

## PENSION SECTION

"A KNOWLEDGE COMMUNITY FOR THE SOCIETY OF ACTUARIES"

# Pension Section News

## Excerpts from the PBGC Actuarial Valuation Report—2005

by Joan M. Weiss

*Editor's Note: The 2005 PBGC Annual Performance and Accountability Report, the 2005 Annual Report of the PBGC and the complete 2005 Actuarial Valuation Report, including additional actuarial data tables, are available under Publications at [www.PBGC.gov](http://www.PBGC.gov).*

The 2005 Pension Benefit Guaranty Corporation (PBGC) Annual Performance and Accountability Report and the 2005 Annual Report of the PBGC each contain a summary of the results of the Sept. 30, 2005, actuarial valuation. The purpose of the separate Actuarial Valuation Report is to provide greater detail concerning the valuation of future benefits than is presented in PBGC's Annual Report.

### Overview

The PBGC calculated and validated the present value of future benefits (PVFB) for both single employer and multiemployer programs and of non-recoverable financial assistance under the multiemployer program. For the single employer program, the liability as of Sept. 30, 2005, consisted of:

- \$62.65 billion for the 3,585 terminated plans
- \$23.92 billion for the 44 probable terminations

Liabilities for "probable terminations" reflected reasonable estimates of the losses for plans that are likely to terminate in a future year. These estimated losses were based on conditions that existed as of PBGC's fiscal year-end. Management believes it is likely that one or more events subsequent to PBGC's fiscal year-end will occur, confirming the fact of the loss. In addition, the liability for reasonably possible terminations has been calculated and is discussed in Note 7—Contingencies to the financial statements on pages 36-37 of PBGC's 2005 Annual Report. A discussion of PBGC's program exposure and net financial condition is presented on pages 10 through 11 of that report. For the multiemployer program, the liability as of Sept. 30, 2005, consisted of:

- \$2 million for 10 pension plans that terminated before passage of the Multiemployer Pension Plan Amendments Act (MPPAA) of which PBGC is trustee.
- \$1,485 million for probable and estimable post-MPPAA losses due to financial assistance to 77 multiemployer pension plans that were, or are expected to become, insolvent.

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## Actuaries

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## Pension News

Issue Number 62 • September 2006

Published by the Pension Section Council of the Society of Actuaries  
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Schaumburg, IL 60173-2226

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

This newsletter is free to section members. A subscription is \$25.00 for nonmembers. Current-year issues are available from the Communications Department. Back issues of section newsletters have been placed in the SOA library and on the SOA Web site: ([www.soa.org](http://www.soa.org)). Photocopies of back issues may be requested for a nominal fee.

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# Letter to the Editor

I commend Emily Kessler on her thought-provoking article, "The Third Way: Building New Retirement Systems." However, I object to her description of "the PC of 1986:"

Could your PC "talk" to another PC? How much data did it hold? What about the graphic capabilities? The 1980 era PC had green screen monitors, DOS, floppy disks and you couldn't print from your PC unless you had a rickety dot matrix printer attached. What has made the PC revolution work is linking PCs. Office networks, e-mail and the Internet all turned the PC from a box that sits on your desk to a communication tool.

Actually, in 1986 my PC had a 1200 baud Hayes Smartmodem that allowed me to send and receive e-mail, access the Internet (Usenet and BBS's), and bank electronically. My Diablo daisy-wheel printer produced letters and reports that were indistinguishable from those typed on my IBM Selectric typewriter, which sat in the corner gathering dust until I finally sold it.

PC technology has come a long way during the past 20 years, but for the technologically savvy computer user the PC of 1986 was never just "a box that [sat] on your desk."

Sincerely,

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# Chairperson's Corner

by Anne M. Button

During the past few months, the Pension Section Council has taken the beginning steps of our new project, Retirement 20/20. In addition to our announcement postcard, which you have all received, we have sponsored a number of activities that are related to Retirement 20/20.

At the beginning of May, we held our symposium, Re-envisioning Work and Retirement in the 21st Century, where 12 papers were presented. I had the privilege of being one of the discussants and found the symposium very interesting with many well thought out theses related to retirement. The topics were varied and ranged from "Social Security, Medicare: Removing the Disincentives for Long Careers" by Gopi Shah, John Shoven and Sita Slavov, which examined how aspects of the current structure of Social Security discourage people from having longer careers to more specific proposals related to the structure of retirement plans such as "A Mercer Perspective—The Retirement Shares Plan: A Breakthrough in Retirement Plan Design" presented by Don Fuerst which outlines a new approach using a variable annuity retirement plan that allows the participants to determine how much risk they're willing to bear.

All these papers were well received and generated much commentary from the audience. The authors are currently finalizing their papers for publication before year-end. We'll be sure to let you know when they're available.

I also attended the first SOA/CCA Employee Benefit Spring Meeting in Dallas at the end of May. This jointly sponsored meeting was an opportunity for the CCA and SOA to work together and bring a different educational experience to our members. This meeting was structured as a series of seminars covering six selected topics in depth plus some individual sessions with important hot topics (e.g. late-breaking developments). The seminars ranged from enterprise risk management to the future of pensions and were generally well received by attendees. I was particularly taken by the session lead by Anna Rappaport, which highlighted the discussion of retirees' attitudes with actual clips from focus groups of retirees that were part of a study designed by the Council's Post-Retirement Needs and Risks Committee. We're currently exploring with the CCA ways to make the spring 2007 meeting even better.

In the middle of June, the Pension Section Council met to plan for the upcoming Retirement 20/20 kick-off conference "Building the Foundation for New Retirement Systems" as well as develop a communication plan to keep our Web site updated and spread the word about Retirement 20/20. The kick-off conference, scheduled for September 28-29 in Washington, D.C., is designed to bring together actuaries, economists, demographers and others who focus on retirement to discuss the foundational questions for 21st century retirement systems. Specifically, panelists and audiences will consider the needs, risks and roles among the key stakeholders in the retirement system. Our goal is to ask the right questions to set the stage for the next phase of Retirement 20/20.

A week after that meeting, I attended the Board of Governors meeting, where I presented the Council's business plan for Retirement 20/20 and our request to the Board to provide the Council with additional staff support and matching funds for 2007. We asked for staff support in project management and marketing as well as in matching funds up to \$25,000. We were very pleased that the Board agreed to support us in this endeavor. We'll be working within the council and reaching out to other Councils in our Retirement 20/20 efforts. This was an excellent outcome.

The Council has been concerned about the decline of the defined benefit plan and our response has been the development of the Retirement 20/20 initiative. The Council also alerted the Board to what has been happening with a "Lost Jobs for Pension Actuaries" issue brief, which was reviewed by the Board at the same meeting. At the June meeting the Board voted to commission a backgrounder so it can better understand and respond to this important strategic issue.

We are still doing our best to deliver ongoing services to you including bringing you educational webcasts, sessions at the annual meeting as well as additional research to support you.

Please e-mail me at [anbutton@deloitte.com](mailto:anbutton@deloitte.com) with any comments you have about any work of the Council. ♦



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## Actuarial Assumptions

	Previous Valuation as of 9/30/04	Current Valuation as of 9/30/05
<b>Interest Factors</b>	Select & Ultimate: <ul style="list-style-type: none"> <li>• 4.8 percent for 25 years</li> <li>• 5.0 percent thereafter</li> </ul>	Select & Ultimate: <ul style="list-style-type: none"> <li>• 5.2 percent for 25 years</li> <li>• 4.5 percent thereafter</li> </ul>
<b>Mortality</b> <b>Healthy Lives</b>  <b>Disabled Lives Not Receiving Social Security</b> <b>Disabled Lives Receiving Social Security</b>	1994 Group Annuity Mortality Static Table (with margins), set forward one year, projected 20 years to 2014 using Scale AA.  Healthy Lives Table set forward six years.  Healthy Lives Table set forward six years.	1994 Group Annuity Mortality Static Table (with margins), set forward one year, projected 22 years to 2016 using Scale AA.  SAME  SAME
<b>SPARR</b>	Calculated SPARR for fiscal years for which it has been calculated. The most recent calculated SPARR is assumed for years for which the calculation is not yet completed (FY 2002 = 9.60 percent)	Calculated SPARR for fiscal year for which it has been calculated. The most recent calculated SPARR is assumed for years for which the calculation is not yet completed (most recent SPARR: FY 2003 = 7.86 percent). See Table 2B on page 15 the 2005 Actuarial Report for values.
<b>Retirement Age</b>	(a) Earliest possible for shutdown companies. (b) Expected retirement age (XRA) tables from 29 CFR 4044 for ongoing companies. (c) Participants past XRA are assumed to be in pay status. (d) Unlocated participants past normal retirement age (NRA) are phased out over three years to reflect lower likelihood of payment	SAME
<b>Expenses</b>	All terminated plans and single-employer probable terminations: 1.18 percent of the liability for benefits plus additional reserves as shown in Table 2C for cases where plan-asset determinations, participant database audits and actuarial valuations were not complete.	SAME

## Actuarial Assumptions, Methods and Procedures

The PBGC continues to review the actuarial assumptions used in the valuation to ensure that they remain consistent with current market conditions in the insurance industry and with PBGC's experience. The actuarial assumptions that are used in both the single-employer and multiemployer valuations are presented in Table 2A on page 14 of the 2005 Actuarial Report. Assumptions concerning data that were not available are discussed in the data section of the report.

As in previous valuations, the select and ultimate interest rates used to value PBGC liabilities were derived by using an assumed underlying mortality basis and current annuity purchase prices. The interest rates so determined for the 2005 valuation were 5.20 percent for the first 25 years after the valuation date and 4.50 percent thereafter. For the 2004 valuation the interest factors were 4.8 percent for the first 25 years and 5.0 percent thereafter. These interest rates are dependent upon the PBGC's mortality assumption.

Beginning with the FY 2004 valuation, the mortality assumptions were updated by adopting the recommendations from a study by an independent consulting firm. The study recommended that, when conducting valuations for its financial statements, the PBGC use the male and female 1994 Group Annuity Mortality Tables, set forward one year, for healthy males and females. The study also recommended that continuing mortality improvements be taken into account by using Projection Scale AA to project these tables a fixed number of years. At each valuation date the fixed number of years will be determined as the sum of the elapsed time from the date of the table (1994) to the valuation date, plus the period of time from the valuation date to the average date of payment of future benefits (the duration). This is an approximation to a generational mortality table. Thus, the mortality table used for healthy lives in the 2005 valuation is the 1994 Group Annuity Mortality Table, set forward one year, projected 22 years to 2016 using Scale AA. The 22 years recognizes the 11 years from 1994 to 2005 plus the 11-year duration of the 9/30/04 liabilities. The 2004 assumption incorporated a 20-year projection, determined as the sum of the 10 years from 1994 to 2004 and the 10-year duration of the 9/30/03 liabilities.

The model used to determine the reserve for future administrative expenses was updated in FY 2000 based

on a study by an independent consultant. The same model was used in FY 2005. The factors used in the expense reserve formula are shown in Table 2C on page 16. Retirement age assumptions were not changed.

The Small Plan Average Recovery Ratio (SPARR) assumptions as shown in Table 2B on page 15 were updated to reflect the SPARR calculated for FY 2003 (7.86 percent). The SPARRs for subsequent years are assumed to equal the FY 2003 SPARR.

We continued our ongoing efforts to improve the quality of the seriatim data and, as in other years, made various changes to improve the accuracy, speed, security and auditability of the calculations and to integrate with the evolving PBGC computer environment.

## Auditors' Opinion

PBGC's 2005 financial statements have received an unqualified opinion from PBGC's auditors, Clifton Gunderson, LLP. The Present Value of Future Benefits and Nonrecoverable Future Financial Assistance and its underlying data are covered by this opinion. The auditors performed numerous tests of both data and procedures to support this opinion.

## Statement of Actuarial Opinion

This valuation has been prepared in accordance with generally accepted actuarial principles and practices and, to the best of my knowledge, fairly reflects the actuarial present value of the Corporation's liabilities for the single-employer and multiemployer plan insurance programs as of Sept. 30, 2005.

In preparing this valuation, I have relied upon information provided to me regarding plan provisions, plan participants, plan assets and other matters.

In my opinion, (1) the techniques and methodology used for valuing these liabilities are generally acceptable within the actuarial profession; (2) the assumptions used are appropriate for the purposes of this statement and are individually my best estimate of expected future experience discounted using current settlement rates from insurance companies; and (3) the resulting total liability represents my best estimate of anticipated experience under these programs. ♦

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# Challenges to Today's Retirement System: A Delphi Survey Update

by Emily Kessler

## Retirement 20/20

ENVISIONING THE FUTURE >

As part of the recent “Re-envisioning Work and Retirement in the 21st Century” symposium, held in May in Washington D.C., attendees completed a Delphi survey covering challenges to today’s retirement system. We wanted to use the symposium to start a conversation with actuaries and other retirement practitioners on the state of the retirement system today, and what we see as the challenges to the system in the future. As part of the “Retirement 20/20” project, we’re going to continue to use the Delphi survey to gather information from a wider range of experts and use the results of the study to start conversations about what we need from a 21st century retirement system.

In a Delphi study, a group of subject matter experts are asked about future states: what might, should or could happen. The idea is that while these subject matter experts as individuals may have biases or incomplete information, collectively their knowledge and information improves. In the analysis of the survey, as with any survey, the researcher then looks for patterns in responses. If the group of subject matter experts clusters around certain answers, then there is probably some truth in their answer. This works best when the individuals each have a lot of knowledge but they don’t all have the same knowledge or similar biases. For example, asking a national cross section of knowledgeable baseball fans “Who will play in the 2007 World Series?” might get you a pretty good result, but asking only Boston-based fans might overstate the chances that the Red Sox will still be playing in October.

What’s unique to a Delphi study is that once a first round of results has been obtained, subject matter ex-

perts are resurveyed with first round results at hand. This gives an opportunity for the subject matter experts to refine their estimates based on the information provided by the other experts. This is important because the Pension Section Council would like **you** to be part of the second round: the survey is available electronically at [www.retirement2020.soa.org](http://www.retirement2020.soa.org). Note this survey is intended to mimic a Delphi study, but as we’re not doing it with the formality of a typical Delphi study, we’ll refer to it as a Delphi survey.

We asked questions along four broad categories: what risks should be pooled, what should any retirement policy framework look like, what changes to the retirement system are necessary and their urgency, and what are the threats to the retirement system? Answers ran the gamut and showed we have no consensus, even within our small sample of actuaries. On some things the answer was clear; for example, there was strong agreement that the health care system needed fixing, but there wasn’t uniform agreement as to how the system should look, going forward. This helps us identify that there are lots of open areas for discussion, but, it also makes it very important for us to hear from you.

A complete report with more detail of first round results (and the survey for you to take!) is also available on the Retirement 20/20 Web site ([www.retirement2020.soa.org](http://www.retirement2020.soa.org)). Please note that we’ve made revisions to the survey based on feedback from those who took it, including rescaling the range of choices. For ease in comparability, the first-round results have been rescaled to match the new rating system.

## What Risks Should Be Pooled?

Forty-one people took the survey in round one, 35 of them actuaries. Approximately 73 percent worked at private, for-profit institutions with another 15 percent at universities. About 40 percent were “baby boomers” and 10 percent had already reached age 65. Sixty-six percent were male, 34 percent were female.

Since an actuary wrote the survey, the first question was on risk pooling: to what degree should certain retirement risks be pooled? We looked at seven major retirement risks: retirement timing (the risk you retire before you expect), inflation, interest rate (with regards to annuity purchase or taking lump sums), market returns, longevity, long-term care and health care. Figure 1 shows the results:

- Respondents were pretty clear that three risks ought to be fully or partially pooled: health (92 percent), longevity (85 percent) and long-term care (74 percent).
- Forty-three percent felt that retirement-timing risk should be borne mostly or entirely by individuals, 30 percent thought individuals should mostly or

entirely bear market risks and 25 percent thought individuals should mostly or entirely bear inflation risk.

- Respondents generally felt individuals could or should be allowed to decide what risks to bear, except in the case of health care, longevity and long-term care risks where respondents strongly favored pooling.

## What Should Retirement Policy Look Like?

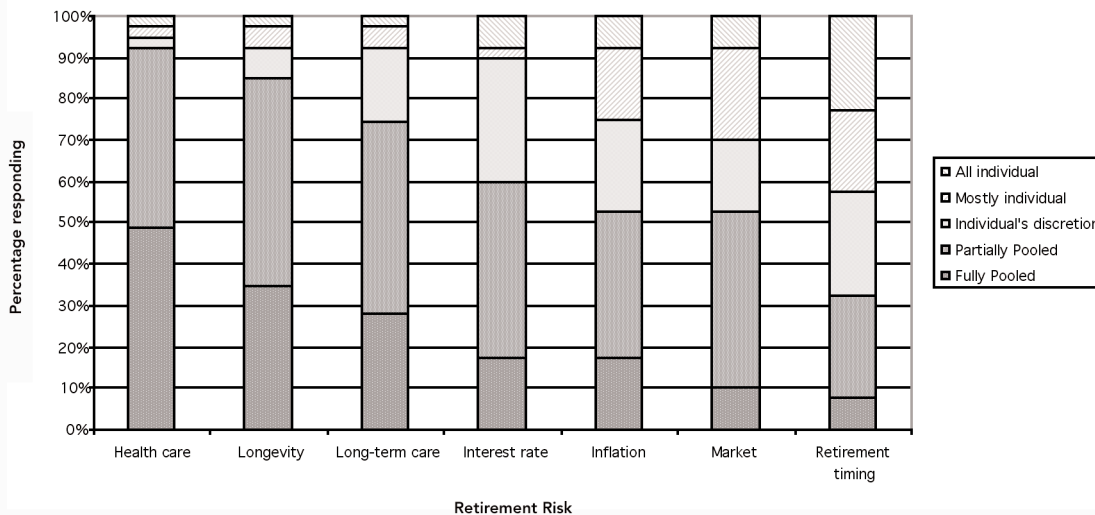
The next series of questions looked at what role the employer should play in any retirement system. Not surprisingly, everyone who took the survey (which was heavily biased toward consulting actuaries) thought the employer should play some role, although respondents split as to whether that role should be mandatory (44 percent) or voluntary (56 percent).

Respondents were also split as to whether participation should include any minimums. There’s been much controversy in the United States about the role of

(continued on page 8)

Figure 1

## To What Degree Should These Risks Be Pooled in a Retirement System?



minimums in the current system (e.g., in coverage and amount of benefits). Of the 56 percent who preferred a voluntary role for employers, only 44 percent of those felt that should include a minimum, and of the 44 percent who preferred a mandatory role for employers, 61 percent of those thought that should include employer minimums.

The next question in that series considered what role the employer should have in any retirement system. Only seven of 41 respondents thought the employer's role should be limited to acting as a conduit to plans maintained by others, sponsoring plans but bearing no cost, or sponsoring plans but bearing only administrative costs. The other 34 were split between those who thought the employers should bear administrative and

benefit related costs, similar to a defined contribution plan (46 percent) and those who thought the employer should bear administrative, benefit and risk-related costs, similar to a defined benefit plan (54 percent).

The next question asked what role government should play in providing retirement benefits. Respondents clearly favored a basic level of benefits for low-paid and middle class (78 percent), while 17 percent preferred that the government provide minimum assistance for low-paid only.

### Necessary Changes to Retirement System

We then asked what level of urgency people saw in terms of making changes to the retirement system. They were asked about specific changes to the system and were

**Figure 2**

**Which of the following are necessary changes to the retirement system?**

Rate the urgency of change from 1 (not at all urgent to 5 (extremely urgent). Rate as 0 for "not a necessary change"	Percentage ranking as "0"	Urgency ranking (including those ranking 0)		
		Mean	Median	Standard Deviation
Bring Social Security into balance	5%	3.7	4.0	1.4
Rework Social Security	21%	2.3	2.0	1.8
Raise Social Security normal retirement age	5%	3.9	4.0	1.3
Raise Social Security early retirement age	29%	2.6	3.0	1.9
Mandatory retirement savings	18%	2.9	3.0	1.7
Increase coverage in DB plans	16%	2.8	3.0	1.7
Increase coverage in DC plans	19%	2.8	3.0	1.8
Raise private system normal retirement age	24%	2.7	3.0	1.8
Formalize/encourage phased retirement	3%	3.6	4.0	1.3
"ERISA"-fy DC auto-pilot	18%	2.7	3.0	1.5
Ease DC plan annuitization (full/partial)	8%	3.5	4.0	1.3
Force partial annuitization	21%	2.8	3.0	1.8
Allow step-up benefits (DB)	16%	2.8	3.0	1.6
Fix health care affordability/availability	5%	4.4	4.0	1.2
Restructure long-term care system	3%	3.7	4.0	1.2



asked to rate the urgency of that change using a scale of 1 (not at all urgent) to 5 (extremely urgent) and to use 0 if they felt change was unnecessary. Again, there was a wide range of responses and not always a lot of agreement. Figure 2 shows the mean, median and standard deviation of responses.

Fixing health care affordability and availability was the most urgent issue identified by survey participants (average urgency ranking 4.4). Following health care were raising the Social Security normal retirement age (3.9), bringing Social Security into balance by making

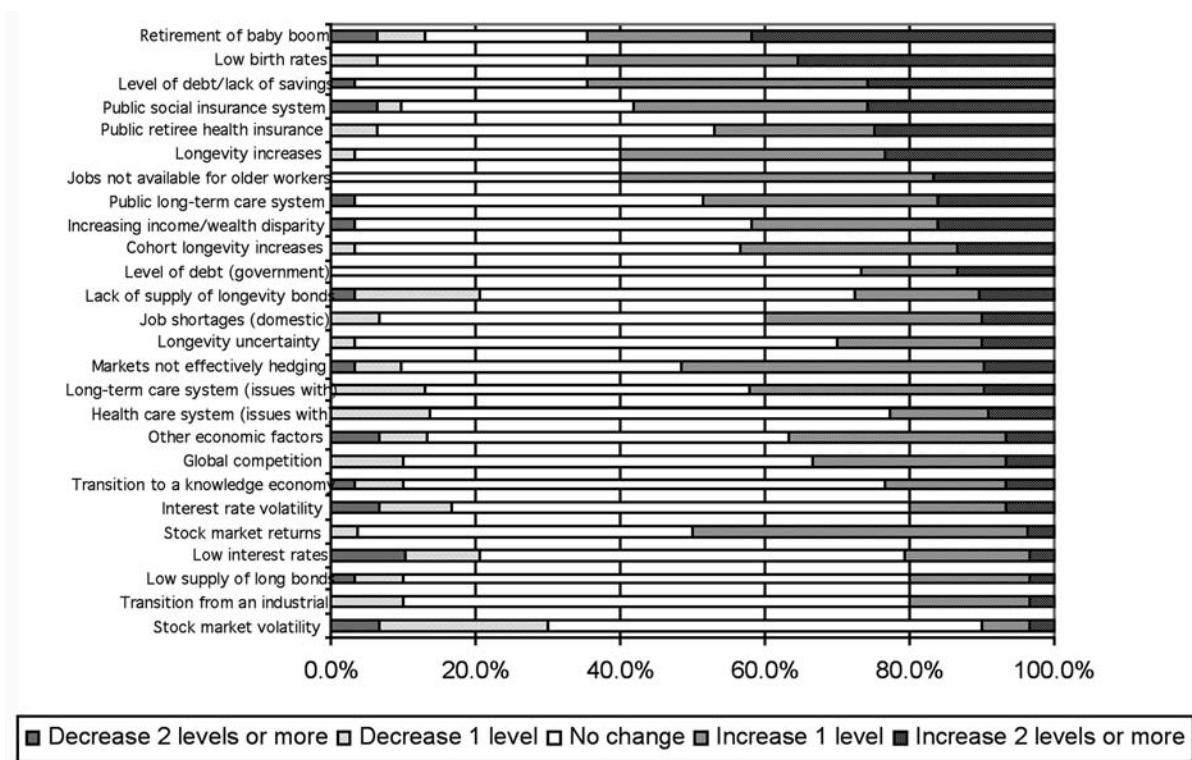
(continued on page 10)

### Figure 3

#### Rate the threat these problems pose to the retirement system:

Rate from 1 (ignorable) to 10 (perfect storm) Rate as 0 for "no threat"	Percentage ranking as "0"	Threat ranking (including those ranking 0)		
		Mean	Median	Standard Deviation
Level of debt/lack of savings (personal)	0%	3.6	4.0	1.4
Level of debt (government)	0%	3.5	4.0	1.1
Global competition	9%	2.7	3.0	1.5
Transition from an industrial economy	9%	2.4	2.0	1.4
Transition to a knowledge economy	12%	2.0	2.0	1.1
Jobs not available for older workers	3%	2.6	3.0	1.2
Job shortages (domestic)	6%	2.1	2.0	1.2
Low interest rates	22%	2.1	2.0	1.5
Low supply of long bonds	11%	2.2	2.5	1.3
Lack of supply of longevity bonds	14%	1.9	2.0	1.3
Markets inefficiencies (retirement risk hedging)	15%	2.4	3.0	1.5
Interest rate volatility	3%	2.8	3.0	1.2
Stock market returns	6%	2.4	3.0	1.3
Stock market volatility	3%	2.7	3.0	1.3
Increasing income/wealth disparity	8%	3.1	3.0	1.5
Other economic factors	4%	2.9	3.0	1.2
Low birth rates	18%	1.9	2.0	1.4
Retirement of baby boomers	3%	2.8	3.0	1.1
Longevity increases	6%	2.6	3.0	1.3
Cohort longevity increases	11%	2.0	2.0	1.4
Longevity uncertainty	6%	2.3	2.0	1.3
Health-care system (issues with)	3%	4.1	4.0	1.0
Long-term care system (issues with)	3%	3.3	3.0	1.0
Public social insurance system	6%	3.0	3.0	1.4
Public retiree health insurance system	6%	3.3	3.5	1.3
Public long-term care system	6%	3.0	3.0	1.3

**Figure 4**  
**Distribution of Change in Threat -**  
**Immediate future versus 10+ years from now**



small changes to current system (3.7), restructuring the long-term care system (3.7), formalizing and/or encouraging phased retirement (3.6) and easing DC plan annuitization (3.5).

A sizable minority felt that some changes were not necessary. Twenty-nine percent felt it was not necessary to raise Social Security early retirement age, 24 percent felt it was not necessary to raise the private system normal retirement age, 21 percent felt it was not necessary to make dramatic changes to the existing Social Security system or to force partial individuals to have some portion of annuitized benefits.

**Threats To The Retirement System**

Finally, the last question asked of Delphi survey participants was about threats to the retirement system. We asked people to consider certain economic and demographic changes and what level of threat they posed to the system. Again, participants elected “0” if they saw no threat at all, 1 if the threat was ignorable, and 5 if the threat represented the perfect storm.

Participants looked at the threat level immediately and for 10 years from now. This allowed participants to indicate if the threat was constant, declining or emerging. Figure 3 below shows perceived threat in the immediate future. Figure 4 shows the change in the perceived threat from the immediate future to 10 or more years from now.

Consistent with other responses, the highest threat ranking was for issues with the health system (4.1) followed by level of debt/lack of savings for individuals (3.6) and government (3.5). Issues with the public long-term care system (Medicaid in the United States) and the public retiree health insurance system (Medicare in the United States) were each ranked a 3.3. Certain items were not perceived to be an immediate threat by a sizable minority, including low interest rates and low birth rates.

When considering how threat levels change over time certain factors came out as emerging threats. Concerns with the healthcare system top both the immediate and 10+ year list. However, several issues are viewed as being more critical 10 years from now:



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- The retirement of the baby boomers moved from tied to 10th as an immediate threat to tied for 5th in the rankings of threats 10 years from now.
- Low birth rates rose from last (tie for 25th) on the list of immediate threats to a tie for 12th on the list of threats 10 years from now.
- Longevity increases rose from a tie for 14th (immediate threat) to 9th (threat 10 years from now).

Several factors are seen as being less threatening 10 years from now.

- One-third of respondents thought low interest rates would be less of a threat to the system 10 years from now.
- Similarly, they saw the transition to a knowledge economy and the transition from an industrial economy to be less of a threat to the system in 10+ years (30 percent and 27 percent respectively, decreased their threat level).

Other factors aren't seen as changing in regards to the level of threat they pose to the system. Two-thirds or more of the respondents didn't see any changing threat, increase or decrease, from stock market volatility, stock market returns, the market's ability to hedge retirement risks, uncertainty about longevity or the effect of cohort longevity increases.

### What Do You Think?

If you're interested in adding your point of view to the survey, you can take it electronically at [www.retirement2020.soa.org](http://www.retirement2020.soa.org). We want to know what you think too. You're welcome to invite clients, colleagues and others to take the survey as well. We'll keep you posted on what we get from Round 2! ♦

## Frustrated by the same old DB plan freeze? Concerned that there won't be any retirement system or pension actuaries soon?

Join us as we turn risk into opportunity:  
**Retirement 20/20.**

The SOA Pension Section Council invites you to join us in re-envisioning retirement systems for the 21st century. Our new strategic project, **Retirement 20/20**, is about a new vision for 21st-century retirement systems. We will take a clear look at where we are today, determine what kind of retirement systems we need for tomorrow, and help build them.



Join us on our journey. Check out the article in this issue about the Delphi study and go to [www.retirement2020.soa.org](http://www.retirement2020.soa.org) for more information. Want to get involved? E-mail us at [retirement2020@soa.org](mailto:retirement2020@soa.org).



[www.retirement2020.soa.org](http://www.retirement2020.soa.org)

# The Future of Pensions

by David Blitzstein



*Editor's Note: This article is the presentation given by David Blitzstein at the "Future of Pensions" track at the 2005 CCA/SOA Employee Benefits Spring Meeting. We thank Mr. Blitzstein for letting us reprint it here. It is also available on [www.retirement2020.soa.org](http://www.retirement2020.soa.org).*

I have to admit that I accepted your invitation for selfish reasons. I'm hoping to use my time here as a catharsis. The dictionary defines catharsis as the purifying of emotions or the relieving of emotional tensions. Originally, the term, "catharsis" was applied by Aristotle to the purging of pity or terror by viewing a tragedy.

Our tragedy is the unraveling of the defined benefit pension system. For the past five years my union has expended great energies in an attempt to shore up our multi-employer and single employer pension plans from a tidal wave of traumatic financial and economic events that threatens to destroy them. Over one million active workers and 300,000 retirees are caught up in this tragedy. What the UFCW is experiencing is a microcosm of what is happening to the defined benefit retirement system nationwide.

The UFCW's pension problem amounts to a \$10 billion unfunded liability in a \$30 billion system spread

over 70 multi-employer plans. These are mature plans where the active to inactive support ratio is 1:1, and most of the plans are beset with net negative cash flow that is growing. This negative cash flow compounds an already difficult low return capital markets environment. As this audience knows better than most, the probability of investing our way out of this funding dilemma is very low.

The UFCW and the unionized supermarket industry have not stood by passively as the pension crisis developed. Labor and management reached an understanding around the pension problem pretty rapidly and initiated negotiated remedies by 2003 and 2004. The understanding was based on principles of shared responsibility and shared pain by the stakeholders. This translated into substantial benefit reductions going forward and significant increases in employer contributions. The typical benefit reductions formula included decreases in early retirement subsidies, decreases in flat benefit rates, and the creation of lower benefit tiers for new hires, with all the ramifications for inter-generational conflicts among young and more senior workers and retirees.

A key component of these pension agreements included actuarial relief available in ERISA, specifically Section 412 (e) extension of amortizations. These pension funding agreements also contain restrictions on future benefit improvements based on funding targets, with additional contribution increases and benefit reductions triggered in the future based on projected minimum funding deficiency. The second stage of action by the UFCW and the unionized supermarkets was a legislative campaign that proposed a very pragmatic pension funding reform regime along with a broad coalition of unions and employers including Kroger, Safeway and UPS.

The problem is that these actions were not enough. The regulators, specifically the IRS, have failed to recognize the good faith efforts of labor and management, and have refused to grant the actuarial relief anticipated by ERISA. As a result, many of the pension deals that we crafted in retail food industry may unravel or require renegotiation, which can only mean more economic pain for the stakeholders. Even with legislation passed, many plans will find themselves in reorganization status. In effect, this means workers covered by these plans can expect no benefit improvements for a generation.

# Retirement 20/20

ENVISIONING THE FUTURE



If the multi-employer pension system has deep problems, the single employer system is hopeless. The single employer legislation under consideration in Congress and the anticipated changes in the FASB pension accounting rules this year will drive employers to freeze and terminate plans at a pace similar to what occurred in the UK most recently.

So as the tragedy unfolds, we have to commit ourselves to preparing an honest and accurate post-mortem on the defined benefit system as we knew it, determine what went wrong and learn from our mistakes, so we can rebuild a retirement system that serves society and revitalizes the faith of all the retirement stakeholders.

## Lessons Learned

One lesson learned is that the current defined benefit pension system is deeply flawed. The ERISA funding regime is inherently unworkable and intellectually dishonest. It's been tested under fire and it failed miserably. We set the price of benefits too low, and made promises to workers that we can't keep. Then we compounded the problem by adopting investment strategies that were overly risky and produced return volatility that was unsustainable in the short term for employers. Many of us bought into a dangerous and lethal fantasy that an economic "free lunch" existed for pension plans. We embraced prolonged contribution holidays and larger allocations to stocks contrary to the lessons of diversification and financial economics. Reality came knocking on the door in March 2000.

The tragedy that has unfolded was predicted by a handful of astute observers. Zvi Bodie, professor of finance at Boston University, was hired by the Department of Labor to analyze the financial health of defined benefit pension plans in 1990. His report warned:

"The possible doomsday scenario for the defined benefit pension system would be an event such as a sharp and prolonged drop in stock prices that causes a sharp decline in the market value of pension asset portfolios. Underfunding becomes much more prevalent. Several major defaults of underfunded pension plans lead the PBGC to significantly raise premiums on the remaining

plans in the system. Expectations of even higher premiums in the future lead sponsors of the well funded plans to terminate their defined benefit plans to avoid the PBGC tax.... Ultimately, the United States could be left only with bankrupt defined benefit plans with the benefits financed directly by taxpayers."

Labor and management in the 1990s fooled themselves into believing that their decisions to improve benefits came with no price tag. This built an underlying economic moral hazard into the system. I don't buy the proposition that this moral hazard was premeditated by labor and management. I believe the outcomes were driven more by bad science and a breakdown of intellectual discipline by public policy makers and professional advisors. Maybe the roots of the defined benefit problem go back to the passage of ERISA and the jumble of amendments added on since 1974.

ERISA failed to clearly define the risk sharing "deal" that pension plans represent. Canadian pension strategist, Keith Ambachtsheer, who has focused much needed attention on the pension risk sharing deal, reminds us what game theorist, John Nash, taught us years ago that such complex yet misunderstood contracts will eventually deteriorate into adversarial win-lose games. Thus the myth that defined benefit plans socialize investment risk has been laid bare in the past decade by a wave of plan terminations in the steel and airline industries. Chapter 11 bankruptcies has become a very effective means to break and rewrite pension deals between a host of pension stakeholders - retirees, older workers, younger workers, corporate management, corporate boards, unions, bond holders, shareholders, and the PBGC. Pension regulators, securities regulators, credit agencies, actuaries, accountants, and the courts all play supporting roles in this renegotiation process.

In attempting to better understand why ERISA failed to properly define the pension deal clearly, I returned to some writings of my old and departed friend, Michael Gordon, one of the drafters and historians of that law. In a chapter titled, "The Social Policy Origins of ERISA," Gordon informed us that "ERISA was not connected to

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some grand overarching vision of structural reform that would facilitate the adoption of private benefit arrangements to the needs and expectations of an emerging post-industrial period;” but, “concentrated instead on flushing out and correcting major historic flaws in private plans”, like vesting rights and termination rules and insurance.

As a result, Congress and the private pension system failed to anticipate the dynamic and ever changing structure of a capitalist economy. The “creative destruction” of the system identified by economist Joseph Schumpeter became the Achilles’ heel of the private pension system. The relatively short lives of corporations contradicts their role as pension sponsors. Just consider the survivorship numbers for the S&P 500. How many names remain that were on the list 30 years ago? Complementing the trend of creative destruction is the wave of mergers and acquisitions experienced by America in the past 50 years and the instability they create for pension plans. Finally the restructuring of Corporate America has had a major impact on labor markets and the behavior of workers, including the weakening of the labor movement, which played a key role in creating the private pension system in the first place.

This raises another important Ambachtsheer theme - principal/agency issues. Adolph Berle and Gardiner Means set out the principal-agent problem in their classic book, *The Modern Corporation and Private Property*, where they identified the tensions between management and shareholders, and the potential for conflicts of interest. Further to this point, Gordon describes how ERISA allows settlor/employer conduct to override proper fiduciary conduct. Single employer pension plans exemplify classic agency-principal behavior. Trustees of single employer plans more often than not make funding decisions in the best interest of the corporation, not the plan participants.

We can conclude that ERISA was limited as a retirement policy tool by its backward looking perspective. Congress’s current pension reform efforts repeat the same pattern of backward looking policy behavior, applying stopgap legislative remedies. Maybe this is the heart of the pension policy problem in the United States. I’ll take it a step further - in my opinion, there is no retirement policy in this country. The concept of the “three-legged stool” is not national policy because it doesn’t exist—50 percent of the working population doesn’t participate in a private pension plan and savings rates are at historically low levels. Again Gordon informed us that what was missing in the policy equation during the passage of ERISA was no “...attempt to forge a political consensus with respect to a specific national target of retirement income adequacy”. This key starting point

got lost in all retirement policy discussions since the 1981 President’s Commission on Pension Policy Report.

Why is this the case? One reason for the lack of policy debate and coordination may be the fragmentation of pension and retirement regulatory and legislative authority among so many agencies and Congressional committees. There is no cabinet position for pensions. In contrast, every other developed nation has a centralized regulatory power and a minister for retirement policy. Just compare our dysfunctional model to the Netherlands, where the Dutch are busy re-inventing their defined benefit pension system based on modern finance principles.

Other countries also use commissions more effectively to study retirement issues and make broad recommendations to their governments for new legislation. Most recently I had the opportunity to hear Lord Turner, the chairman of Merrill Lynch in the U.K., present his commission report on comprehensive reform of the U.K. retirement system. I was impressed by Lord Turner’s grasp of pension economics and the quality of his analysis, which surprisingly avoided politics and ideological agendas.

My thoughts on the future of the U.S. retirement system are based on two practical issues. First, how do we secure the legacy benefit liabilities of the current system in an effort to keep benefit promises and sort out the financial obligations among the various stakeholders? Second, what kind of retirement system can we build that avoids the pitfalls of the current system, and instead has more symmetrical risk sharing, making it fairer and financially sustainable?

Finding a fix for the current black hole of unfunded pension liabilities is a critical first stage to rebuilding a viable retirement system. The past service legacy costs of these under-funded plans has to be secured and depoliticized. If this can be accomplished, it would relieve the immediate financial crisis, and allow the stakeholders the freedom to negotiate a new pension model for the future, based on a new set of risk sharing rules.

A solution does not have to be a taxpayer bail-out, but the government needs to play a financial leadership role. I would suggest we consider a mix of public and private capital market financial engineering schemes. For example, Jeremy Gold has proposed an idea that securitizes unfunded liabilities of defined benefit plans in the capital markets through the PBGC. Under the Gold strategy, the sponsoring company would issue private placement bonds or tradable bonds to the PBGC, and the plan would receive bonds issued by the PBGC, each in an amount equal to the initial unfunded actuarial liability. The price of these bonds would be adjusted for a company’s credit rating. This financial engineering approach

offers transparency and fully funds all plans over a transition period.

Richard Berner and Michael Peskin from Morgan Stanley have proposed a similar defeasance strategy for pension legacy costs in which sponsoring companies and the PBGC would swap “amortizing promissory notes.” And a third idea from Bernard Dumas of INSEAD and Andrew Smithers of Smithers & Company proposes a market for trading pension claims in the form of collateralized pension claim obligations (CPCOs), similar to collateralized debt obligations (CDOs). These ideas require an accommodating legal and tax environment that only government can ensure if these strategies are expected to succeed.

### **What Should We Be Looking At?**

Once we secure the past legacy costs of the current defined benefit system, we can begin to formulate a viable private retirement system for the future. I’ll concentrate on four main topics, all of which are linked and must be integrated in order to succeed:

- First, a new risk sharing deal that corrects the current destructive asymmetry, reflecting the mismatch between risk and reward among stakeholders in the DB system.
- Second, a retirement delivery system that corrects the agent/principal problems in the current system.
- Third, benefit design.
- And fourth, ideas on how to increase the savings of low and moderate income workers.

### **Correct the current destructive asymmetry**

Redefining pension contracts among stakeholders is a critical subject that has been generally ignored in most policy circles. In Canada, the mismatch between stakeholder risk and reward, defined as asymmetry, and the issues of who owns a pension surplus or a pension deficit, has been highlighted by the Association of Canadian Pension Management in the national debate over the future of the retirement system. In fact, the ACPM has taken the position that resolving the asymmetry issue would lead to better funding and even growth of the DB system.

Ambachtsheer and others have observed that DB pension contracts unfairly favor current generations at the expense of future generations. Moreover, our recent experience, suggests that course-correction mechanisms either do not exist or are not vigorous enough to maintain DB sustainability during periods of adverse investment and demographic experience. Again relying on Ambachtsheer, we can envision the following

inter-generational negotiation, based on a new set of rules:

- All pension stakeholders including future generations of workers must have knowledgeable bargaining representatives.
- The stakeholders must agree to the following long-term expectations: the economy’s wealth creating potential; the term structure of risk-free investment returns; the long-term cost of risk capital which equates to the risk premium; and, the inter-generational variance around these long-term expectations.
- Based on the above agreements, the income replacement equivalent pension benefit, and the potential inter-generational pension variance based on surplus and shortfall risk scenarios would be calculated.
- These negotiations will determine investment risk and contribution levels necessary to pay agreed-to benefits. If the current generation imposes investment risk on future generations, these future generations should receive fair compensation for undertaking this burden.

This model is based on sound finance principles, but it also demands a societal partnership arrangement that is inclusive of all pension stakeholders. In the United States we pride ourselves on our democratic values, but those values do not always cross-over well into the economic life of this country. However, the examples of the Netherlands and Australia should encourage us to try a new approach to retirement policy.

### **Correct the agency/principal problem**

To facilitate the new pension deal, we need to minimize agency costs by creating what Ambachtsheer refers to as “single-purpose pension co-ops”. TIAA-CREF, superannuation funds in Australia, big industry funds in the Netherlands like ABP and PGGM, and large multi-employer plans in the U.S. and Canada are examples of the “single purpose pension co-op”. In response to the recent recommendations of the UK Turner Commission to establish a National Pension Savings Scheme, the National Association of Pension Funds offered the idea of “super trusts,” which would group the savings of different industries. These plans minimize the potential for conflict of interest and build on economies of scale. These single purpose pension co-ops could also become attractive platforms to compliment a universal coverage

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system based on some level of compulsory contributions by employees and employers.

The single purpose pension co-op arrangement also opens up the opportunity to foster stronger governance and organizational design for pensions. Research has found an excess return gap of 1 percent per annum between well and poorly governed pension plans. Research from Cost Effectiveness Measurement has determined that the economies of scale premium for a pension plan is 20 basis points for every ten-fold increase in assets. This means that a large pension plan could afford to hire qualified staff, allowing boards of trustees to delegate development and implementation of fund strategy. Good governance practices would be further enhanced by expanding the training and professional certification of trustees, and eventually converting trustees into full-time professional positions.

### Rethink benefit design

Benefit design has to be rethought in light of the rules of the new pension deal. This requires a leap beyond simple debates over DB vs. DC. Our starting point has to accept the fact that effective retirement programs are expensive, in the range of 15-20 percent of payroll. Therefore, a mixed DB/DC approach may be most appropriate. For example, the DB piece could look like the Mercer “retirement shares” model which cures much of the risk sharing asymmetry by pricing benefits properly without a risk

premium, and eliminates the contractual problem of who owns the deficit or surplus with pre-determined rules that re-balance costs and benefits annually. In this design, workers are protected from longevity risk but share investment and interest rate risk. This means workers own the deficits as well as the surpluses of the plan. We can agree or disagree with this risk sharing formula, but at least it offers a workable starting point.

This hybrid DB design requires a defined contribution component if we expect to meet our retirement income adequacy goals. This is especially necessary considering the more conservative and more expensive DB design inherent in the Mercer shares model. The DC design I envision would be integrated as a wrap-around to the new DB plan to be managed in the same single purpose pension co-op. This concept is not dissimilar to the “retirement account pension plan” (RAPP) envisioned by Bob Paul of the Segal Company over a decade ago, or the DB-K Plus plan formulated by the American Academy of Actuaries in 2003. These complimentary DC programs would be structured so that workers make decisions about the level of retirement benefit they will earn per dollar of savings. The DC component would be invested professionally by the Plan with the sole objective of meeting the realistic benefit goals set by the worker, assuming the bulk of the benefits would be paid in annuity form.

### Increase low and moderate income worker savings

Finally, the retirement needs of low and moderate income workers require special attention. This group is most at risk to coverage gaps and retirement benefit inadequacy. We all know that raising contribution limits on IRAs and 401(k)s is not the answer for these workers. We need to promote creative ways to leverage the limited savings potential for this population.

I have two recommendations that target this group. First, as part of Social Security reform we need to restructure the payroll tax by exempting the first \$10,000 of salaried income for those workers under an inflation adjusted income threshold, and re-directing those contributions into our private single purpose pension co-op. The lost income to Social Security will be made up by raising the payroll cap, or with special taxes on pollution or foreign oil as suggested by conservative thinker Irwin Stelzer.

Second, we can leverage the savings power of federal income tax refunds by fostering the idea of refund splitting. In 2001, low and moderate income workers received \$78 billion in total federal refund payments, including the earned income tax credit (EITC), child tax credits, and other refundable credits from over





withholding. This amounts to an average value of \$1,546 per family. In one refund splitting experiment in Tulsa, Okla., called "refund to assets" (R2A), participants contributed \$606 or 47 percent of their refunds to savings accounts. This refund splitting scheme could be further complemented by an expansion of the 2001 Savers Credit as suggested by J Mark Iwry, by eliminating and modifying asset rules that affect program eligibility. This integrated model aimed at leveraging the savings potential of low and moderate wage workers could provide powerful momentum to building additional retirement savings.

### So What Can We Do Now?

My views on retirement policy are obviously a product of my experience as a union representative over the last 28 years. My work with the United Mine Workers and the history of that mythical organization with its special role in establishing multiemployer pension and health trusts greatly influenced my thinking about retirement. Sometimes I think back to the words of John L. Lewis when he was campaigning for the retirement funds in 1946:

"The United Mine Workers of America has assumed the position over the years that the cost of caring for human equity in the coal industry is inherently as valid as the cost of replacement of mining machinery, or the cost of paying taxes, or the cost of paying interest indebtedness, or any other factor incident to the production of a ton of coal for consumers' bins..... (The agreement establishing the fund) recognized in principle the fact that the industry owed an obligation to those employees, and the coal miners could no longer be used up, crippled beyond repair and turned out to live or die subject to the charity of the community or the minimum contributions of the state."

These are not just empty words from a bygone era. The need for retirement benefits is as critical as it was 60 years ago when Lewis wrote these words. The social contract of the post WWII era has most definitely unraveled. There is no going back. We in the United States, as the wealthiest nation in the world, will be judged on how we reconstruct our retirement system. We can import intelligent ideas from abroad as part of the pension reform effort, but ultimately our unique economic and political culture will drive us toward a mixed private/public solution. This mixed system along with a strong dose of financial engineering will provide the answer.

Maybe the 1981 President's Commission on Pension Policy Report provides a guidepost for the future. Twenty-five years later it still offers a vision and a framework for unfinished business of creating a universal and financially sustainable system. The hallmarks of the 1981 Commission were:

- It was based on retirement income replacement goals.
- It promoted a 3 percent of payroll contribution supplement called Minimum Universal Pension System (MUPS) to be administered as an add-on to existing private plans, or where employers could opt to a independent central fund run by the government.
- It raised concerns 25 years ago about the costs of early retirement benefits, and suggesting that private plans link their normal retirement age to Social Security.
- It called for equalizing the tax treatment for all contributions and benefits, and phasing out the Social Security earnings test.
- It emphasized the creation of incentives for older employees to work beyond normal retirement age.
- It called for inflation protection for retirees.

And, it determined that retirement policy would fail without the consolidation of pension regulatory and legislative authority.

The 1981 Commission had great foresight. Only if someone had bothered to listen and act. Public policy moves in long cycles. Historically, the moment is timely to begin the great effort necessary to rewrite the retirement social contract in America. ♦



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# The Risk of Declining Market Cap with Large Pension Obligations

by Raymond Murphy

Upcoming funding and accounting regulations will limit the ability of pension plan sponsors to smooth the recognition of investment gains and losses, resulting in better transparency, but more volatility. More cost volatility will make short-term budgets harder to manage, and large healthy companies will need to find a way to either bear or mitigate the risk. Companies that have experienced a decline in market capitalization, but still retain large pension obligations, will not be as able to withstand the cost of a sharp decline in funded status.

This article will focus on the pension risk from the standpoint of different companies. Specifically, we'll examine risk based on the relative size of the pension obligation to the market capitalization of the plan sponsor.

## Individual Analogy

Before we address the financial risks of pension plans, let's consider two gamblers on their way to Las Vegas. Gamblers A and B both like to play black jack and both will wager \$1,000 with the understanding that they could lose it all. However, Gambler A has a net worth of \$1,000,000 compared to B's net worth of \$5,000.

If Gambler A loses it all, it will not change his lifestyle or credit rating. Gambler B stands to lose 20 percent of his net worth, which would materially affect his financial health.

Obviously, the \$1,000 wager has different meaning to A and B. Think of the \$1,000 wager as the potential loss to a pension fund. If Gambler A loses \$1,000, he can easily replace the loss from other sources. Similarly, a company should be able to withstand a loss in pension surplus of 1/1000th of its market cap without affecting its operations or its credit rating.

Gambler B is in deep trouble if he loses the \$1,000. If a company experienced a pension loss equal to 20 percent of its net worth, this would have serious consequences to earnings, cash flow and credit rating.

## Measuring Pension Risk

Actuarial losses can arise from several sources (e.g. turnover, salary increases, longevity, etc.), but for this purpose we'll discuss only investment losses and discount rate

changes. These changes are typically measured annually, but to keep the analysis simple, let's assume that the change occurs instantaneously.

Assuming a normal distribution, the investment gain or loss will be within two standard deviations of the mean return 95 percent of the time. The standard deviation of equity returns and long-term government bond returns are about 20 percent and 9 percent respectively. The variance of a pension plan's returns will depend on its asset allocation. A pension trust with 65 percent equities and 35 percent long government bonds would have a standard deviation of about 16 percent, which would imply a range around the expected return from plus 32 percent to minus 32 percent.

The liability change is driven by changes in the discount rate. From January 1986 through January 2006, the mean change in the Moody's Corporate AA yield was -.25 percent with a standard deviation of .80 percent. The two standard deviation rule implies that discount rates will generally vary plus or minus 1.6 percent.

Pension cash flows have long durations and long duration liabilities will react more to discount rate decreases than shorter ones. I'll assume that the average pension plan Projected Benefit Obligation has a duration of 12. If we consider an extreme discount rate decline of 1.6 percent, the plan liability will increase by 19.2 percent. If a plan's assets are matched exactly to its liabilities using duration matching bonds, then there will be a corresponding asset gain to offset the liability loss.

By using these statistics we can create a simple model of the effect on surplus of a worst-case scenario, wherein the equity loss would be 40 percent and the discount rate drops 1.6 percent. The worst-case loss would be:

$$\begin{aligned} & \text{Equity Assets} \times 40\% \\ - & \text{Bond Assets} \times 19\% \\ + & \text{Liability} \times 19\% \end{aligned}$$

For example, assume that a fully funded plan has equity assets of \$150 million, bond assets of \$50 million, and a \$200 million PBO. The worst-case loss would be:

Equity Loss	\$60.0
Bond Gain	(9.5)
Liability Loss	<u>38.0</u>
	88.5

The plan's assets have dropped to \$149.5 million and the PBO has increased to \$238 million. The funded ratio has dropped from 100 percent to 63 percent.

While it is unlikely that a "perfect storm" like this would occur all at once, it can certainly occur over a longer period of time. In fact, the S&P 500 dropped 40 percent from January 2000 to January 2003, while the Moody's Corporate AA yield dropped from 7.9 percent to 6.5 percent, or 1.4 percent over the same period.

### Size Does Matter

The purpose of this analysis is not to single out any one company, so the companies will remain anonymous. However, the companies below are all well-known American brands. The data below is taken directly from their annual reports with values as of Dec. 31, 2005, except for Company D, whose year-end was Sept. 30,

2005. The market capitalization value is measured at the same date as the PBO and assets. The PBO and assets include non-U.S. plans (all dollar amounts are in billions).

The data tell four different stories. Companies A and B have a relatively low ratio of PBO to Market Cap, while Companies C and D have a PBO that exceeds the Market Cap by a large margin. Companies A and C are underfunded, and B and D have assets higher than PBO.

It is interesting that, despite the funded status and PBO to Market Cap ratio, the asset allocation is very similar, with equity concentration of 62 percent to 70 percent and bond allocation of 19 percent to 29 percent.

Now let's compute the worst-case loss, or WCL.

This result indicates that the ratio of PBO to Market Cap is much more significant than the funded ratio in measuring pension risk. The lowest funded ratio (Company A at 77 percent) actually has the best risk profile, since it would stand to lose only 3 percent of Market Cap in the worst-case scenario. Company D is well fund-

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	A	B	C	D
Market Cap	\$170.0	\$362.60	\$14.2	\$14.5
Plan Assets	\$11.6	\$54.3	\$63.8	\$34.0
Equity %	64%	63%	70%	62%
Bond %	26%	19%	29%	25%
PBO	\$15.0	\$51.4	\$74.6	\$31.3
PBO/Market Cap	9%	14%	525%	216%
Assets/PBO	77%	106%	86%	109%

	A	B	C	D
Equity Assets	\$7.4	\$34.2	\$44.7	\$21.1
a) Equity x 40%	3.0	13.7	17.9	8.4
Bond Assets	3.0	10.3	18.5	8.5
b) Bonds x 19%	0.6	2.0	3.5	1.6
c) PBO x 19%	2.9	9.8	14.2	5.9
WCL = a-b+c	5.3	21.5	28.6	12.7
WCL/Market Cap	3%	6%	201%	88%

ed, but has a small Market Cap, so it could lose 88 percent of its Market Cap.

Company C is in a difficult financial situation with pension liabilities that dwarf the size of the business, and a large union workforce that has negotiated generous benefits over many decades. These legacy costs have impacted its ability to compete and its credit rating has been reduced. While not shown here, the worst-case scenario will obviously result in higher expense and funding requirements. If Company C can't make required contributions, it could face bankruptcy, in which case the PBGC would assume the unfunded liabilities.

### Asset Allocation

If you look across the pension plans of American companies, you'll likely see asset allocations similar to these four plans. It is common to see 60 percent to 70 percent in equities and 20 percent to 30 percent in bonds. If the company is strong and has a long-term perspective, it may make sense to invest a higher percentage in equities since equities have been shown to outperform other asset classes over a long period. This assumes that the strong company can withstand the volatility and risk.

However, if the pension obligation is greater than the size of the company, the chances of the company staying in business are lessened, and the company may not be able to take a long-term view of the pension risk. It is no surprise that the PBGC is very interested in the funded status of at-risk companies. The company's employees should also be concerned since their benefits could be cut due to lower PBGC guaranteed benefits.

The risk could be greatly reduced if more assets were invested in duration matching bonds. Consider if all of Company C's assets were invested in bonds. There would be no equity exposure, and the discount rate drop would produce an investment gain of \$12.1 billion to offset the PBO increase of \$14.2 billion. The WCL would only be \$2.1 billion instead of \$28.6 billion. Why wouldn't the CFO of Company C find this attractive?

Company C discloses an expected return on assets of 8.5 percent which is probably consistent with its current asset allocation. If the expected return were reduced to a bond yield, such as the discount rate of 5.6 percent, pension expense would increase by about \$1.8 billion, or about 97 cents a share. This cost increase would almost wipe out all of Company C's EPS. In this case, the increased cost for shifting to all bonds may be a greater issue than the significant pension risk.

### Summary

The new FASB rule will require companies to show pension assets and liabilities on the balance sheet, which will highlight the true pension risk. This will improve disclosure and provide new interest in assets that match liabilities. However, many companies will see this new rule as another reason to abandon their defined benefit plans.

Shareholders and regulators should pay attention not only to the funded status, but to the ratio of pension liability to market capitalization. As shown in this article, a severe market correction and/or discount rate decline could wipe out the entire value of a company that is already in financial trouble. ♦

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## Editorial Correction

The following table was printed incorrectly in the June 2006 issue of Pension Section News. The Pension Editorial Staff apologizes for the error they made in its original submission. To the right is the accurate table in its entirety.

	Monthly Annuity Due, 5% interest Deferred Annuity to age 65 for ages less than 65 Immediate Annuity for ages 65 and greater				Change in annuity value from GAM-83 value at the same age		
	GAM-83	UP-94 @ 2005	RP2000 @ 2005	RP2000 Generational	UP-94 @ 2005	RP2000 @ 2005	RP2000 Generational
Male							
35	2.23	2.45	2.48	2.81	9.9%	11.1%	26.0%
45	3.68	4.04	4.08	4.48	9.6%	10.8%	21.6%
55	6.23	6.73	6.79	7.19	8.0%	8.9%	15.4%
65	11.14	11.79	11.78	12.09	5.8%	5.7%	8.5%
75	7.93	8.58	8.37	8.53	8.2%	5.6%	7.5%
85	5.18	5.46	5.12	5.16	5.4%	-1.2%	-0.4%
Female							
35	2.82	2.81	2.72	2.89	-0.5%	-3.8%	2.4%
45	4.63	4.60	4.45	4.66	-0.6%	-3.8%	0.7%
55	7.66	7.60	7.37	7.59	-0.9%	-3.8%	-0.9%
65	13.02	12.95	12.62	12.82	-0.5%	-3.1%	-1.5%
75	9.67	9.77	9.44	9.56	1.1%	-2.4%	-1.1%
85	6.45	6.31	6.15	6.19	-2.1%	-4.5%	-4.0%

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# Better Strategy for Defined Benefit Pension Plans

by Richard S. Mattison

## Pension Investing Reality

**A**lthough it may seem counterintuitive, the real expected cost of funding a defined benefit pension plan is independent of the chosen investment strategy. Said another way, it is more appropriate to consider cost savings associated with investments in stocks as nothing more than compensation for taking on the increased risk that investing in stocks entails. It may, over time, actually turn out to be cheaper, or it may turn out to be more expensive. But on an expected ex ante market pricing basis, the law of one price prevails.

While pension costs *per se* can be considered independently of investment strategy, the volatility of costs cannot. Many defined benefit plan sponsors are acutely aware of this volatility and are freezing or terminating their defined benefit pension plans. This is a shame because costs for a defined benefit plan can be both affordable and predictable. But it requires an appropriate investment strategy, and a commitment to stick with it. Before freezing or terminating a pension plan there's another alternative to consider: restructuring the investment strategy to bring this cost volatility back under the plan sponsor's control.

## Law of One Price

One of the tenets of modern market theory is that markets are reasonably efficient and at least "near" arbitrage-free. There are so many professional investors and money managers actively involved with financial markets that arbitrage opportunities are quickly exploited and priced away. In this near arbitrage-free environment two securities with identical future cash flows should have identical market prices, hence the law of one price. If they do not, arbitrageurs will buy the cheaper and sell the more expensive until prices converge.

Like other financial instruments that are assets to the purchaser and liabilities to the issuer, the liabilities of a defined benefit pension plan are simply future cash flows. Clearly these future cash flows can be uncertain, contingent on future events such as death, disability, early retirement, termination, etc. Nonetheless, we have many tools at our disposal today for pricing such uncertain cash flows, and Wall Street actively engages in pricing uncertain future cash flows every trading day.



Using modern pricing tools and techniques we can calculate the current market price of a defined benefit pension plan's liabilities. This market price not only reflects the current cost of the liabilities, it also reflects the lowest current cost of any portfolio of securities that will meet the future liability obligations when due. No other portfolio of securities can do that at a cheaper cost. If a cheaper portfolio exists, then arbitrage opportunities exist in the market.

## Higher Expected Returns

It is perhaps common to believe that higher expected future returns for stocks imply lower expected current funding costs for liabilities. This is false. It is certainly true that \$100 invested in the stock market today may be worth more, at some future time, than \$100 invested in the bond market. And it is entirely consistent with arbitrage-free markets to expect that, on average, the future value of \$100 invested in the stock market will be greater than the future value of \$100 invested in the

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bond market. For example, we may expect stocks to return 10 percent and bonds to return 5 percent, hence we expect \$100 invested in the stock market to be worth \$110, and \$100 invested in the bond market to be worth \$105, in one year's time. With this perfectly reasonable market framework, let's say we borrow \$100 in the bond market at a fixed interest rate of 5 percent, and invest this money in the stock market. We expect to earn 10 percent on our stocks, and hence expect to have a \$5 profit at the end of the year. What is that \$5 expected profit worth today?

One valuation approach could be to discount that \$5 expected profit at the risk-free rate, in our example, 5 percent. On this basis the present value of our future expected profit is \$4.76. Another approach is to discount the expected profit at the risky asset rate, *e.g.*, 10 percent. This leads to a present value of \$4.54.

What present value does the market give to our expected future profit? Another way of asking this question is what does it cost today to replicate the exact payoff pattern given in our example? In this example we borrowed \$100 in the bond market and invested \$100 in the stock market, so our net cost today for our future expected profit is zero. Hence, on a market-pricing basis, the present value of that \$5 expected profit is zero. If you are willing to pay more than zero today, then you are giving someone else the opportunity to arbitrage, to earn a risk-free profit.



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	Current Cash Flow	Expected Future Cash Flow
Bond	+\$100	-\$105
Stock	-\$100	+\$110
Net	\$0	+\$5

Let's change our example slightly and assume that we have a liability of \$105 due in one year's time. Is it cheaper to fund this future liability payment using stocks (*e.g.*, with  $\$95.45 = \$105/1.1$ ) than using bonds (*e.g.*,  $\$100 = \$105/1.05$ )? There is clearly some probability that our stock investment will be worth less than \$105. Assuming we are not allowed to default on our liability payment,

then we will have to pay the difference from other funds. The present value of this future potential shortfall, on a market pricing basis, is identical to the price of a stock put option with the strike price set 10 percent higher than the current market price. Our real ex ante cost, then, of funding the future liability payment with stock is \$95.45 plus the put price to cover the outcomes when stocks return less than 10 percent. The cost of this stock plus put option portfolio can readily be shown to be greater than \$100, the cost of funding the liability with bonds. (For example, this put would cost \$8.39 using the standard Black-Scholes option pricing formula with an assumed stock standard deviation of 15 percent.) What if we are willing to give up the potential stock upside? What if we are willing to sell a call option with the strike price set 10 percent higher than the current market price? In this case we have locked in our portfolio's payoff at \$105, and as we know from the law of one price in arbitrage-free markets, our net cost for this portfolio today is \$100.<sup>1</sup>

### Pension Plans Today

Accounting rules clearly influence, and often govern, much of corporate behavior. For defined benefit pension plans the ability to discount future liabilities at non-market rates, using non-market methodologies, leads to incorrect estimates of present values of future cash flows, in effect to incorrect estimates of the current cost of a defined benefit pension plan. Discounting future liabilities and estimating future funding costs at expected portfolio returns also leads to a severely biased framework for designing investment portfolios. This biased framework has resulted in tremendous volatility in annual expense for many defined benefit pension plans. This volatility is proving to be unacceptable to many plan sponsors. It does not have to be this way. While ex ante cost is independent of investment strategy, the volatility of cost is clearly not. Portfolios can be designed to control the volatility of future funding costs, in effect to control the tracking error of the portfolio vis-à-vis the liabilities. The cost of providing a defined benefit pension plan may not seem as favorable on a real market pricing basis, but removing an accounting bias from the design of the plan's investment strategy can result in a defined benefit pension plan with a much more predictable, and bearable, expense. ♦

<sup>1</sup> This can also be shown using the standard Put-Call Parity equation.

# Fast Forward, China: World's Fastest Growing Economy Focuses on its Private Pension Market

by Allen Wu and Stan Feng

**W**e've heard the news, seen the gravity-defying statistics, and the ebullience persists—China's economy continues to roar. Multinational companies are entering the Chinese market at a rapid rate, pumping millions of dollars into the Chinese economy. The Chinese in major cities are becoming richer and, in general, are enjoying better living conditions than the preceding generation. China is firmly on its path of changing from a developing country to a developed one.

But hidden in the backdrop of China's rapid growth lurks an aging population, a result of China's one-child policy and the improved longevity of its people. The "4-2-1" phenomenon, characterized by a family structure of four grandparents, two parents, and a single child, is becoming more prevalent. While this aging society is not immediately apparent—in fact, many multinational companies employ a young workforce, with very few grey-haired employees—a demographic shift is inevitable.

## Historical background

In the mid 1990s, China accepted the World Bank's three-pillar model for pensions, comprising a:

- I. a pay-as-you-go, statutory pension plan operated by the Ministry of Labor and Social Security (MoLSS);
- II. a mandatory defined contribution scheme, with contributions from both companies and employees, administered by provincial and municipal bureaus of the MoLSS; and
- III. a scheme, consisting of voluntary corporate supplemental retirement plans.

Pillars I and II are administered and managed by the government, and it is widely acknowledged that these plans are massively underfunded in several provinces and



cities. Although most multinational companies have made the required contributions to the programs, many domestic Chinese companies in poor financial health have not made the mandatory social insurance contributions. Even where Pillars I and II are properly managed, they provide inadequate pensions for higher wage earners due to relatively low (by multinational company standards) salary caps.

Voluntary corporate plans have historically been rare in China, largely owing to a lack of tax incentives, the unregulated pension environment and a lack of choice and sophistication with regard to funding vehicles. Consequently, many of the initial voluntary corporate arrangements were unfunded and set up as book reserve type arrangements. The tax implications of such arrangements are unclear and are determined on a case-by-case

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basis. Although book reserve arrangements remain an option today, many companies have since considered other vehicles to set up corporate plans.

### **A Framework: Enterprise Annuities**

In April of 2004, the government issued legislation intended to provide a framework for voluntary corporate pension plans known as enterprise annuities (EA). This term derives from the literal translation of the Chinese phrase, but it is misleading because there is no requirement to provide such annuities. Some of the key features of the legislation include the following:

- The plans must be defined contribution schemes (by reference to individual accounts and maximum contributions).
- Companies setting up an EA plan must appoint a trustee, responsible for appointing qualified service providers—plan administrators, investment managers and custodians. And EA assets must be managed separately from the assets of the company and the service providers.
- Both companies and employees should contribute to the EA plan, with annual company contributions not exceeding 1/12 of gross payroll of the previous year, and combined company and employee contributions not exceeding 1/6 of gross payroll of the previous year. (The legislation has not provided any guidelines for minimum contribution requirements.)
- Up to 30 percent of the assets may be invested in equities, although overseas investment is not currently permitted. The remaining 70 percent must be invested in safer, but lower-yielding assets such as bonds and fixed deposits.
- Individual vested account balances must be portable from one company to another when employees change jobs.
- At the legal retirement age (currently age 60 for males and 55 for females), the individual account balance can be paid either as a lump sum or in installments. Individuals who emigrate overseas

and beneficiaries of individuals who die before retirement age are permitted early withdrawal of funds.

The EA legislation has left many unanswered questions. For example, it is not clear what specific tax relief will be applied to employer contributions, but it was explicit that employee contributions would be post-tax. In China, taxation requirements are subject to the rulings of provincial governments that control tax legislation and collection in China. Until this critical question is answered, it is difficult to predict how successful the EA system will be.

### **Recent developments**

The EA market is expected to be regulated tightly—particularly in the wake of recent fraud in the Chinese financial services sector. All EA service providers need to be licensed, and the government has, as of August 2005, granted 37 licenses to various institutions (five trustee licenses, six custodian licenses, 11 administration licenses, and 15 investment management licenses). All EA licenses are granted to Chinese companies who lack experience in the pension area. In due course, we anticipate that foreign firms will eventually enter the market, importing the know-how of more mature pensions markets. EA products are now available in the market and some companies have implemented EA plans. While this is a welcome development, we anticipate that EA plans and providers will experience some growing pains (if they haven't already).

Since the issuance of the EA legislation, close to a dozen provinces have issued their own legislation providing tax relief to company EA contributions, ranging from 4 percent to 8 percent of salary. We also continue to hear that the government is close to finalizing details of a nationwide tax treatment of EA plans, but remain cautious on this news. Seasoned observers remain skeptical that this can be accomplished in short-term, given the politics between the various ministries involved and the competing interests of central and provincial governments.

### **What Actions are Multinational Companies Taking?**

Assuming that sufficient tax incentives are provided, most observers agree that EA plans will become the norm in the future. Because of the unresolved questions at this



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time, many companies are adopting a “wait-and-see” approach to the EA market. However, we have noticed that Chinese companies have a head start in setting up EA plans.

But for some multinational companies, particularly those that have been established in China for many years and have a relatively long-serving staff, retirement benefits are becoming a popular way to retain employees in a job-hopping market. As mentioned above, some companies have already established voluntary retirement plans and others are moving ahead to implement supplementary plans using existing available vehicles. While about 20 percent of plans use a book reserve for both defined benefit and defined contribution plans, funded approaches are also possible.

The most common alternative to EA plans are pension insurance contracts offered by a handful of insurance companies, accounting for approximately 47 percent of supplementary pension plans, according to a Mercer survey. The tax deductibility of these insurance contracts is subject to the local tax bureaus’ approval.

One other common concern among multinationals is to find appropriate pension coverage for their non-Chinese national employees (*e.g.*, expatriates and foreigners hired locally). Many employers, aware of China’s underdeveloped pension market, are uncomfortable with offering local products to their foreign employees, especially those accustomed to the level of service and sophistication of mature pension markets. A growing trend is to cover such employees by an offshore plan, with Hong Kong being one of the popular locations for such a plan. Offshore products are available only to foreign employees in China and do not enjoy any tax deduction on the contributions.

## Summary

Few other countries in modern history have elevated themselves from impoverished nations to economic powerhouses in such a short period of time. But it’s worth noting, as measured by GDP per capita, that developed countries became rich before they became old. For

China, the greatest concern is that it may become old before it becomes rich<sup>1</sup>. While China’s future growth remains promising and continues to attract billions of dollars in investment, its private pension market cannot be ignored. Every day, multinational companies are making difficult business decisions in China. Those familiar with China know that decisions are made under very complicated situations and ambiguous regulations. Doing business in China requires patience. Multinationals face complex issues regarding Chinese pension plans. They need to develop a long-term strategy now, rather than later, for facing these issues so they can thrive in this increasingly competitive landscape. ♦

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<sup>1</sup> “The Graying of the Middle Kingdom—The Demographics and Economics of Retirement Policy in China,” R. Jackson & N. Howe, CSIS (Center for Strategic and International Studies) and Prudential Foundation, April 2004.

# Re-envisioning Retirement Symposium:

## A Forum for Creative Visions of the Future

by Steven Siegel

Viewers of the recent PBS Frontline documentary “Can You Afford to Retire?” can be forgiven for feeling an urge to rush to their local physician in need of a prescription for an anti-depressant. And hopefully, if they were over 65 and living in the U.S., they would have either signed up for Medicare Part D, which had its strict enrollment deadline a day before the show’s airing, or had some other coverage for the continuously improving, but increasingly expensive prescription drugs available. The bleak picture presented by the Frontline documentary and the highly publicized Medicare Part D administrative challenges encountered earlier this year reinforces the view held by many of the fragmented state of financial security in retirement in the U.S. Whether or not you agree with the documentary’s characterizations and conclusions, I am willing to venture that most of us would agree that there is room for improvement in the status quo—not only in the U.S., but across North America as well.

Using this view of the status quo as a launching point, an SOA working group, originally formed to explore potential efforts related to phased retirement, decided to issue a call for papers that not only dealt with phased retirement, but a broader view of new visions for the future. The group, led by Rob Brown, officially issued the call for papers entitled “Re-envisioning Work and Retirement in the 21st Century” in April 2005. The goal of the group and the call for papers was to hold an eventual symposium that would provide a forum for attendees to interact and discuss the future with little or no preconceived notions. The group was not disappointed—12 worthy

papers were submitted in response to the call for papers and provided the content basis for a symposium.

The Re-envisioning Retirement in the 21st Century symposium was held in Washington, D.C. on May 3-4, 2006. Over 50 attendees representing a diverse range of organizations gathered to hear presentations, network, and discuss the papers and other ideas. For the benefit of those unable to attend, the following is a brief session-by-session synopsis.

### Session 1: Evolving Retirement Risks

This session set the tone for the symposium with Anna Rappaport providing context for the current state of retirement risks along with her visions on potential future scenarios and their implications. Much of Rappaport’s perspective was built upon recent research efforts of the SOA. Beverly Orth then presented ideas for new retirement plan designs envisioned for the 21st century. A motivating factor for the designs she presented was the growing trend away from DB plans. To counter this, Orth proposed, as one approach, a multi-employer DB plan that small employers, which previously found DB plans too complicated, may embrace. Valerie Pagnelli provided insightful commentary on the papers including her view that further phased retirement be encouraged. She also posed an interesting idea of a “retirement pyramid” modeled on the well-known food pyramid for educational purposes.

### Session 2: Improving Models for Sharing of Risk

Louis Doray opened this session with the actuarial implications of phased retirement scenarios in terms of an employer’s normal cost and employee’s retirement benefits. Doray’s presentation included an explanation for how cost methodology could be adjusted to accommodate such changes. Richard MacMinn presented results from his paper that investigated the effect of select birth cohorts on the pricing of mortality-based securities, such as survivor bonds, life annuities in general, or portfolios of life annuities. He concluded that the cohort effect can potentially be hedged with survivor bonds, which can become a mortality improvement risk management tool for life annuity markets.

The session closed with Carol Sears’ commentary on the papers including the observation that actuaries need to help educate workers on the new risks they face.

### Session 3: Improving Models for Saving for Retirement

William Leslie led off this session with his views on how a retirement income program could provide the basis for better retirement savings in the 21st century. The program



Rob Brown opens the Symposium

he proposes is based on software that Leslie developed as part of an SOA research project. The software, which is available on the SOA Web site provides an illustration of the risk/reward trade-off of transferring longevity, investment, and inflation risks. Mark Iwry and David John then co-presented their proposal for an automatic IRA intended to make saving easier, more convenient, and consistently accomplished. Their proposal would feature direct payroll deductions into a low cost, diversified individual retirement account for those employees that currently do not have access to such type of saving. Rob Brown provided stimulating commentary on both of the papers and some observations from the Canadian landscape.

#### Session 4: Beyond the Horizon

Session 4 provided some of the more forward-thinking perspectives of the symposium. Chiu-Cheng Chang began with an observation of the evolving knowledge-based economy and its global impact for this century. Using this increasingly common economy characteristic as a framework, Chang proposed a prototype social security system called the National Provident Fund that would be fully portable and reciprocal across national boundaries. Bing Chen then discussed how an intragenerational funding approach might spread risks from those older persons who live longer to those who do not live as long and from those who are healthier to those who are less healthy. Using the U.S. and New Zealand as illustrations, Chen envisions intragenerational funding as a supplement, rather than a replacement of existing intergenerational programs. Kevin Binder, the discussant for the session, gave his views on how concepts from the papers might be incorporated for a practicing actuary's benefit.

#### Session 5: Social Balance

Jon Forman and Adam Carasso began this session with their thoughts on how a Mandatory Universal Pension System (aka MUPS) could fill the gap between what current retirement systems provide and that needed for future financial retirement security. In the long run, they estimate that a MUPS could replace an additional 14 percent final wages, over and above Social Security benefits. Gopi Shah then presented a paper she co-authored with John Shoven and Sita Slavov that explores the disincentives for working longer—even though life expectancy has increased—that are inherent in the current U.S. Social Security system. She presented some alternative approaches that would help to counteract these disincentives, while maintaining benefit neutrality. Emily Kessler commented on both of the papers noting that they exposed weaknesses in the system, while posing practical questions on each of the proposals.

#### Session 6: First Steps Toward Tomorrow

The final session of the symposium featured Carol Sears and Scott Miller presenting their vision of a new kind of plan, called the Retirement Income Security Plan (RISP).

Essentially, a RISP would be a companion, catastrophic-coverage-only plan featuring an annuity payable for life with a benefit schedule that increases as the annuitant ages. Donald Fuerst then presented Mercer's proposal for a new concept in pension benefit design called a Retirement Shares Plan (RSP). From an underlying theoretical perspective, the RSP transfer investment risk and return to the plan participants while retaining and pooling the longevity risks. Fundamentally, it would be similar to a career accumulation plan where the value of retirement shares is dependent on the investment performance of the plan's assets. Anne Button, served as the discussant for this session, commenting upon the papers and tying them into the Pension Section's Retirement 20/20 effort.

#### Lunch Sessions

Highlights of the symposium also included two lunch sessions featuring Henry Eickleberg of General Dynamics explaining his views from an employer perspective on where DB plans and retirement, in general, are headed; and Rob Brown and Emily Kessler discussing results of a survey given to attendees on the first day of the symposium. The survey included questions on what roles employers and the government should play in retirement plans and potential plan changes. You can read more about the results of this survey in another article in this issue.

#### Monograph

An online monograph with the papers presented at symposium along with discussant comments has been produced and is available on the SOA Web site at <http://www.soa.org/ccm/content/research-publications/library-publications/monographs/retirement-systems-monographs/>. We would encourage you to review the monograph and read papers of interest to you. We hope this stimulates you to think creatively about the future of retirement.

#### Acknowledgements

Special thanks to Rob Brown for chairing this effort, and members of the Project Oversight Group who also willingly volunteered to be discussants for the sessions: Kevin Binder, Anne Button, Valerie Paganelli and Carol Sears. Thanks also to SOA staff, Emily Kessler, Steve Siegel, Sue Martz and Dana Luboyeski for their contributions.

#### Conclusion

The Pension Section is committed to playing a role as a leader in re-envisioning retirement through this and its Retirement 20/20 effort. We hope you'll learn more by visiting the Retirement 20/20 Web site at [www.retirement2020.soa.org](http://www.retirement2020.soa.org) and the Pension Section Web site. We welcome your ideas for helping us move forward with this goal. Please feel free to contact any Pension Section Council member or SOA staff with your thoughts. ♦



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ANNUAL MEETING & EXHIBIT

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