he said, but it might also provide incentives for people who would have worked full-time to cut back.

Mulvey suggested that employers who have been intent on reducing costs and cutting workers during the past years of slow economic growth need to look ahead and plan for a different future. "We try to know what's down the road," added Elbaum. "At the same time, it's hard to keep a bench workforce in waiting. We're measured against our competitors. We have to make sure we are staffed appropriately."

And if workers are not available in the United States, Ford has options overseas. "As a global company we do have alternate locations available," he said. "That's not to say this is our strategy, but it's something we grapple with."

An overview of the conference, with PowerPoint presentations, is available on the Pension Research Council's Web site at <http://rider.wharton.upenn.edu/~prc/04conf.html>. To learn more about the Pension Research Council, visit their Web site at <http://prc.wharton.upenn.edu/prc/prc.html>.

Reprinted with permission from knowledge@wharton, an online publication of the Wharton School University of Pennsylvania, originally published 19 May 2004. For more information go to <http://knowledge.wharton.upenn.edu/>. ♦

The Society of Actuaries Adds a New Retirement Monograph to its Online Publications Library

Managing Retirement Assets delves into a unique set of retirement product, distribution and asset management strategies. The monograph reveals the significance of those advising retirement plan sponsors, retirees and organizations to mutually understand the risks and how to manage them.

Please check it out at <http://www.soa.org/ccm/content/research-publications/library-publications/monographs/retirement-systems-monographs/>.

Section 404 Is Not Only About Deductibility Anymore

by Art Conat with assistance from Dennis Polisner, FSA, John Stokesbury, FSA, Curt Cartolano, FSA, and Mark Beilke, ASA

“Internal Controls” and the Actuary

When Enron collapsed and the public was besieged with numerous allegations of accounting scandals, Congress responded by passing the Sarbanes-Oxley Act of 2002 (S-O Act). The S-O Act placed new controls on the development and auditing of corporate financial statements as a means to assure the investing public that the information contained within accurately reflects the economic viability of publicly traded companies and thereby strengthens the nation's domestic financial market.

The S-O Act emphasizes the need for the auditing firm to be independent from the corporations it audits by further restricting the manner in which it may interact with its audit clients. It also added personal responsibility for the accuracy of the information contained in audited financial statements by requiring attestations to that effect by certain corporate executives, including the fact that proper controls are in place for data derived from sources outside the control of the auditor.

This information is not new to many readers, yet many actuaries who provide employee benefit plan services have been surprised when contacted by their clients attempting to identify the controls in place for work performed and included in audited financial statements.

Implications for Pension and OPEB Actuaries

For companies registered with the Securities and Exchange Commission (SEC), Section 404 of the S-O Act essentially requires that: 1) corporate management establish a structure to control the information provided in its financial statements; 2) corporate management assess the effectiveness of its internal control structure; and 3) an SEC-registered public accounting firm evaluate and attest to the effectiveness of the internal control structure surrounding the development of information included in the corporation's financial statement. For many registrants, the requirements are effective for the fiscal year that ends after Nov. 15, 2004. For smaller companies and those with only registered debt, the requirements become effective as of the fiscal year ending after July 15, 2005.

Of particular interest to actuaries who perform employee benefit valuations for SEC-registered clients is the requirement for corporate management to take responsi-

bility for the controls on the information contained within the financial statements' pension and other postemployment benefit (OPEB) footnotes. For corporate management to be able to make a formal attestation, the appropriate executives must understand and be able to document the process of how the pension and OPEB results are developed. Consequently, actuaries may be contacted by their clients to gain a better understanding of the controls that are in place for performing actuarial valuations, including the annual setting of assumptions.

Typical questions that arise for pension and OPEB actuaries during these assessments include:

- *Has your firm received a “SAS 70” letter for your valuation process?*

Statement of Auditing Standards No. 70 (“SAS 70”) identifies the factors that an auditing firm should consider when a corporation uses a third-party service organization to process certain transactions. When appropriate, an auditing firm can audit the risk controls surrounding a process performed by the service organization and provide such organization a letter that can in turn be furnished to the auditors of the corporations for whom it processes transactions. This allows the process of the service organization to be audited once, with the resulting letter usable by all of the service organization's clients. An SAS 70 report is not essential and is only provided in situations where there is a single process applied to a large group of clients; for example, defined contribution recordkeeping. Given the nature of the processes in an actuarial valuation of pension and OPEB plans, it may be difficult to obtain an applicable SAS 70 report.

- *What is the process of developing and selecting actuarial assumptions?*

Corporate management is required to identify and document the controls around the selection of the assumptions used for footnote disclosures. Although Actuarial Standards of Practice (ASOP) Nos. 27 and 35 indicate that the assumptions used in the footnote disclosure are prescribed assumptions, the employer will be interested in documenting the process and the controls around the actuary's work to the extent an actuary helps the client develop those assumptions.

- *What tests, crosschecks and edits does the actuary perform on the census data?*

This question may receive a broad spectrum of responses. The process of gathering the census data begins with the client. Thus, any response here will likely be considered in connection with other checks performed by another party.

- *What are your quality review or quality assurance processes?*

In order for corporate management to attest that the controls surrounding the development of the numbers are sufficient, they will want to understand the manner in which information has been checked and reviewed. They will likely want to have a brief description of all of the quality assurance steps that are undertaken.

- *What role does the actuary play in developing information for the financial statements?*

There are different services an actuary may provide for a particular client. For example, an actuary might be responsible for tracking information that helps determine whether a special event, such as a settlement or curtailment, has occurred during the year; or he or she might have a role in designing procedures to ensure that the valuation is based on the most recent plan document.

What Should Pension and OPEB Actuaries Do?

When actuaries are questioned along these stated lines, they should keep in mind that corporate management is seeking answers to be able to attest that the controls surrounding the development of financial statement data are sufficient. From this perspective, the cooperation of the actuary is essential to resolving any issues quickly. An actuarial client's corporate management will certainly appreciate the actuary who can help to resolve this small part of a much greater process.

The requirements under Section 404 of the S-O Act are new to everyone involved. Over the course of the coming year or two, chief executive and financial officers, auditors, specialists such as actuaries, and other professionals who will be involved in the implementation of the law's requirements have to work through the details of the proper documentation for compliance. Along the way, various professional organizations (e.g., American Institute of Certified Public Accountants) and/or the SEC may provide new guidance and clarifications to help all parties comply. In the meantime, every actuary should do the best professional job possible in completing this documentation and responding to information requests in a timely manner. ♦



Arthur L. Conat, ASA, EA, MAAA, is a principal at Ernst & Young LLP in Chicago, Ill. and a member of the Pension Section Council. He can be reached at art.conat@ey.com.



Several SOA staff members and session speakers get together to chat at the Spring Meeting in Anaheim. (Left to right): Emily Kessler and Lois Chinnock, SOA Staff; Ian Genno, session speaker and Pension Section Council co-chair; Patrick Landry, meeting participant; Dan Cassidy and Jeremy Gold, session speakers.



SOCIETY OF ACTUARIES

475 North Martingale Road • Suite 600
Schaumburg, Illinois 60173
www.soa.org