SOCIETY OF ACTUARIES

Pension Section News

2005 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 2005 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 2005 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 will be followed by deficits that begin to grow rapidly toward the end of the next decade as the baby boom generation retires. The Medicare Hospital Insurance (HI) Trust Fund that pays hospital benefits had negative cash flows in 2004 and annual cash flow deficits are expected to continue and to grow rapidly after 2010 as baby boomers begin to retire. The growing deficits in both programs will lead to exhaustion in trust fund reserves for HI in 2020 and for Social Security in 2041. 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 financing 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 6.4 percent of GDP in 2079. The projected 75-year actuarial deficit in the combined Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI) Trust Funds is 1.92 percent of taxable payroll, up slightly from 1.89 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 2017 and will be sufficient to finance only 74 percent of scheduled annual benefits by 2041, 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 of 15 percent in the amount of payroll taxes 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 that the system is solvent on a sustainable basis over the next 75 years and beyond would also require larger changes.

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Actuaries
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Letter to the Editor

Dear Editor:

In the April 2005 edition of *Pension Section News*, Samee-ul-Hasan responds to Mark Ruloff's article from the January edition.

I have two points of disagreement with this response.

First, the final average plan is identified as a risk which is "uninsurable" and it is suggested that it is "unwise" for employers to self-insure it. While it is true that final average plans have a more uncertain benefit/cost outcome, these outcomes are generally bound by an upper limit which can be measured. Also, employers do have the final lever. If pension costs escalate unaffordably, salaries can be held steady (or reduced if necessary) to balance the "total compensation" equation. I am not saying that this is easy, I am just observing that it can be done. I dislike the idea that employers are making "unwise" decisions but suspect many are making uninformed decisions.

Second, I appreciate the argument that "any decision-theory approach that considers worst cases will come down in favor of DC." I would suggest that this only holds true if one ignores the administration costs of an effective DC program, the litigation risk of an ineffective DC program and the general workforce cost of attempting to turn every employee into an investment expert. We know for a fact that individuals are underperforming their investment expert counterparts. Many individuals are not even selecting the classes of investment that resemble their own risk/return profile.

In the end, I am still pro-DB since I continue to see a world of challenges with effectively operating DC programs. Mark Ruloff correctly points out that many employers are suffering the sting of the asset/liability mismatch. The root of evil here is not the DB plan itself, but a sponsor's decision to accept a certain risk/return proposal, rejoice when the bet pays off (many years of contribution holidays) and run and hide when the bet fails. Mark correctly asserts that this risk can be substantially curtailed (but not eliminated) through investment policy changes.

DC plans are a great economic solution for sponsors but fail to achieve many of the "human resource" strategies to which DB plans effortlessly respond. It is not good versus evil as much as it is having a sponsor choose the risks and rewards that best help them achieve their business goals. As a profession, we need to better educate sponsors (and potential sponsors) of DB plans on the risks, the cost levers AND the rewards, which will go a long way towards leveling the playing field in the choice between DB and DC.

Joe Nunes, FSA, FCIA
President
Actuarial Solutions Inc.

Chairperson's Corner

by Tonya B. Manning

Perhaps you have often heard, as I have, the widespread assertion that a defined benefit plan is the most effective way for employers to provide retirement benefits to long-service employees. The council would like to fully explore this statement, not just from the plan sponsor perspective, but from the viewpoint of all stakeholders.

The essential question to be reviewed and discussed is this: "Is the utility of one dollar truly higher if invested in a defined benefit plan vs. a defined contribution plan?" There are many ways to evaluate utility and many perspectives to base such evaluations. One perspective might be from the eyes of an employer, comparing (i) contributing one dollar in an employee's current defined contribution account to (ii) contributing one dollar in a defined benefit plan for a prospective accrued benefit. Under which scenario will the company be better off, considering all costs related to providing salary and benefits to the employee? Is there a level of years of service where the answer changes from "no" to "yes"? How are assumptions, specific plan features and employee retention integrated into the evaluation of utility? Can utility be assessed when there are plan features not easily assigned a dollar value or where the employer gains indirect benefits, such as reduced volatility? Answers to these questions must be answered to determine if defined benefit plans truly are the most effective retirement vehicles.

Defined benefit plans are under attack today, seen as retirement vehicles with unavoidable risks and volatility that many employers no longer wish to continue with long-term. At the same time, enterprise risk management is emerging as a new component in a company's business plan. Inherent in this new concept is the principle that risk must not necessarily be minimized; it is to be understood, managed and in some cases, optimized. So, could it be that there is an argument that defined benefit plans are worth the risk after all? Exploring them from the perspective of utility will help answer this question.

The Pension Section Council will investigate the concept of utility as it applies to defined benefit and defined contribution plans in order to understand it best from all sides. This information will help the various stakeholders most effectively understand the value of defined benefit plans. The council plans to start with a literature search to see what has been written in this area and what conclusions may be drawn. Additional research may be initiated to fill in any gaps. Any comments from section members and other readers on this topic are also welcome.

As we look at the efficiencies of our current retirement plans, the council is also examining how work duration and retirement benefits are being redefined in the 21st century. Employees are now beginning to extend their working careers longer, on either a full- or part-time basis. As such, a retirement plan's traditional normal retirement age no longer represents the normal age at retirement. Careers are now extended, but it is not clear if they can be sustained in the current retirement system. Employees must become better "risk managers," and employers must develop workforce management programs that support the needs of older and younger workers alike. Ultimately, there may be a total redesign of our existing retirement systems that reflects the new norms in how employees progress through their career and working lifetime. Momentum for workable phased retirement legislation is growing.

The council has recently issued a call for papers titled, "Re-envisioning Work & Retirement in the 21st Century." From this, the council intends to compile a set of papers appropriate for publication. Those interested in writing a paper are asked to answer key questions, such as:

1. What will a 21st century career look like for a baby boomer, generation Xer or generation Yer?
2. What tools (for employers, individuals and/or society) could be used to manage risks with this new type of career, particularly in the later third of the working lifetime?
3. What are the cultural changes that need to take place?
4. What choices should employees be offered regarding how they enter retirement?

Once complete, the compiled set of papers may be used as a basis for a conference or symposium.

In addition to the above, the Pension Section Council continues to look for ways to provide information and resources that not only help members meet the needs of their clients and employers, but also advances the profession. The council is involved in many other activities geared toward meeting our primary mission of providing research and continuing education to members. For example, there will be additional continuing education opportunities this year via future webcasts and seminars. Please refer to the article, "Pension Section Council Summary of Activities" in this issue.

The Pension Section Council has emerged from its transition to the new SOA governance structure. The new framework is in place and we continue to move forward with many activities and services to our members. Along with the many activities, there are several opportunities for your involvement, particularly with the following committees: Basic Education, Continuing Education, Research and Communications. Please contact either me at *Tonya_manning@Aon.com* or Emily Kessler, SOA retirement systems staff fellow at *ekessler@soa.org* if you would like to participate. ◆

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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, underlying 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 2.6 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 2079.

The projected 75-year actuarial deficit in the HI Trust Fund is now 3.09 percent of taxable payroll, down slightly from 3.12 percent in last year's report due primarily to slightly greater income in 2004, and slightly lower costs than estimated in last year's report. The fund again 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 2014. The fund also continues to fail our long-range test of close actuarial balance by a wide margin. Though the projected date of HI Trust Fund exhaustion moved back slightly to 2020, from 2019 in last year's report, projected HI tax income falls short of outlays in this and all future years. HI could be brought into actuarial balance over the next 75 years by an immediate 107 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 magnitude would be necessary to the extent changes are delayed or phased in gradually, or to make the program solvent on a sustainable basis over the next 75 years and beyond.

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 financed into the indefinite future because current law automatically sets financing each year to meet next year's expected costs. However, expected rapid cost increases will result in a rapidly growing amount of general revenue financing—projected to rise from just under 1 percent of GDP today to 6.2 percent in 2079—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. 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, underlying 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 paid.

Pension Section Council Summary of Activities

by Anne M. Button

T he recent activities of the Pension Section Council are summarized as follows:

Research

- The Research Committee has worked on the following projects:
    - o Publication of the "Survey on the Prevalence of Traditional and Hybrid Defined-Benefit Pension Plans."
    - o Publication of the "Impact of Mortality Projection Scales on Defined Benefit Pension Plan Valuations."
    - o Call for papers on "Reenvisioning Work and Retirement in the 21st Century." The deadline for abstracts was June 30, 2005.
    - o The symposium on "The Future of Pension Plan Funding and Disclosure: Envisioning a Better System" for July 14-15, 2005. Over 20 papers were accepted; 14 will be featured at the symposium. A monograph will be published.
    - o The Preretirement Influences Literature Search project has been cancelled due to a lack of available time for the contracted researcher. The SOA staff is working with the researcher to determine if part of the project can be salvaged.

Continuing Education

- The Continuing Education Committee has completed the following:
    - o The design of the seminar "Addressing the Financial Risks from Retirement Systems," embedded in the 2005 SOA Health/Pension spring meeting (together with the Financial Economics Task Force).
    - o Webcasts on "Corporate Bond Yield Curve & Pension Valuations on May 19, 2005 and Public Misperceptions about Retirement Security" on June 23, 2005.

Basic Education and Communications

- George McCauslan has been named chair of the Basic Education Committee and Mike Price has been named chair of the Communications Committee. Both committees are in formation. Any members interested in serving on either committee should contact either George at

GeorgeWMcC@aol.com or Mike at *michael_price@palmercay.com.*

Annual Meeting

- The Financial Economics Task Force, together with the Continuing Education Committee, has designed a 2 1/2-day embedded seminar titled "Enterprise Risk Management and Pension Finance: Working in Tandem." The seminar will feature outside speakers including Robert Herz, chairman of the FASB, and other speakers from the investment community. The task force is working to get non-actuaries to the seminar as well.
- The Social Security Committee designed recruited a 1 1/2-day embedded seminar titled "A Primer on Fertility Rates," featuring actuaries from the U.S., Canadian and U.K. (invited) social security systems.

Future Projects
- The Pension Section Council is currently working on the following projects:
    - o The analysis of the issues related to ERM to determine how to integrate pensions and pension practitioners into the SOA ERM initiative. The council will work with the ERM Task Force and the Risk Management Section.
    - o The utility of defined-benefit vs. defined-contribution benefit structures to employers, employees, society and other stakeholders.
    - o The considerations for the establishment of a Web site for the general public on retirement issues.
    - o The development of an environmental scanning process to ensure that new pension topics and ideas are shared in a timely fashion.
    - o Issues around working as professionals. The first phase is to develop an action plan to promulgate the discussion on ethic issues.
- The Task Force on Financial Economics continues to work on the *Actuary's Guide to Financial Economics Consulting*. The target release date has been moved back to 3rd/4th quarter 2005.
- The Committee on Post-Retirement Needs and Risks has the following projects underway:
    - o The 2005 Retirement Risk Survey. Questions are currently being finalized; preliminary survey results will be available at the 2005 Annual Meeting.
    - o Focus groups to study retirees who have retired with a lump sum and no other annuity sources other than Social Security. The goal is to understand the decisions these retirees make on financial management of these systems and drivers for their decisions. A request for proposal has been issued to researchers.
    - o An embedded symposium into the 2006 SOA/LIMRA/LOMA Pension and Annuity Conference.
    - o A paper on implications to follow-up to its *Public Misperceptions about Retirement Savings paper*. ◆

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Financial Statement as of March 31, 2005:

12/31/2004 balance	155,161
Income	83,420
Ongoing services, including publication of *Forums*	**27,045**
Ongoing functions	**37,231**
3/31/2005 balance	174,305

Seminars to be Offered at the SOA Annual Meeting

The Pension Section is proud to announce two seminars to be held at the SOA Annual Meeting in New York, November 13-16, 2005. These seminars focus on two issues of importance to retirement practitioners: (1.) putting pension plans into an enterprise risk management framework and (2.) the importance of fertility projections in social insurance. For more information about either seminar, including registration details, go to *www.soaannualmeeting.org*. Be sure to read the articles on these two topics in this issue as well. ◆

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 2005 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds. Copies of the OASDI 2005 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.

Basic assumptions are developed for several of these factors based on analysis of historical trends and conditions and on expected future conditions. These include fertility, mortality, immigration, marriage, divorce, productivity, inflation, average earnings, unemployment, retirement and disability incidence and termination. Other factors are projected using methods that reflect historical and expected future relationships to the basic assumptions. These include total population, life expectancy, labor force, gross domestic product, interest rates and a myriad of program-specific factors. It should be noted that all factors included in any consistent set of assumptions are interrelated directly or indirectly. It is also important to note that these interrelationships can and do change over time.

The assumptions and methods used in this report are reexamined each year in light of recent experience and new information about future conditions, and are revised if warranted.

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 generally over the next five to 25 years. Ultimate values or trends reached by the end of the 75-year long-range period are generally maintained at these levels or trends for extrapolations beyond 75 years. One exception is for real wage growth, as described in section IV.B.5.

The ultimate values assumed after the first five to 25 years (and through the end of the 75-year long-range period) for both the demographic and the economic factors are intended to represent average annual 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 at its potential level of output and employment in the latter half of 2004.

Under all three sets of assumptions the economy is assumed to be at 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 are summarized in tables V.A1 and V.B1. Additional economic factors, summarized in table V.B2, are critical to the projections of the future financial status of the combined OASI and DI Trust Funds.

Table V.A1. – Principal Demographic Assumptions, Calendar Years 1940-2080						
	Total Fertility Rate[1]	Age-Sex-Adjusted Death Rate[2] per 100,000, by age			Net immigration	
Calendar Year		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	931.2	289.4	5,451.1	501,065	
1991	2.06	918.8	286.2	5,373.5	548,000	
1992	2.04	906.2	280.2	5,315.3	620,986	
1993	2.02	928.0	283.1	5,470.0	644,696	
1994	2.00	916.2	280.5	5,392.7	583,390	
1995	1.98	913.9	277.3	5,397.5	573,719	
1996	1.98	900.4	266.1	5,367.2	662,284	
1997	1.97	885.1	253.6	5,332.5	571,800	
1998	2.00	878.3	246.9	5,325.2	489,360	
1999	2.01	884.3	245.0	5,386.6	523,037	
2000	2.06	875.6	243.3	5,328.3	677,579	550,000
2001	2.03	867.1	243.2	5,260.7	798,126	550,000
2002[5]	2.02	866.2	236.2	5,302.9	730,689	550,000
2003[5]	2.03	861.9	233.3	5,288.7	529,370	400,000
2004[5]	2.02	857.9	230.5	5,276.3	600,000	400,000

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]
Intermediate:						
2005	2.02	854.2	227.8	5,265.5	675,000	400,000
2010	2.01	828.2	215.9	5,140.0	600,000	400,000
2015	1.99	796.7	205.5	4,960.1	600,000	350,000
2020	1.98	764.7	195.9	4,770.4	600,000	350,000
2025	1.96	734.0	187.0	4,586.1	600,000	300,000
2030	1.95	705.0	178.7	4,411.4	600,000	300,000
2035	1.95	677.7	170.9	4,247.1	600,000	300,000
2040	1.95	652.1	163.5	4,093.3	600,000	300,000
2045	1.95	628.2	156.6	3,949.2	600,000	300,000
2050	1.95	605.7	150.1	3,813.9	600,000	300,000
2055	1.95	584.5	144.0	3,686.8	600,000	300,000
2060	1.95	564.6	138.3	3,567.1	600,000	300,000
2065	1.95	545.8	132.8	3,454.4	600,000	300,000
2070	1.95	528.1	127.7	3,348.0	600,000	300,000
2075	1.95	511.3	122.8	3,247.5	600,000	300,000
2080	1.95	495.5	118.2	3,152.5	600,000	300,000
Low Cost:						
2005	2.05	859.9	229.5	5,299.3	720,000	550,000
2010	2.08	858.5	224.1	5,325.6	850,000	550,000
2015	2.11	847.2	218.4	5,275.8	850,000	500,000
2020	2.14	832.9	212.6	5,201.2	850,000	500,000
2025	2.17	817.9	207.0	5,120.3	850,000	450,000
2030	2.20	803.1	201.6	5,038.9	850,000	450,000
2035	2.20	788.7	196.5	4,959.4	850,000	450,000
2040	2.20	774.8	191.5	4,882.8	850,000	450,000
2045	2.20	761.5	186.8	4,808.9	850,000	450,000
2050	2.20	748.7	182.3	4,737.6	850,000	450,000
2055	2.20	736.3	177.9	4,668.9	850,000	450,000
2060	2.20	724.4	173.7	4,602.5	850,000	450,000
2065	2.20	712.9	169.7	4,538.4	850,000	450,000
2070	2.20	701.8	165.9	4,476.6	850,000	450,000
2075	2.20	691.2	162.1	4,416.8	850,000	450,000
2080	2.20	680.9	158.6	4,359.0	850,000	450,000
High Cost:						
2005	1.99	848.5	226.1	5,231.7	630,000	250,000
2010	1.93	796.9	206.7	4,953.4	472,500	250,000
2015	1.87	743.5	190.0	4,641.3	472,500	200,000
2020	1.81	692.5	175.1	4,336.7	472,500	200,000
2025	1.75	645.3	161.5	4,052.4	472,500	200,000
2030	1.70	601.9	149.2	3,790.7	472,500	200,000
2035	1.70	562.3	137.9	3,550.9	472,500	200,000
2040	1.70	526.0	127.6	3,331.6	472,500	200,000
2045	1.70	492.8	118.2	3,130.8	472,500	200,000
2050	1.70	462.4	109.7	2,946.6	472,500	200,000
2055	1.70	434.5	101.8	2,777.4	472,500	200,000
2060	1.70	408.8	94.6	2,621.8	472,500	200,000
2065	1.70	385.2	87.9	2,478.5	472,500	200,000
2070	1.70	363.4	81.8	2,346.3	472,500	200,000
2075	1.70	343.3	76.2	2,224.2	472,500	200,000
2080	1.70	324.7	71.0	2,111.2	472,500	200,000

[1] The 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 2029.

[2] The 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.

[3] Historical 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.

[4] Net other annual immigration is estimated to have averaged 375,000 persons over the period 1980-89 and 550,000 over the period 1990-99.

[5] Preliminary or estimated.

	Table V.B1. – Principal Economic Assumptions						
	Annual percentage increase in—						
Calendar year	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	Real-wage differential
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	-.6	4.1	5.8	4.2	1.6
1970 to 1975	2.1	-.7	-.9	6.7	6.6	6.8	-.2
1975 to 1980	1.0	-.6	-.2	7.3	8.7	8.9	-.3
1980 to 1985	1.7	-.2	.0	5.2	6.7	5.2	1.4
1985 to 1990	1.3	.1	-.1	3.2	4.7	3.8	.9
1990 to 1995	1.1	-.2	.4	2.5	3.6	3.0	.6
1995 to 2000	2.1	.4	.1	1.7	5.3	2.4	2.9
1994	.9	-.3	.8	2.1	3.7	2.5	1.3
1995	.1	.7	1.0	2.0	4.7	2.9	1.8
1996	2.4	1.1	-.1	1.9	4.0	2.9	1.1
1997	1.5	.8	.8	1.7	5.6	2.3	3.4
1998	1.9	.2	.8	1.1	6.2	1.3	4.8
1999	2.3	.1	.5	1.4	4.8	2.2	2.6
2000	2.4	.1	-1.2	2.2	6.1	3.5	2.6
2001	2.0	-.3	-1.3	2.4	2.0	2.7	-.8
2002	3.2	-1.3	-1.0	1.7	.4	1.4	-1.0
2003	3.5	-.8	-1.4	1.8	2.6	2.2	.4
2004	3.3	-.5	.0	2.2	3.8	2.6	1.2
Intermediate:							
2005	2.0	-.4	-.1	1.6	4.2	2.2	2.1
2006	2.0	.0	.0	1.8	4.3	2.2	2.2
2007	1.8	-.1	.0	2.3	4.4	2.6	1.8
2008	1.8	-.1	.0	2.5	4.3	2.8	1.5
2009	1.8	-.1	.0	2.5	4.1	2.8	1.3
2010	1.7	-.1	.0	2.5	4.1	2.8	1.3
2011	1.7	-.1	.0	2.5	4.1	2.8	1.3
2012	1.7	-.1	.0	2.5	4.2	2.8	1.4
2013	1.6	-.1	.0	2.5	4.0	2.8	1.2
2014	1.6	-.2	.0	2.5	3.9	2.8	1.1
2010 to 2015	1.6	-.1	.0	2.5	4.0	2.8	1.2
2015 to 2080	1.6	-.2	.0	2.5	3.9	2.8	1.1

	Annual percentage increase in—						
Calendar year	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	Real-wage differential
Low Cost:							
2005	2.1	-.4	-.1	1.5	4.2	2.0	2.2
2006	2.2	.0	.1	1.4	4.1	1.7	2.4
2007	2.2	.0	.1	1.5	4.1	1.8	2.3
2008	2.2	.0	.1	1.5	3.9	1.8	2.1
2009	2.1	.0	.1	1.5	3.7	1.8	1.9
2010	2.0	-.1	.1	1.5	3.7	1.8	1.9
2011	2.0	-.1	.1	1.5	3.6	1.8	1.8
2012	1.9	-.1	.1	1.5	3.7	1.8	1.9
2013	1.9	-.1	.1	1.5	3.5	1.8	1.7
2014	1.9	-.1	.1	1.5	3.4	1.8	1.6
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:							
2005	.5	-.5	-.2	2.2	2.5	2.7	-.2
2006	2.7	-.1	-.1	2.2	5.2	2.6	2.6
2007	1.7	-.1	-.1	2.5	4.6	2.8	1.8
2008	.1	-.2	-.1	4.1	3.7	4.4	-.7
2009	1.9	-.1	-.1	5.4	6.6	5.7	.9
2010	2.0	-.3	-.1	5.3	7.3	5.6	1.7
2011	1.2	-.3	-.1	4.4	5.4	4.7	.7
2012	1.2	-.3	-.1	3.6	4.6	3.9	.7
2013	1.2	-.2	-.1	3.5	4.4	3.8	.6
2014	1.3	-.3	-.1	3.5	4.3	3.8	.5
2010 to 2015	1.2	-.3	-.1	3.7	4.6	4.0	.6
2015 to 2080	1.3	-.3	-.1	3.5	4.4	3.8	.6

Table V.B1.—Principal Economic Assumptions

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

Calendar year	Average annual unemployment rate[1] (percent)	Annual percentage increase in...			Average annual interest rate[2] percent)
		Labor force[3]	Total employment[4]	Real GDP[5]	
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	3.2	12.1
1985 to 1990	5.9	1.7	2.0	3.3	8.5
1990 to 1995	6.6	1.0	.9	2.5	7.0
1995 to 2000	4.6	1.5	1.8	4.1	6.2
1994	6.1	1.4	2.2	4.0	7.1
1995	5.6	1.0	1.4	2.5	6.9
1996	5.4	1.2	1.4	3.7	6.6
1997	4.9	1.8	2.2	4.5	6.6
1998	4.5	1.0	1.4	4.2	5.6
1999	4.2	1.2	1.5	4.4	5.9
2000	4.0	2.3	2.5	3.7	6.2
2001	4.8	.8	.0	.8	5.2
2002	5.8	.8	-.3	1.9	4.9
2003	6.0	1.1	.9	3.0	4.1
2004	5.5	.6	1.1	4.4	4.3
Intermediate:					
2005	5.4	1.6	1.7	3.6	4.2
2006	5.3	1.4	1.5	3.5	5.1
2007	5.3	1.1	1.1	3.0	5.5
2008	5.4	.9	.8	2.7	5.6
2009	5.4	.8	.8	2.5	5.6
2010	5.5	.8	.7	2.5	5.7
2011	5.5	.8	.7	2.4	5.8
2012	5.5	.6	.6	2.3	5.8
2013	5.5	.6	.6	2.2	5.8
2014	5.5	.6	.6	2.1	5.8
2015	5.5	.5	.5	2.1	5.8
2020	5.5	.3	.3	1.9	5.8
2025	5.5	.2	.2	1.8	5.8
2030	5.5	.2	.2	1.8	5.8
2035	5.5	.3	.3	1.9	5.8
2040	5.5	.3	.3	1.9	5.8
2045	5.5	.3	.3	1.8	5.8
2050 to 2080	5.5	.2	.2	1.8	5.8

Table V.B2.—Additional Economic Factors

TableV.B2.—Additional Economic Factors					
	Average annual unemployment rate[1] (percent)	Annual percentage increase in...			Average annual interest rate[2] (percent)
Calendar year		Labor force[3]	Total employment[4]	Real GDP[5]	
Low Cost:					
2005	5.3	1.6	1.8	3.9	4.2
2006	5.3	1.4	1.5	3.8	4.9
2007	5.2	1.2	1.3	3.6	5.1
2008	5.1	1.1	1.2	3.5	5.2
2009	4.9	1.0	1.1	3.4	5.3
2010	4.8	1.0	1.1	3.3	5.4
2011	4.7	1.0	1.1	3.2	5.4
2012	4.6	.8	.9	3.0	5.5
2013	4.5	.7	.8	2.8	5.5
2014	4.5	.7	.7	2.7	5.5
2015	4.5	.6	.6	2.6	5.5
2020	4.5	.5	.5	2.5	5.5
2025	4.5	.4	.4	2.4	5.5
2030	4.5	.4	.4	2.4	5.5
2035	4.5	.5	.5	2.5	5.5
2040 to 2080	4.5	.6	.6	2.6	5.5
High Cost:					
2005	6.4	1.2	.3	.6	3.7
2006	6.4	1.1	1.1	3.7	5.7
2007	6.0	1.1	1.4	3.0	5.8
2008	6.5	.7	.2	.2	6.0
2009	7.2	.4	-.3	1.5	7.9
2010	6.6	.9	1.6	3.5	8.7
2011	6.4	.9	1.1	2.2	7.1
2012	6.5	.6	.5	1.6	6.2
2013	6.5	.5	.5	1.6	6.0
2014	6.5	.5	.5	1.6	6.0
2015	6.5	.4	.4	1.6	6.0
2020	6.5	.3	.3	1.5	6.0
2025	6.5	.1	.1	1.3	6.0
2030	6.5	.1	.1	1.3	6.0
2035	6.5	.1	.1	1.3	6.0
2040	6.5	.1	.1	1.3	6.0
2045	6.5	.0	.0	1.2	6.0
2050	6.5	-.1	-.1	1.1	6.0
2055 to 2080	6.5	-.2	-.2	1.0	6.0

[1] The unemployment rates for 2015 and later are adjusted to the age-sex distribution of the civilian labor force in 2003. All other rates are unadjusted.

[2] The 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.

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

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

[5] The real GDP (gross domestic product) is the value of total output of goods and services in 2000 dollars.

Stochastic Projections (excerpts from Appendix E of the Report)

Editor's Note: The following is excerpted from Appedix E of the 2005 Annual OASDI 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.

1. 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.

2. Methodology

Other sections of this report provide estimates of the financial status of the combined OASI and DI Trust Funds using a "deterministic" model. For the deterministic model, certain assumptions are made regarding levels of fertility, changes in mortality, immigration levels, emigration levels, net other immigration levels, the Consumer Price Index, average real wages, unemployment rates, trust fund real yield rates and disability incidence and recovery rates. Each of these variables will reach an assumed ultimate value at a specific point during the long-range period and will maintain that value throughout the remainder of the period. As mentioned above, three deterministic scenarios are developed assuming separate, specified values for each of these variables.

In contrast, the results of 5,000 independent stochastic simulations are presented in this appendix. Each of the 5,000 simulations is determined by allowing the above variables to vary throughout the long-range period. The fluctuation in the variable is projected by using standard time-series modeling, a method designed to help make inferences based on historical data. Generally, each variable is modeled by an equation that captures a relationship between current and prior years' values of the variable and introduces year-by-year random variation, as reflected in the historical period. For some variables, the equations additionally reflect relationships with other variables. Parameters for the equations are estimated using historical data for periods ranging from 20 years to 103 years depending on the nature and quality of data available. 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 interdependence among variables, and the historical periods used for the estimates. For some variables, using the variations exhibited in a relatively recent historical period may not provide a realistic representation of the potential variation for the future. In addition, results would differ if random variations had been applied to additional variables other than those mentioned above (such as labor force participation rates, retirement rates, marriage rates and divorce rates). Furthermore, additional variability could result from incorporating statistical approaches that would more fully model change in the long-range central tendencies of the variables. 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 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.

3. 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, 2005-79. Stochastic estimates are shown for the median (50th percentile) and for the 95-percent and 80-percent confidence intervals. For comparison, deterministic estimates are shown for the intermediate,

Table VI.E1.—Long-Range Estimates Relating to the Actuarial Status of the Combined OASDI Program [Comparison of deterministic and stochastic results]								
	Traditional Deterministic model			Stochastic Model				
				Median 50th Percentile	80-Percent Confidence Interval		95-Percent Confidence Interval	
	Intermediate	Low Cost	High Cost		10th Percentile	90th Percentile	2.5th Percentile	97.5th Percentile
Actuarial balance	-1.92	0.38	-4.96	-2.01	-3.15	-0.99	-3.83	-0.49
Open group unfunded obligation (in trillions)	$4.0	-$1.1	$10.9	$4.2	$7.0	$1.9	$8.8	$0.8
First year cost exceeds tax income	2017	2022	2013	2017	2014	2020	2013	2022
Year assets become exhausted	2041	See ft. [1]	2030	2041	2035	2052	2032	2064
Annual cost in 75th year (% of taxable payroll)	19.08	13.84	26.76	19.55	16.10	24.15	14.54	26.94
Annual cost in 75th year (percent of GDP)	6.39	5.01	8.26	6.55	5.39	8.09	4.87	9.02

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.

Median stochastic estimates for the actuarial measures displayed in Table VI.E1 are the same or slightly more pessimistic for the combined OASI and DI Trust Funds than those projected under the intermediate assumptions. The median estimate of the long-range actuarial balance is -2.01 percent of taxable payroll, about 0.09 percentage point lower than projected under the intermediate assumptions. The median estimate for the first year cost exceeds tax income is 2017 and for the year assets first become exhausted is 2041. These are the same as those projected under the intermediate assumptions. The median estimate for the annual cost in the 75th year of the projection period is 19.55 as a percent of taxable payroll and 6.55 as a percent of GDP. The comparable estimates using the intermediate assumptions are 19.08 and 6.39, respectively.

The 95-percent confidence interval determined by the stochastic modeling projections can be compared to the range of variation defined by the traditional low cost and high cost alternatives. For three of the measures in table VI.E1 (the actuarial balance, the open group unfunded obligation and the year assets become exhausted), the 95-percent stochastic projection range is narrower than the range defined by the low cost and high cost alternatives. That is, for these measures, the estimates under the low cost and high cost alternatives fall outside the 95-percent confidence interval determined

by the stochastic modeling projections. In contrast, for two other measures in the table (the first year cost exceeds tax income and the annual cost in the 75th year of the projection period expressed as a percent of GDP), the 95-percent stochastic projection range includes the estimates under the low cost and high cost alternatives. For the remaining measure in the table (the annual cost in the 75th year of the projection period expressed as a percent of taxable payroll), the 95-percent stochastic projection range includes the estimate under the high cost alternative, but does not include the low cost estimate. ◆

Hypertext versions of the Social Security and Medicare Trustees Reports as well as "A Summary of the 2005 Annual Reports" are available on the Internet at the following addresses:

Social Security (OASDI):
http://www.socialsecurity.gov/OACT/TR/TR05/index.html
Medicare (HI and SMI):
http://www.cms.hhs.gov/publications/trusteesreport/
Summary:
http://www. socialsecurity.gov/OACT/TRSUM/trsummary.html
Other information about Social Security benefits and services is available at:
http://www.socialsecurity.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

[1] The fund is not estimated to be exhausted within the projection period. Web address: *www.socialsecurity.gov/OACT/stochastic/index.html.*

HI Trust Fund

Actuarial Methodology and Principal Assumptions

Editor's note: The following excerpt is taken from Section IV.A, "Actuarial Methodology and Principal Assumptions for the Hospital Insurance Cost Estimates," in the 2005 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 e-mailed 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 2005 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 (i) establishing the present cost of services provided to beneficiaries, by type of service, to serve as a projection base; (ii) projecting increases in HI payments for inpatient hospital services; (iii) projecting increases in HI payments for skilled nursing, home health, and hospice services covered; (iv) projecting increases in payments to managed care plans; and (v) projecting increases in administrative costs. The major emphasis is directed toward expenditures for fee-for-service inpatient hospital services, which accounted for approximately 69 percent of total benefits in 2004.

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 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 HI incurred costs differ from the increases in cash expenditures shown in the tables in section III.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 Actuarial Methodology 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.

	Labor				Non-labor					Units of service				
Calendar year	Average hourly earnings	Hospital hourly earnings differential	Non-Hospital hourly earnings	CPI	Hospital price differential	Labor hospital prices	Input price index	Unit Input intensity allowance[2]	HI enroll.	Managed care shift effect	Admission incidence	Other sources	HI inpatient hospital payments

Table IV.A1.– Components of Historical and Projected Increases in HI Inpatient Hospital Payments[1]

Calendar year	Average hourly earnings	Hospital hourly earnings differential	Non-Hospital hourly earnings	CPI	Hospital price differential	Labor hospital prices	Input price index	Unit Input intensity allowance[2]	HI enroll.	Managed care shift effect	Admission incidence	Other sources	HI inpatient hospital payments
Historical data:													
1995	3.0%	−0.6%	2.4%	2.9%	0.5%	3.4%	2.8%	−0.7%	1.7%	−2.0%	2.4%	0.5%	4.7%
1996	5.1%	−2.6%	2.4%	2.9%	−1.1%	1.8%	2.2%	−0.5%	1.4%	−2.7%	2.6%	4.4%	7.5%
1997	3.9%	−2.0%	1.8%	2.3%	−0.8%	1.5%	1.7%	−0.5%	1.1%	−3.2%	2.3%	−0.3%	0.9%
1998	5.7%	−2.9%	2.6%	1.3%	2.5%	3.8%	3.1%	−2.6%	1.0%	−3.1%	0.4%	0.3%	−1.0%
1999	4.8%	−1.7%	3.0%	2.2%	−0.1%	2.1%	2.6%	−2.2%	0.8%	−1.8%	1.2%	1.6%	2.2%
2000	6.7%	−2.7%	3.8%	3.5%	−0.5%	3.0%	3.5%	−2.2%	1.3%	0.4%	0.3%	−1.3%	1.9%
2001	4.1%	1.2%	5.3%	2.7%	0.3%	3.0%	4.4%	−1.0%	1.0%	2.3%	1.2%	1.4%	9.7%
2002	1.9%	3.0%	5.0%	1.4%	0.1%	1.5%	3.7%	−1.2%	1.0%	2.1%	−0.1%	2.6%	8.3%
2003	3.8%	0.3%	4.1%	2.2%	1.4%	3.6%	3.9%	−0.6%	1.4%	0.8%	0.0%	−1.0%	4.6%
2004	4.0%	−0.1%	3.9%	2.6%	1.7%	4.3%	4.0%	0.0%	1.5%	0.0%	−2.6%	0.6%	3.4%
Intermediate estimates:													
2005	3.9%	−0.2%	3.7%	2.1%	2.0%	4.1%	3.8%	0.0%	1.6%	−0.9%	0.1%	1.6%	6.3%
2006	4.1%	0.2%	4.3%	2.2%	1.0%	3.2%	3.9%	0.0%	1.5%	−3.9%	0.0%	0.7%	2.1%
2007	4.2%	0.2%	4.4%	2.6%	0.8%	3.4%	4.0%	0.0%	1.8%	−4.1%	−0.1%	0.5%	2.0%
2008	4.3%	0.2%	4.5%	2.8%	0.6%	3.4%	4.1%	0.0%	2.0%	−1.6%	−0.2%	0.7%	5.0%
2009	4.3%	0.1%	4.4%	2.8%	0.4%	3.2%	4.0%	0.0%	2.0%	−1.7%	−0.2%	0.7%	4.7%
2010	4.2%	0.1%	4.3%	2.8%	0.2%	3.0%	3.8%	0.0%	2.1%	−1.8%	−0.2%	0.8%	4.7%
2011	4.1%	0.1%	4.2%	2.8%	0.0%	2.8%	3.7%	0.0%	2.4%	−1.3%	−0.3%	0.8%	5.3%
2012	4.1%	0.0%	4.1%	2.8%	0.0%	2.8%	3.7%	0.0%	2.8%	−1.4%	−0.5%	0.8%	5.4%
2013	4.1%	0.0%	4.1%	2.8%	0.0%	2.8%	3.6%	0.0%	3.0%	−1.4%	−0.5%	0.8%	5.5%
2014	4.0%	0.0%	4.0%	2.8%	0.0%	2.8%	3.6%	0.0%	2.9%	−1.3%	−0.4%	0.8%	5.7%

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 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 2005, the prospective payment rates have already been determined. For fiscal years 2006 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 IV.A1:

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 IV.A1 above 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. ◆

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

[2]Reflects 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.

SMI Trust Fund

Estimates Under Alternative II Assumption for Aged and Disabled Enrollee

(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 2005 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 e-mailed to dmmce@cms.hhs.gov. *To expedite this process, please mention* "Trustees Report" *in your request.*

SMI consists of Part B and, beginning in 2004, Part D. The benefits provided by each part are quite different in nature. The actuarial methodologies used to produce the estimates for each part reflect these differences and, accordingly, are presented in separate sections. This section describes the basic methodology and assumptions used in the estimates for the SMI trust funds under the intermediate assumptions. In addition, projections of SMI costs under two alternative sets of assumptions are presented.

Assumptions

The economic and demographic assumptions underlying the projections of SMI costs shown in this report are consistent with those in the 2005 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.

1. Part B

a. 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 *Supplementary Medical Insurance* 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.

(a) 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.

(b) 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 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.

(c) 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.

(a) Carrier Services
i. 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), 40 plus a performance adjustment reflecting whether past growth in the volume and intensity of services met specified targets under the sustainable growth rate mechanism. Table IV.B1 shows the projected MEI increases and performance adjustments for 2006 through 2014. The physician fee updates shown through 2005 are actual values. The modified update shown in column 4 reflects the growth in the MEI, the performance adjustment, and legislative impacts, such as the addition of preventive 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, therefore, actual physician expenditures are expected to continue to exceed the SGR targets. This situation causes projected physician updates to be about –5 percent for six consecutive years, beginning in 2006. The result is a cumulative reduction in the payment rates for physician services of roughly 26 percent from 2005 to 2011. In contrast, the MEI is expected to increase by 15 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 MEI is a measure of inflation in physician practice costs and general wage levels.

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 IV.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 IV.B1, table IV.B2 shows the estimates of the incurred reimbursement for carrier services per fee-for-service enrollee.

ii. 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 IV.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 IV.B1, table IV.B2 shows the corresponding estimates of the average incurred reimbursement for these services per fee-for-service enrollee. The fee schedules for each of these expenditure categories are updated by increases in the 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.

(b) 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 IV.B3.

(3) Fee-for-Service Payments for Persons with End-Stage Renal Disease
See SMI 2005 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. In 2004, the number of Medicare enrollees who selected a managed care plan to provide their Medicare benefits increased slightly. Capitated plans currently account for approximately 95 percent of all Part B 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 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 IV.B6 (not shown) shows the estimated number of Part B beneficiaries enrolled in a managed care plan and the aggregate incurred reimbursements associated with those enrollees.

(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.

	Physician Fee Schdule									
	Increase Due To Price Changes									
Calendar year (Years prior to 2004 not shown)	MEI	MPA[1]	Physician Update[2]	Modified Update[3]	Residual Factors	Total Increase[4]	CPI	DME	Lab	Other Carrier

Table IV.B1. – Components of Increases in Total Allowed Charges per Fee-for-Service Enrollee for Carrier Services

(In percent)

Aged:

Year	MEI	MPA	Physician Update	Modified Update	Residual Factors	Total Increase	CPI	DME	Lab	Other Carrier
2004	2.9	−1.4	1.5	3.8	6.8	10.9	2.6	2.3	7.5	7.0
2005	2.9	−1.4	1.5	1.5	4.2	5.7	2.1	−1.3	7.7	4.4
2006	2.7	−7.0	−4.5	−4.6	5.7	0.8	2.2	1.8	4.2	9.9
2007	2.6	−7.0	−4.6	−5.4	5.4	−0.3	2.6	4.3	3.3	8.5
2008	2.4	−7.0	−4.8	−5.0	5.0	−0.2	2.8	4.2	3.0	8.6
2009	2.3	−7.0	−4.9	−4.9	2.7	−2.3	2.8	−0.1	5.7	8.4
2010	2.2	−7.0	−5.0	−5.0	2.8	−2.3	2.8	5.9	5.8	7.9
2011	1.9	−7.0	−5.2	−5.2	2.7	−2.7	2.8	5.8	5.6	7.7
2012	1.9	−1.6	0.3	0.3	2.6	2.9	2.8	5.7	5.5	7.3
2013	1.9	2.9	4.9	4.9	2.7	7.7	2.8	5.8	5.6	7.4
2014	1.9	3.0	5.0	5.0	2.7	7.8	2.8	5.8	5.6	7.4

Disabled (excluding ESRD):

Year	MEI	MPA	Physician Update	Modified Update	Residual Factors	Total Increase	CPI	DME	Lab	Other Carrier
2004	2.9	−1.4	1.5	3.8	6.6	10.6	2.6	2.6	9.7	17.8
2005	2.9	−1.4	1.5	1.5	4.1	5.7	2.1	−1.4	7.5	5.3
2006	2.7	−7.0	−4.5	−4.6	5.6	0.8	2.2	1.7	4.0	8.6
2007	2.6	−7.0	−4.6	−5.4	5.4	−0.3	2.6	4.2	3.1	7.1
2008	2.4	−7.0	−4.8	−5.0	5.0	−0.2	2.8	4.2	2.8	7.6
2009	2.3	−7.0	−4.9	−4.9	2.7	−2.3	2.8	−0.1	5.6	7.6
2010	2.2	−7.0	−5.0	−5.0	2.8	−2.3	2.8	5.9	5.7	7.1
2011	1.9	−7.0	−5.2	−5.2	2.7	−2.7	2.8	5.7	5.6	7.2
2012	1.9	−1.6	0.3	0.3	2.6	2.9	2.8	5.7	5.5	6.8
2013	1.9	2.9	4.9	4.9	2.7	7.7	2.8	5.8	5.6	7.0
2014	1.9	3.0	5.0	5.0	2.7	7.8	2.8	5.8	5.6	7.0

[1] Medicare performance adjustment.

[2] Reflects 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.

[3] Reflects 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.

[4] Equals combined increases in allowed fees and residual factors.

Table IV.B2. – Incurred Reimbursement Amounts per Fee-for-Service Enrollee for Carrier Services					
Calendar year (Years prior to 2004 not shown)	Fee-for-service enrollment (millions)	Physician fee schedule	DME	Lab	Other Carrier
Aged:					
2004	28.296	1,661.08	223.48	97.25	420.85
2005	28.225	1,752.76	221.35	104.86	439.16
2006	27.206	1,760.18	224.91	109.27	482.39
2007	26.228	1,754.74	234.66	112.92	523.87
2008	26.140	1,750.54	244.71	116.25	569.69
2009	26.017	1,707.56	244.47	122.84	618.15
2010	25.880	1,664.42	259.00	129.93	667.09
2011	26.000	1,615.59	274.05	137.26	718.88
2012	26.260	1,660.25	289.68	144.85	771.38
2013	26.586	1,788.33	306.34	153.01	828.50
2014	26.955	1,928.09	324.08	161.61	889.99
Disabled (excluding ESRD):					
2004	4.949	1,441.55	345.50	91.21	462.53
2005	5.130	1,520.57	346.00	98.48	486.96
2006	5.159	1,525.82	351.44	102.41	528.85
2007	5.164	1,520.25	366.37	105.62	566.62
2008	5.236	1,516.11	381.85	108.61	609.83
2009	5.307	1,478.49	381.41	114.66	656.03
2010	5.371	1,440.68	403.89	121.16	702.39
2011	5.421	1,397.81	427.15	127.91	752.84
2012	5.449	1,435.92	451.38	134.89	804.36
2013	5.478	1,546.36	477.28	142.40	860.44
2014	5.513	1,666.88	504.88	150.33	920.64

Table IV.B3. - Components of Increases in Recognized Charges and Costs per Fee-for-Service Enrollee for Intermediary Services				
[In percent]				
Calendar year (Years prior to 2004 not shown)	Outpatient Hospital	Home Health Agency[1]	Outpatient Lab	Other Intermediary
Aged:				
2004	11.8	13.1	7.3	13.1
2005	8.2	10.3	8.6	7.5
2006	8.0	8.3	4.6	2.0
2007	7.7	7.3	1.1	5.9
2008	7.7	6.7	3.4	5.1
2009	7.8	5.5	5.6	5.2
2010	7.8	5.5	5.7	5.2
2011	7.1	5.1	5.6	5.0
2012	6.9	4.6	5.5	4.9
2013	6.9	4.5	5.6	4.9
2014	6.9	4.1	5.6	4.9
Disabled (excluding ESRD):				
2004	12.4	12.1	9.5	−1.5
2005	8.1	10.1	8.6	8.4
2006	7.9	8.4	4.6	−1.6
2007	7.6	7.6	1.0	5.7
2008	7.7	7.3	3.3	5.6
2009	7.7	6.1	5.6	5.7
2010	7.7	6.0	5.7	5.8
2011	7.0	5.8	5.6	5.7
2012	6.8	5.7	5.5	5.6
2013	6.9	5.6	5.6	5.7
2014	6.9	5.1	5.6	5.7

1. From July 1, 1981 to December 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.

2. Effective January 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 January 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.

3. Does 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.

2. Part D

The voluntary prescription drug benefit, which will start on January 1, 2006, presents challenges for projecting its costs. Except for limited specific drugs, Medicare has no historical experience in covering outpatient prescription drugs—and many provisions of the reimbursement mechanism are without precedent.

a. Cost Projection Methodology

(1) Projection Base
The 2001 Medicare Current Beneficiary Survey (MCBS) provides the base data for the projection of Part D expenses. (Prior Part D estimates were based on the 1998 MCBS.) The MCBS is a survey of about 12,000 beneficiaries that collects data on person-specific health care utilization, expenses and sources of payment, including prescription drugs. The MCBS drug expenses were adjusted to correct for survey misreporting. Due to the nature of drug administration in the institutional setting, the MCBS cannot determine drug expenses for institutionalized beneficiaries; hence, drug expenses for this group were imputed. The data were standardized to a full-retail cost level by removing the estimated effects of rebates and discounts.

(2) Drug Benefit Payments
The adjusted MCBS drug costs were updated to projection years by the increases in per capita drug expenses shown in table IV.B9. Since insurance coverage influences the spending level for covered services and drugs (that is, beneficiaries with increased insurance coverage for drugs would tend to increase their drug expenses), the MCBS drug expenses were adjusted to reflect differences in drug coverage between the Part D benefit and the existing coverage reported in the MCBS.

All individuals enrolled in Medicare Part A or Part B are eligible to enroll in the voluntary prescription drug benefit. However, individuals for whom Medicare is the secondary payer are not assumed to enroll in Part D. It is assumed that 90 percent of the remaining individuals who do not qualify for the low-income subsidy or receive coverage through an employer-sponsored retiree plan will enroll in Part D. Of the 10 percent who do not enroll in Part D, it is assumed that half of these individuals will have drug spending in the lowest quintile and the other half will have drug spending randomly distributed across all those eligible for Part D. These assumptions reflect the 2004 Medicare Technical Review Panel's recommendation that the Board of Trustees reduce the number of Medicare beneficiaries expected to participate in the Part D program and incorporate an explicit model of beneficiary selection.[1] The assumption that most of the eligible individuals will enroll is used because of the large subsidy and late-enrollment surcharge.

Table IV.B9 displays the components of the increases in Part D expenditures. Prescription drug plans are expected to negotiate price discounts and manufacturer rebates to manage drug utilization. In addition, these plans incur administrative costs for plan operation. Since drug expenses grow faster than administrative costs, the administrative percentages slowly decrease over time.

(a) Prescription Drug Plans
Projected drug expenses are allocated to the beneficiary premium, direct subsidy, and reinsurance subsidy by the benefit formula specifications (deductible, coinsurance, initial benefit limit, catastrophic threshold) for beneficiaries in prescription drug plans and Medicare Advantage drug plans. Low-income beneficiaries receive additional subsidies to help finance premium and cost-sharing payments. Subsidies are estimated for beneficiaries who meet the income and asset requirements.

The statute specifies that the base beneficiary premium is equal to 25.5 percent of the sum of the national average premium bid and the estimated catastrophic reinsurance. The actual premium would be greater for plans with bids above the national average and lower for plans with lower bids. The estimated average premium amounts are 25.5 percent of the estimated standard benefits.

Risk corridors encourage plans to participate in Part D by reducing risk exposure. The projections assume that surpluses and deficits would be about the same magnitude with no net cost or savings.

(b) Employer-Sponsored Plans
There are several options for employer-sponsored plans to benefit from the Part D program. One option is the employer subsidy in which Medicare will subsidize qualifying employer sponsored plans a portion of their qualifying retiree drug expenses determined without regard to plan reimbursements. About 25 percent of beneficiaries enrolled in Part D are assumed to be covered by this subsidy in 2006 with this amount grading down to about 14 percent in 2014.

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[1] The earlier methodology assumed a greater proportion of Medicare beneficiaries would enroll in prescription drug plans but did not assume any "anti-selection" behavior among enrollees. In other words, all enrollees were considered equally likely to enroll, regardless of their levels of drug costs. This approach represented a simplified, but largely equivalent, alternative to the more refined methodology that reflects a higher probability of enrollment for beneficiaries with high drug expense levels and, conversely, a greater likelihood that those with low costs would postpone enrollment. The new model of beneficiary selection results in somewhat fewer enrollees but with above-average cost levels; overall projected costs are only slightly affected.

Another option is for an employer-sponsored plan to either wrap around an existing Part D plan or to become a prescription drug plan themselves. The subsidies for these types of arrangements will be calculated in the same way as other Part D plans. We expect that these types of plans will offer additional benefits beyond the standard Part D benefit package resulting in lower reinsurance payments. About 1 percent of beneficiaries enrolled in Part D are assumed to be covered by these types of employer-sponsored plans in 2006 grading up to about 7 percent in 2014.

(c) Per Capita Reimbursements
Table IV.B10 shows estimated enrollments and per capita reimbursements for beneficiaries in private prescription drug plans, low-income beneficiaries and beneficiaries in employer-sponsored plans.

d. Summary of Aggregate Reimbursement Amounts on a Cash Basis under the Intermediate Assumptions
Table IV.B11 (not shown) shows aggregate projected reimbursement to plans and employers by type of payment. Since payments would be made as incurred, cash and incurred are about the same.

e. Projections under Alternative Assumptions
Part D expenditures for the low cost and high cost alternatives were developed by modifying the base (2006) estimates and the growth rates estimated under the intermediate assumptions. The base (2006) per capita estimates increased by 13 percent under the high cost scenario and decreased by 13 percent under the low cost scenario. For years after 2006, the growth assumptions decreased two percentage points per year under the low cost scenario, and increased two percentage points per year for the high cost scenario.

The 2006 base modifications of 13 percent include the following:
- ±5 percent for how well the Medicare Current Beneficiary Survey (MCBS) represents Medicare beneficiaries' drug expenses. The high cost scenario increases the MCBS data by 5 percent, and the low cost scenario decreases the MCBS data by 5 percent.
- ±2 percent per year on the rate of change of drug expenses per capita. The national health expenditures (NHE) projections were used to increase the per capita drug expenses. The NHE projections use 2003 as a base and project succeeding years. Compared to the intermediate assumptions, the cumulative increase from 2003 to 2006 is 6 percent greater under the high cost scenario and 6 percent lower under the low cost scenario.

- ±2 percent for any differences between the drug per capita increase in the NHE projections and increases experienced by Medicare beneficiaries.

The participation rate for individuals who do not qualify for the low income subsidy or receive coverage through an employer-sponsored retiree plan is increased by 5 percent for the high cost scenario and decreased by 5 percent for the low cost scenario. In addition, assumptions regarding participation in the low-income subsidies, employer-sponsored plan participation, drug plan administrative loading and discount/management savings vary in the alternative scenarios. Table IV.B12 compares these varying assumptions.

Actuarial Methodology
Table IV.B13 compares expenditures under intermediate, low and high cost alternatives as a percentage of gross domestic product. ◆

Table IV.B9.—Key Factors for Part D Expenditure Estimates			
Calendar year	Annual per capita drug cost increase[1]	Cost management and discounts	Plan administrative expenses
Intermediate estimates:			
2005	10.40%	—	—
2006	10.10	15.00%	12.67%
2007	9.90	17.00	12.42
2008	9.60	19.00	12.20
2009	9.40	21.00	11.99
2010	9.10	23.00	11.91
2011	8.70	25.00	11.84
2012	8.40	25.00	11.61
2013	8.20	25.00	11.36
2014	8.00	25.00	11.12

[1] According to the National Health Expenditure Projections published February 23, 2005.

Table IV.B10.—Incurred Reimbursement Amounts per Enrollee for Part D Expenditures							
	Private plans						
	All beneficiaries			Low-income		Employer plans	
Calendar year	Enrollment (millions)	Direct subsidy	Re-insurance	Enrollment (millions)	Low-income subsidy	Enrollment (millions)	Employer subsidy
Intermediate estimates:							
2005							
2006	29.4	$889.87	$481.90	$10.90	$2,362.11	$9.70	$610.06
2007	30.6	939.13	505.86	11.1	2,548.94	9.2	656.4
2008	32.1	1,002.92	530.17	11.3	2,718.17	8.5	702.86
2009	33.5	1,068.39	555.05	11.6	2,891.94	7.8	750.68
2010	35	1,136.81	579.11	11.8	3,067.61	7.2	799.18
2011	36.4	1,205.41	602.94	12.1	3,239.64	6.8	847.14
2012	37.9	1,278.94	665.1	12.5	3,489.35	6.4	910.84
2013	39.1	1,380.69	713.83	12.8	3,763.77	6.6	985.83
2014	40.2	1,488.24	764.65	13.2	4,052.06	6.7	1,065.03

Calendar year	Intermediate assumptions	Alternatives	
		Low cost	High cost
Low-income participation as a percent of low-income eligible beneficiaries			
2004[1]			
2005[1]			
2006			
2007			
2008	75.7	65.7	85.6
2009	75.8	65.9	85.7
2010	75.8	65.9	85.7
2011	75.9	66.0	85.7
2012	76.0	66.2	85.8
2013	76.0	66.2	85.8
2014	76.0	66.2	85.8
Percentage of beneficiaries enrolled in subsidized employer-sponsored plans			
2004			
2005			
2006	23.7	24.9	19.9
2007	22.0	23.4	17.9
2008	20.0	22.0	15.9
2009	18.1	20.6	14.0
2010	16.2	19.2	12.2
2011	15.0	18.3	11.0
2012	13.8	17.4	9.4
2013	13.7	17.2	9.3
2014	13.6	17.0	9.3
Drug plan administrative loading as a percent of net premium			
2004			
2005			
2006	12.7	7.7	17.7
2007	12.4	7.7	16.8
2008	12.2	7.8	16.0
2009	12.0	7.8	15.2
2010	11.9	7.9	14.6
2011	11.8	8.0	14.0
2012	11.6	8.0	13.5
2013	11.4	8.0	13.0
2014	11.1	8.0	12.4
Drug plan discount and drug management savings percentage			
2004			
2005			
2006	15.0	20.0	15.0
2007	17.0	22.0	16.0
2008	19.0	24.0	17.0
2009	21.0	26.0	18.0
2010	23.0	28.0	19.0
2011	25.0	30.0	20.0
2012	25.0	30.0	20.0
2013	25.0	30.0	20.0
2014	25.0	30.0	20.0

Table IV.B12.—Part D Assumptions under Alternative Scenarios for Calendar Years 2004-2014

[1] Participation rates under the transitional assistance benefit.

Table IV.B13.—Part D Cash Expenditures as a Percentage of the Gross Domestic Product for Calendar Years 2004-2014[1]			
Calendar year	Intermediate assumptions	Alternatives	
		Low Cost	High Cost
2004	0.00	0.00	0.00
2005	0.06	0.04	0.07
2006	0.63	0.47	0.81
2007	0.66	0.47	0.87
2008	0.68	0.48	0.94
2009	0.71	0.49	0.99
2010	0.74	0.5	1.02
2011	0.77	0.51	1.07
2012	0.81	0.53	1.15
2013	0.86	0.55	1.24
2014	0.91	0.58	1.33

[1] Expenditures are the sum of benefit payments and administrative expenses.

Results of SOA Survey on Traditional and Hybrid-Defined Pension Plans

by Steven Siegel

The Pension Section's Research Team recently released the results of a survey on the prevalence of traditional and hybrid defined benefit pension plans in the United States. The survey, which queried the largest 2,500 plan sponsors in the United States, was motivated by the research team's desire to gain a better understanding of the potential impact of recent litigation involving cash balance plans. The complete survey results can be found in the retirement systems research projects section of the SOA Web site. The full Web site address is *http://www.soa.org/ccm/content/ areas-of-practice/retirement-pension/research/surv-of-prevalence-of-trad-and-hybrid-db-pen-plans/*

The genesis of the survey began with an exploration on suitable topics for follow-up research to a study entitled "Actuarial Aspects of Cash Balance Plans" that was done several years ago on behalf of the SOA by Bolton Offutt Donovan. As ideas for follow-up research were being developed, several high-profile cases involving cash balance plans were making national headlines. With the future viability of cash balance plans suddenly unclear, the team decided that it was important to take a macro view on the extent of cash balance plan coverage and to assess how far-reaching the impact of any legislation might be. In addition, there was no prior information available that explored in-depth the prevalence of these plans. Hence, the plan for the survey was put into action.

A project oversight group for the effort was assembled and chaired by Kevin Binder. The group drafted the initial survey questions and explanatory material. To administer the survey, the research team hired Mathew Greenwald and Associates. With their extensive background in retirement systems survey instruments, Greenwald and Associates honed the survey and readied it for final distribution. Using an extensive database of plan sponsor contacts, Greenwald and Associates selected the largest 2,500 plans in the United States.

Plan sponsors were initially mailed the survey. To maximize the response rate, those who did not respond by mail were called and asked to complete the survey over the phone. In addition, the SOA contacted the enrolled actuaries affiliated with each of the plans to marshal their support. Many thanks are due to Pension Section members who helped spur their plans to respond to the survey.

In all, 342 responses were received for a total response rate of 14 percent. Of these, 100 plan sponsors answered on behalf of public sector organizations, representing 29 percent of the plans. On a participant basis, public plans represented almost 55 percent of active plan participants employed by sponsors with ongoing and/or frozen defined benefit plans.

Respondents were asked four questions:

1. How many pension plan participants the organization has in the United States.
2. Whether the organization sponsors one or more defined-benefit pension plans.
3. If one or more defined benefit plans are sponsored, how many participants are in the plans.
4. If applicable, what types of defined benefit plans are sponsored, along with the number of participants in each type of plan.

One of the most interesting results of the survey was that approximately 40 percent of private sector and 25 percent of public defined benefit plan participant's benefits are determined by some form of hybrid benefit design feature. The report includes detailed tabulations and graphs on the plan types represented in the survey along with several breakdowns by plan size.

It is anticipated that this survey will be repeated on a periodic basis to assess ongoing trends in the defined benefit plan landscape. The Pension Section Research team would welcome your thoughts on the survey and ideas for further research related to cash balance plans or retirement systems, in general. Feel free to contact me at *ssiegel@soa.org* with any thoughts you have. ◆

> **One of the most interesting results of the survey was that approximately 40 percent of private sector and 25 percent of public defined benefit plan partcipant's benefits are determined by some form of hybrid benefit design feature.**

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Bush Administration Proposes Overhaul of Pension Rules

by Anne M. Button (with contributions from Robert Maciejewski, Eric Rolin and John Potts)

T he recent woes of the Pension Benefit Guaranty Corporation and the onslaught of news related to the beleaguered airline industry and the steps the airline companies have taken to rid themselves of their pension liabilities have brought into focus idiosyncrasies in federal funding requirements. From looking at the public records, one can see that two airlines in bankruptcy, US AIR, as recently as 2000 and United Airlines, as recently as 2001 were not required to contribute to the airlines' pension plans. And yet once these companies entered bankruptcy in 2003 and 2004, both companies surrendered underfunded plans to the Pension Benefit Guaranty Corporation which meant that participants in the plans would receive smaller benefits than had been promised to them.

In January 2005, the Bush Administration released a proposal to restructure the funding requirements for defined benefit plans sponsored by single employers. No changes are currently proposed for multi-employer plans. The stated goals of the reform are as follows:

- Funding targets should not be "manipulable" and should reflect the financial health of the employer.

- Liabilities and assets should be measured accurately using current interest rates.
- The risk of termination must be recognized for plan sponsors in poor financial health.

Administration's Proposal Related to Funding Requirements

The administration proposes the following changes to the funding requirements for single employer pension plans:

1. One method to determine liabilities for all plans.
    a. This method will determine the liabilities associated with benefits earned to date and will not reflect any liability associated with benefits earned in the future. This liability will be referred to as the Funding Target.
    b. In determining this liability, the administration proposes using a yield curve. A Treasury Department white paper describes this yield curve as being based on high quality zero coupon corporate bond yields. These rates will be issued monthly based on interest rates averaged over 90 days of high-quality corporate bonds (AA) with varying maturities. The mortality assumption will also be prescribed.
    c. Actuaries will use assumptions that reflect the experience of the plan with regard to the probability of termination, disability and retirement unless the company is "financially weak" or "at-risk." In the case of an "at-risk" company, the liabilities will be determined assuming that the participants will begin receiving benefits as soon as possible and all participants will elect lump sum payments if that is an available option of the plan.
    d. "At-risk" companies, defined as companies that have senior unsecured debt rated as below investment grade by each of the nationally recognized statistical rating organizations, will also be required to increase the liabilities of the plan for administrative expenses associated with purchasing annuities from an insurance company.
2. The market value of assets will be used and contributions that are made after the end of the plan year will be discounted back to valuation date using the yield curves' weighted average interest rate.

3. The funding target is determined to be the difference between the liability and the adjusted market value of assets and this target will be amortized over seven years using the yield curve interest rates for the applicable years.

4. The minimum required contribution will be equal to the normal cost (the liability associated with an additional year of service) plus the seven-year amortization payment. In future years, an amortization base will be established in any year where the funding target exceeds the sum of the market value of assets and the present value of the remaining amortization bases.

5. There will be a phase-in period for companies who move from healthy to "at-risk."

6. The proposal also includes changes to the maximum contribution that an employer may deduct equal to the excess of 130 percent funding target plus the normal cost plus increases in the funding target and the normal cost based on future salary increases over the market value of assets but not less than the unfunded at-risk liability plus the at-risk normal cost. However, the use of a credit balance has been eliminated.

Administration's Proposal Related to Notification and Plan Design Requirements

In an effort to reduce the impact on participants caused by terminations of underfunded plans, the proposal would also speed up notification requirements to participants and restrict certain plan amendments and plan design features. The notification requirements are as follows:

- If the market value of plan assets were less than the funding target, Form 5500 plan funding status filing deadlines to the government would be accelerated. Funding status filings are currently required 9-1/2 months after the end of the plan year. Under the proposed changes, "underfunded" plans with more than 100 participants would be required to file this Form 5500 report 1-1/2 months after the plan year.

- A summary annual report to participants that would contain relevant information regarding the funding status of the plan for past three years as well as the PBGC guarantees would be due 15 days after the annual filing to the Department of Labor.

The administration's plan design requirements are driven by the plan sponsor's financial health classification as either "ongoing" or "at-risk" which is based on its bond rating. "Ongoing" plan sponsors are those with investment-grade bonds (Baa or better); "At-risk" plans are those whose plan sponsor's bonds have had a ranking of "junk bond" status for five years or more. Exhibit 1 outlines the restrictions placed on various plans, depending on the plan sponsor's financial condition.

Exhibit 1			
Percentage Points Below Required Funding Level (Target)	Bankrupt Sponsor	Junk Grade Sponsor (At-Risk Liability Target)	Investment Grade Sponsor (Ongoing Liability Target)
0 to 19	• No benefit increases • No lump sums • No accruals	• No new restrictions	• No new restrictions
20 to 39	• No benefit increases • No lump sums • No accruals	• No benefit increases • No lump sums	• No benefit increases
40 or worse	• No benefit increases • No lump sums • No accruals	• No benefit increases • No lump sums • No accruals • No preferential funding of executive compensation	• No benefit increases • No lump sums

What Will This Mean for Defined Benefit Plan Sponsors?

We examined what type of impact these changes would have on two sample plans. We looked at a pension plan with pay-related benefits (FAP) covering 350 participants where 74 percent of the liability was associated with retirees and another plan with flat dollar benefits covering 1,000 participants where 50 percent of the liability was associated with retirees. Exhibit 2 summarizes the liabilities and the difference in the minimum contributions of the various plans.

Under the new rules, both plans would see increases in the minimum required contributions. The FAP plan would see its minimum funding requirement increase 11 percent if the company is healthy and 26 percent if the company is financially weak. This plan has a large number of retirees which puts downward pressure on the proposed effective interest rate and resulting upward pressure on the liability and proposed minimum required contribution. These increases would be offset,

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(in thousands)	Exhibit 2			
	Final Average Pay – Healthy	Final Average Pay –At-Risk	Flat Dollar Benefit – Healthy	Flat Dollar Benefit –At-Risk
Funding Accrued Liability[1] (8% interest; projected unit credit)	11,200	11,200	5,600	5,600
Funding Normal Cost	300	300	200	200
Current Liability (6.14% interest rate)	10,100	10,100	6,500	6,500
Current Liability Normal Cost	350	350	240	240
Actuarial Value of Assets (5 year smoothed value)	9,000	9,000	5,000	5,000
Funding Target	12,300	13,500	7,800	8,700
Funding Target NC	350	350	250	250
Effective Annual Yield to Determine Funding Targets	5.65%	5.50%	5.95%	5.90%
Market Value of Assets	8,300	8,300	4,600	4,600
Current Minimum Funding	950	950	200	200
Proposed Minimum	1,050	1,200	750	900
Percentage Increase	11%	26%	275%	350%

however, by a decrease in net amortization as recent large losses currently being amortized over five years would be amortized over seven years under proposed rules.

If the employer with the FAP plan is at risk, then the funding target increases further primarily due to (i) the required load for expenses which accounts for $750,000 of the increase and (ii) the required assumption that participants retire as soon as possible with modest early retirement subsidies.

The employer with the flat dollar plan would see a much more dramatic increase in the minimum required contribution. This is primarily due to the plan having a credit balance of $500,000 that may no longer be reflected. In addition, this plan had a number of plan amendments that were being amortized over 30 years and the liability as-sociated with these increases would now be amortized over seven years. The difference in the at-risk liability and the ongoing liability is solely due to the required expense load because the liability assuming that all participants retire as soon as possible is less than the ongoing liability and therefore is set equal to the ongoing liability. ◆

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[1] Mortality table used in developing all liabilities except the current liability was the RP2000 Combined Mortality projected by Scales AA_M and AA_F generational projection tables. The current liability was determined using the prescribed mortality table (1983 GAM).

Seminar on Fertility Projections for Social Insurance

by Emily K. Kessler

The level of future fertility rates is one of the principal assumptions used in the projection of long-range actuarial costs and revenues for social insurance programs, including the Social Security and Medicare programs in the United States and the Canada Pension Plan and the Quebec Pension Plan in Canada. So far, mortality assumptions have taken the limelight in these actuarial estimates while fertility assumptions have had limited public actuarial discussion. Since the financial effect of these projections influences significant public policy decisions and public welfare, objectively developed and soundly based projections are extremely important. Moreover, most economically and demographically developed countries face low and uncertain fertility rates. Therefore, the subject is of interest not only in the United States and Canada, but in other developed countries as well.

A seminar on this topic will be held at the SOA Annual Meeting scheduled for November 13-16 in New York. The seminar will provide an overview of the importance of fertility rates in social insurance projections relative to other demographic variables and present alternative schools of thought on expected future fertility experience. Drivers of fertility rates will be discussed as well as differences in trends by country, with a focus on the United States and Canada. Current projection methodologies used by actuaries and demographers will be explored. The usefulness of stochastic and other approaches will be discussed.

The presenters will include authors who submitted papers in response to the Society of Actuaries' Call for Papers on this subject. Panelists will provide a primer on fertility rates, discuss factors driving fertility rates (both level and timing), discuss approaches to the projection of fertility rates and propose possible determinants of future fertility levels. Leading social insurance actuaries and demographers from the United States and Canada have been invited to participate, including:

- Alain Bélanger, Statistics Canada
- Rob Brown, University of Waterloo
- Steve Goss and Alice Wade, U.S. Social Security Administration
- Sam Gutterman, PricewaterhouseCoopers LLP
- Sari Harrel and Jean-Claude Menard, Office of the Chief Actuary, Canada
- Bruce MacDonald, Independent Consultant
- Diane Macunovich, University of Redlands
- Pierre Plamondon, Quebec Pension Board
- Neela Ranade, Congressional Research Service
- Gopi Shah, Stanford University

The five-session seminar will be held on Monday, November 13 and Tuesday, November 14. For more information, visit *http://www.soaannualmeeting.org/ sessions.php.* ◆

ANNUAL MEETING & EXHIBIT

SOA05

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Letter to the Editor

Scrapping Social Security's Intermediate Cost Assumptions – II

The logical question for pension actuaries is: Are the long-term (75-year) projections prepared annually by the Social Security trustees sufficiently reliable to justify the conclusion that the Social Security program is so financially troubled as to require an overhaul (and the sooner the better)? Bear in mind the plan covers nearly 160 million workers and 50 million beneficiaries and has functioned well. The public holds it in great esteem, and changes are not to be made lightly.

In the March 2004 *Pension Section News*, in an attempt to answer the question of reliability, my Letter to the Editor examined the ability of the intermediate cost, low cost and high cost sets of assumptions to project assets. I compared projected assets from 1992 to 2001 to the end of 2002 with actual assets at that time (see the summary chart below).

Chart 1 Average Discrepancy Between Projected Assets and Actual Assets ($1.4 trillion) at 12/31/2002			
	Assumption Set Used		
Calendar Years	Low Cost	Intermediate Cost	High Cost
1992-1996	0%	-20%	-42%
1997-2001	0%	-3%	-6%
1992-2001	0%	-11%	-24%

I concluded that, since the low cost basis was on target, it should replace intermediate cost, which has served as the official standard for thinking about and developing Social Security legislation. Further, intermediate cost should be renamed high cost and a new low cost should be developed. Note that the low cost projections produce not a deficit, but a surplus at the end of 75 years, so it appears all the current political heat may be misplaced.

A Second Approach to Evaluating Projection Validity

To further assess the reliability of the actuarial work in which all final actuarial decisions are made by non-actuarial trustees, I worked up a chart comparing projected assets, at decennial intervals: 2000, 2010, etc.

It seemed to me *a priori* that the projected asset values at any particular year, such as 2050, should be more or less equal. To test this hypothesis, I therefore prepared the accompanying chart of all the individual projected values to the seven decennial years; they were compiled from the 23 trustees' reports 1983 to 2005.

Annual Report Year	Chart 2 Projected asset values from Trustees Annual Reports, 1983-2005 to the decennial years shown below from 2000 to 2060 ($ Billions) (intermediate cost assumptions)						
	2000	2010	2020	2030	2040	2050	2060
1983	1,220	4,547	10,133	15,830	19,780	20,057	6,848
1984	1,381	4,848	10,521	15,668	18,350	16,298	-1,998
1985	1,354	4,592	9,338	11,955	9,427	-2,012	-35,676
1986	1,329	4,616	9,639	12,739	10,890	410	(-)
1987	1,289	4,489	9,392	12,411	10,678	778	(-)
1988	1,409	4,461	9,124	11,838	8,840	(-)	(-)
1989	1,582	4,816	9,576	11,930	7,642	(-)	(-)
1990	1,410	4,162	8,046	9,096	2,899	(-)	(-)
1991	1,202	3,612	7,040	7,712	1,194	(-)	(-)
1992	998	2,916	5,341	4,159	(-)	(-)	(-)
1993	909	2,469	4,675	3,760	(-)	(-)	(-)
1994	861	2,108	2,976	(-)	(-)	(-)	(-)
1995	936	2,308	3,275	(-)	(-)	(-)	(-)
1996	881	2,057	2,829	(-)	(-)	(-)	(-)
1997	907	2,141	2,834	(-)	(-)	(-)	(-)
1998	978	2,491	3,777	981	(-)	(-)	(-)
1999	1,016	2,734	4,420	2,368	(-)	(-)	(-)
2000	1,052	3,263	5,739	4,866	(-)	(-)	(-)
2001	na	3,379	6,105	5,508	(-)	(-)	(-)
2002	na	3,382	6,484	6,712	294	(-)	(-)
2003	na	3,245	6,418	7,260	1,953	(-)	(-)
2004	na	3,030	5,776	6,370	1,280	(-)	(-)
2005	na	2,930	5,378	5,632	273	(-)	(-)
Low value	861	2,057	2,829	(-)	(-)	-2,012	-35,676
High value	1,687	4,848	10,521	15,830	19,780	20,057	6,848

Note: (-) means negative assets that were not available.

What we see is a very substantial variation over the 23 years. For the year 2000, the range is from $861 billion to $1,687 billion; for 2020 it is from $2,829 billion to $10,521 billion. It is even more extreme for 2040: from a negative of perhaps many trillions to $19,780 billion. (*Negative values were not provided by the trustees where the symbol (-) is shown.*) Given these large variations over only 23 years, doubts arise that the projections can be relied on to make major changes to the existing program.

The low cost values are clearly superior to the intermediate for at least the recent 10-year period, 1992-2002. But afterward, one sees again comparable large variations—but at least they provide for 10 good years. (If you would like a copy of the low cost chart, contact me at *dlanger@davidlanger.com*.)

Additional comments I have published on the actuarial work of the trustees appear on my Web site, *davidlanger.com*. If you have any comments, I will be glad to hear them.

David Langer, ASA, EA

Don't Miss This Seminar
Enterprise Risk Management and Pension Finance: Working in Tandem

by Emily K. Kessler

Enterprise risk management (ERM) is rapidly becoming an important actuarial tool and discipline. Most ERM initiatives by the actuarial profession to date have focused on financial institutions. How can ERM principles be understood and applied to corporations that sponsor defined benefit (DB) pension plans? How can pension actuaries use ERM to help plan sponsors manage, mitigate or retain plan risks as part of a strategy that encompasses all corporate financial and operational risks?

This topic will be explored in depth at the SOA Annual Meeting in New York, November 13-16. This 2-1/2 day seminar looks at how ERM principles may be applied to DB pension plans and the enterprises that sponsor them. First, we'll overview current SOA efforts to build expertise in this field. Next, because ERM requires an enterprise-wide view and because DB plans are financial parts of businesses, the second session will treat the plan and its sponsor as one in preparation for the analysis and management of risk.

The second day will focus on how the plan and its risks are viewed by others: equity analysts, credit rating agencies and accounting standard setters. The day concludes with a session that asks how DB plans add value for participants *and* shareholders. On day three, we'll talk about where we go from here: what are the regulatory constraints that stand in the way of value-added design and risk management? Our concluding session considers how capital markets will react to corporations that manage their DB plan risks in an enterprise-wide framework.

The eight-session framework includes sessions on integrating the DB plan with the corporation, sessions focusing on the equity analysts,' credit analysts' and accountants' view of pension risk, value-added design for DB plans and implications for financial regulators and capital markets.

Invited speakers include:
* Dick Berner, Morgan Stanley
* Tom Copeland, Copeland Funds Management
* Jon Exley, Barclays Capital UK
* Bob Herz, Financial Accounting Standards Board
* Greg Jonas, Moody's Investors Service
* Steve Kandarian, MetLife
* Gordon Latter, Merrill Lynch
* Olivia Mitchell, Wharton School, University of Pennsylvania
* Cliff Speed, Hewitt Associates UK
* David Zion, Credit Suisse First Boston
* Jeremy Gold, Jeremy Gold Pensions
* Evan Inglis and Mark Ruloff, Watson Wyatt Worldwide
* Stephen Kellison, SOA President
* Ethan Kra and Frank Todisco, Mercer HR Consulting
* Michael Peskin, Morgan Stanley
* Max Rudolph, Mutual of Omaha Insurance Company
* Larry Sher, Buck Consultants

Every session has been designed to include substantial time for Q&A. The full seminar offers 90 minutes core and 540 minutes non-core EA credit. For more information, visit *www.soaannualmeeting.org/sessions.php*. ◆

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