



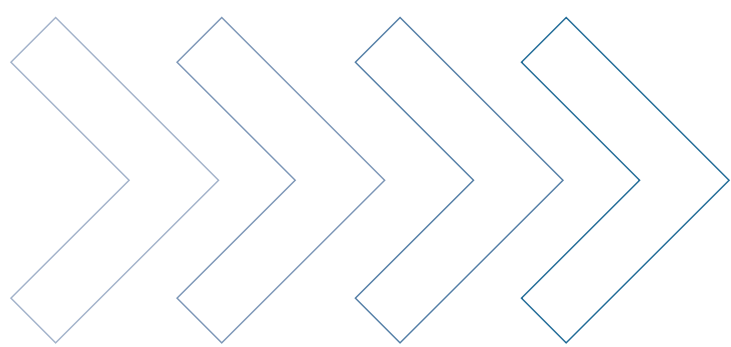
In The Public Interest

ISSUE 15 • AUGUST 2017

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Actuarial Projections,
A Summary of the Social
Security Panel at the 2017
Living to 100 Symposium**

By Sam Gutterman

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Letter from the Editor

By Jeffery M. Rykhus

And it's round and round we go again with health care reform or repeal. I hope that all the readers of this newsletter will strive to inform themselves on the issues surrounding the Affordable Care Act, Medicaid and Medicare and will be active citizens in the debate currently happening in Congress.

This issue of *In the Public Interest* begins with our Chairperson's Corner, which is a "Review of OPEB Research." In his article, Steve Bryson explains the current research project that is underway in our section, to explore the extent of other post-employment benefits for public employees and how well they are funded or, more likely, not funded. Steve's article brings to light the three stages of the research project and what is being planned in each stage.

The third article is, "Mortality in Social Security Actuarial Projections, A Summary of the Social Security Panel at the 2017 Living to 100 Symposium," by Sam Gutterman. Sam discusses the issue of mortality projections and how they are used in Social Security projections, specifically in the United Kingdom, Canada and the United States.

The fourth article is "Selling Insurance Across State Lines," by Larry Mitchell. Larry walks us through his analysis of the effect that selling insurance across state lines will have on the individual market, and he states, along with other interesting comments, this will not stem overall rising health care cost trends. Larry also provides an interesting example regarding unintended consequences of this proposal, if a company were to get the lion's share of the state market.

The fifth article, "Gender Differences in Social Security," by Bruce Schobel is a history of gender differences that have



changed over time in Social Security law. Interestingly, these differences, in general, have historically provided a bigger benefit to women. Now gender parity has been achieved, and benefits between men and women are equal, though Bruce has some interesting observations on that situation as well.

The sixth and final article, "Appropriateness of Risk Taking by Public Pension Plans — Part I," is authored by Don Boyd and Yimeng Yin. This article was chosen to be more middle-of-the-road and to present the issue of public pension funds' investing in riskier asset classes from a more academic point of view. Because of its length it had to be split into two parts, and the final part will be published early next year.

That's all for now, folks. Please keep yourself informed on actuarial topics in the news, and I hope that as many of you as possible can attend the Society of Actuaries Annual Meeting in Boston this October. See you there. ■



Jeffery M. Rykhus, FSA, MAAA, is an insurance agent at New York Life in the Glendale, Calif., office and a consulting actuary in Los Angeles, Calif. He can be contacted at jrykhus@gmail.com.

Chairperson's Corner

Review of OPEB Research

By Steve Bryson

In keeping with our mission to advance research about publicly-funded programs, our section has awarded a contract to GRS Consulting to investigate the extent and effect of funding (or **not** funding) retiree health insurance plans that cover former employees of state and local governments throughout the U.S. I write “not funding” because, unlike public retirement systems, many public entities in the U.S. finance their retiree health plans through current appropriations only, and do not practice advance funding of future benefits to any extent.

After joining the SIPF council in the fall of 2014, it occurred to me that the actuarial community and the public at large had been giving considerable scrutiny to the funded status of public retirement systems, but not so much to the funded status of public retiree health plans. So I proposed to my SIPF colleagues that we engage in a research project similar in concept to the Society's Blue Ribbon Panel report.¹ They agreed and so the effort began. At the time, my thinking was to focus our research on certain key questions. With input from an excellent roster of colleagues², we began the drafting of our RFP to focus on these concepts:

- What is the extent of unfunded OPEB³ liabilities in the U.S., and how is that distributed by state and between state and local entities?
- What is the distribution of plans by funding percentage?
- What are the short term and long term implications of unfunded liabilities on the stakeholders? Who are the stakeholders?
- How will the changes to GASB accounting standards⁴ impact the measurement of the unfunded liabilities? Will they spur advance funding?
- What strategies are public plan sponsors implementing to mitigate the impact of liability measurements on their financial statements?
- What has been the impact of the Affordable Care Act on those liabilities?
- For those plans that are not being funded, why not?



So here we are 30 months later. We have a contract in place with GRS, and the project is under weigh. Over the next five or six months, GRS will undertake the following tasks:

PHASE ONE

- Collect publicly available financial statements of public OPEB plan sponsors and the corresponding actuarial valuation reports.
- Compile key data points from the statements and reports going back to 2008⁵ if possible.
- Identify those sponsors that successfully managed their OPEB liabilities, and measure that success.
- Compare OPEB funding (both advance and pay-as-you-go funding) to available revenues.
- Measure funding and liabilities per the resident population.
- Compare liabilities attributable to employees vs. retirees.
- Distinguish liabilities attributable to implicit rate subsidies vis-à-vis direct subsidies.
- Identify key plan features that are associated with high levels of liabilities.
- Survey state and local government finance officers about germane topics, such as plan designs, eligibility, Medicare coverage, retiree cost-sharing, asset management, retiree participation rates, etc.

PHASE TWO

- Focus on sponsors that have successfully managed their OPEB obligations.
- Research published literature.

- Survey finance officers about the key components of their success.
- Create a “blueprint for success” by investigating strategies such as:
 - Reducing offered benefits (e.g., higher deductible plans)
 - Tightening eligibility for benefits
 - Shifting from defined benefit to defined contribution designs

PHASE THREE

Attempt to forecast changes in OPEB unfunded liabilities due to the implementation of GASB Statements 74 and 75

- Due to the new restrictions on the actuarial cost method and assumptions, and
- Due to plans that transition to advance funding of future benefits,

The SIPF is hosting a breakfast at the SOA 2017 Annual Meeting in Boston. We will be presenting a digest of the results from our research. We hope you will join us. ■



Steve Bryson, FSA, EA, FCA, MAAA, is vice president for Lewis & Ellis Inc. He can be contacted at sbryson@lewisellis.com.

ENDNOTES

- 1 The full report can be found here: <http://www.soa.org/Content-Blocks/Blue-Ribbon-Panel.aspx>.
- 2 The Project Oversight Group includes Adam Reese, Jeff Petertil, Steve McElhaney, Jeffery Rykhus, John Robinson, Joseph Goodman, Piotr Krekora and Robert Clark. We also received help in setting up the RFP from Andy Peterson, Karen Dixon, and Vince Granieri.
- 3 “Other Postemployment Benefits”, an accounting term describing benefits other than pensions provided to former employees.
- 4 Statements 74 and 75 of the Governmental Accounting Standards Board, setting the requirements for computing and disclosing OPEB liabilities effective for plan fiscal years beginning after June 15, 2016 and for employer fiscal years beginning after June 15, 2017.
- 5 The earliest implementation of the prior accounting standard, Statements 43 and 45.

Mortality in Social Security Actuarial Projections

A Summary of the Social Security Panel at the 2017 Living to 100 Symposium

By Sam Gutterman

Mortality represents one of the most important assumptions in the analysis of the sustainability and the assessment of appropriate contribution rates of social security systems. Because of the importance of this public policy issue (as well as the applicability of long-term mortality assumptions to other actuarial applications), it is important to obtain a broad perspective regarding its methodology and underlying viewpoints.

Cutting-edge, macro-level insight into mortality projection issues were presented at the 2017 Living to 100 Symposium panel presentation¹ by leading social security actuaries from Canada, the United Kingdom and the United States. The three panel members—Jean-Claude Ménard², chief actuary of the Canada Pension Plan; Adrian Gallop, of the advice to government team of the Government Actuary's Department in the U.K.; and Steve Goss³, chief actuary of the U.S. Social Security system—provided mortality intel they have found useful.

As indicated by the panelists, actuarial assessments of a financial security program benefit from a comprehensive understanding of the dynamic demographic drivers and the characteristics of its participants on their mortality. Their projections are not made in isolation—each confers with experts and considers their opinions.

The transparency of the development of the basis of these assumptions invites public and professional scrutiny, facilitating confidence in the objectivity of the developed projections. This has led to the use of sound methodologies and ultimately to a more soundly-based public policy decision-making process, although because of its significance it continues to be subject to criticism and enhancement, sometimes from those with diametrically opposite viewpoints. Almost universally, those involved in social security projections are well respected in their professional communities.

PROJECTION METHODOLOGY

Two overall approaches have been taken to develop mortality projections: (1) statistical projections (that is, relying on time series or regression extrapolation), originally including age setbacks and subsequently involving average (covering periods sometimes spanning more than half a century) mortality improvement rates by age and gender or a more refined modeling approach, and (2) implicit or explicit by-cause projections, at least for up to 75 years. All three social security departments make use of both techniques in one way or another. Nonetheless, all three panelists focused significant attention on their efforts to understand the underlying drivers of long-term mortality experience, considering the significance of and sensitivity to changes in mortality in selecting the projection factors used.

Each actuary follows a rather similar overall projection methodology, incorporating statistical and judgmental elements inherent in both of the above two approaches:

1. Estimate current mortality rates by gender and age (explicitly by cause of death for the United States). This is not simply the mortality experience for the most recently available year—the rates are based on a set of fitted reported rates for the country over several recent years. This is needed partly because of the lag in obtaining current national mortality experience and annual experience fluctuations. In addition, these rates are usually trended until the valuation date.
2. Estimate both current and ultimate mortality improvement factors by gender and age. In the United States, these also vary by major causes of death.
3. Interpolate or converge the mortality improvement factors by gender and age group (and cause for the United States) between the estimated current rates and the ultimate factors (from step 2). The year at which the ultimate improvement rates go fully into effect ranges from 20 years to 25 years.
4. Apply the resulting mortality improvement factors by gender, age and year successively to the assumed current (base) mortality rates.

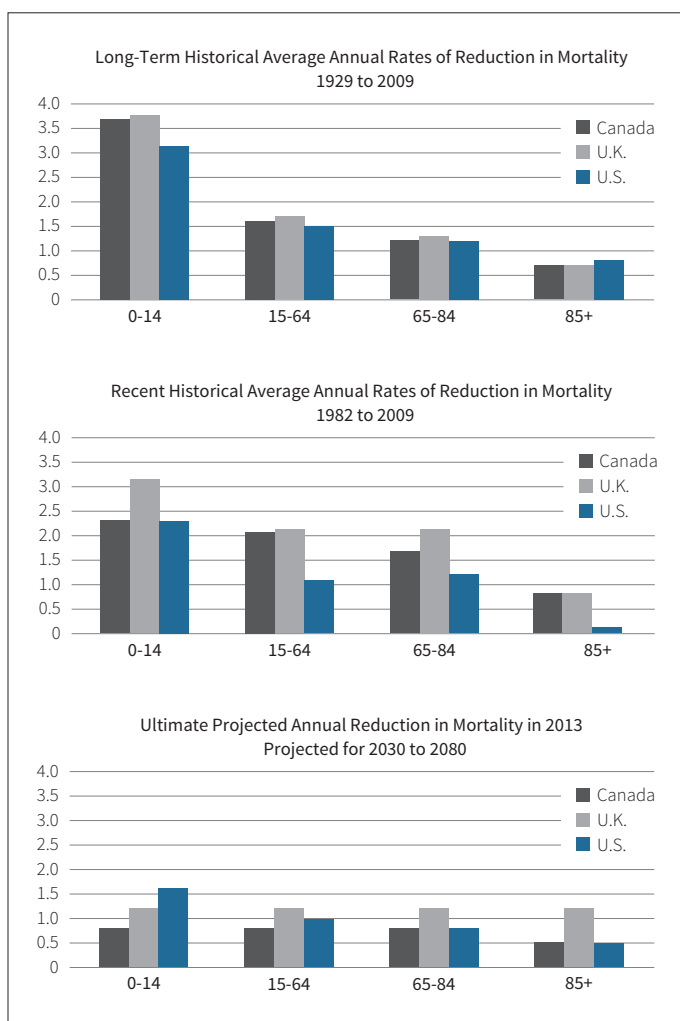
However, different techniques and considerations are applied in each of the first three steps. The views and research of a variety of individuals and technical panels of experts are considered, particularly in the selection of improvement factors. In the end, the last factor applied in each case is professional judgment, and weighting the expected effects of all the factors involved.

Although the detailed steps taken and factors considered in the projections differ by country, there appears to be a consensus among social security actuaries that future mortality improvement will likely not be as large as the exceptional improvement of the first decade of this century. This is, in part, because of

differences in national experience and changes in demographics, the effectiveness of prevention activity, health care technologies and medicines, introduction of more extensive public health coverage, supply of services and quality of health care. That said, U.S. and Canadian ultimate improvement factors that decrease on a percentage basis as attained age increases, contrast with U.K. projections of a level ultimate-mortality improvement, independent of age.

The methods and assumptions used in these projections are subject to regular peer review and adjustment based on new data, the objective of which is to maintain their high quality and to incorporate, as much as practical, the best possible approaches and information sources. For example, the Canadian projections are subject to triennial reviews by a panel of actuaries, and the U.S. projections have been subject to ideas and opinions of

Figure 1 – Comparable rates of mortality improvement by age category and country



Source: U.S. Social Security Administration

The methods and assumptions used in these projections are subject to regular peer review and adjustment. ...

quadrennial technical panels consisting of actuaries, demographers and economists. The U.K. regularly convenes a panel of experts to provide perspectives into the demographic aspects of its social security projections, while U.S. Social Security mortality projections have recently been shown to be consistent with opinions of independently developed views of likely mortality trends by age and medical condition developed by the medical staff of Johns Hopkins University.

MORTALITY EXPERIENCE, PROJECTIONS AND OBSERVATIONS

All three countries have seen significant mortality improvement for more than a century. The extent and patterns of future improvement play a significant role in debates concerning how best to address financing challenges facing all social security programs, especially as the baby boomers retire and beyond.

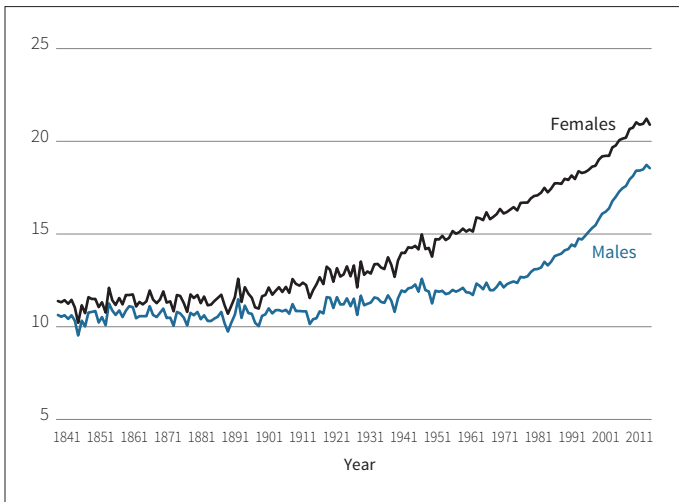
Historical mortality experience among their respective countries is gathered, with a focus on mortality improvements at key age ranges. For example, Figure 1 compares annual rates of reduction in mortality for two historical periods and age categories and projections for years between 2030 and 2080.

Goss pointed out that life expectancy at birth, a widely-used indicator of the overall health of the population, can be a misleading metric for use in assessing long-term trends. This concern is due to the sizable improvements in mortality at younger ages, particularly at infancy, in the first two-thirds of the 20th century that led to a substantial portion of the improvement in life expectancy at birth over this period.

As shown in Figure 2 (shown for the U.K., with similar patterns for Canada and the U.S.), the last few decades have seen a reduction in the differential between male and female period life expectancy at age 65, with the historical advantage of females in longevity being reduced since the 1980s when it was at its peak. This is partly because of the dramatic reduction in smoking that was more significant for males and in cardiovascular diseases. Although each of the three panelists projected some continued reduction in this difference between the genders, none projected the differences would be eliminated completely.

One historical experience improvement pattern that seems consistent in all three countries is an age-gradient, that is, a

Figure 2 – Period life expectancy at age 65 (U.K.)

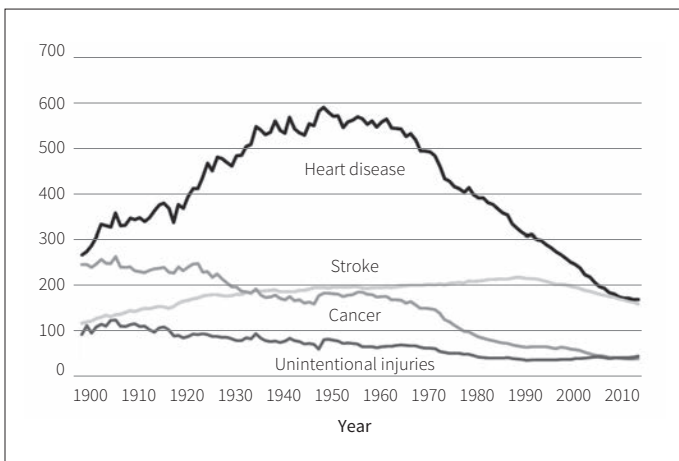


Source: Office for National Statistics

smaller percentage improvement at ages 85 and older compared to that of younger ages. The projections made in Canada and the United States have reflected a continuation of this age-related pattern, while those of the U.K. are the same for all ages, expressing an aggregate historical average instead. Over time, differences in this pattern by age can contribute to significant differences in overall social security projections.

Each panelist discussed trends in the leading causes of death in their country, which overall are cardiovascular (heart) diseases and malignant neoplasms (cancers). An example of major causes of death on an age-adjusted basis is shown in Figure 3 for the United States.

Figure 3 – Age-adjusted death rates for heart disease, cancer, stroke and unintentional injuries: United States, 1900-2015 (rates per 100,000 standard population)



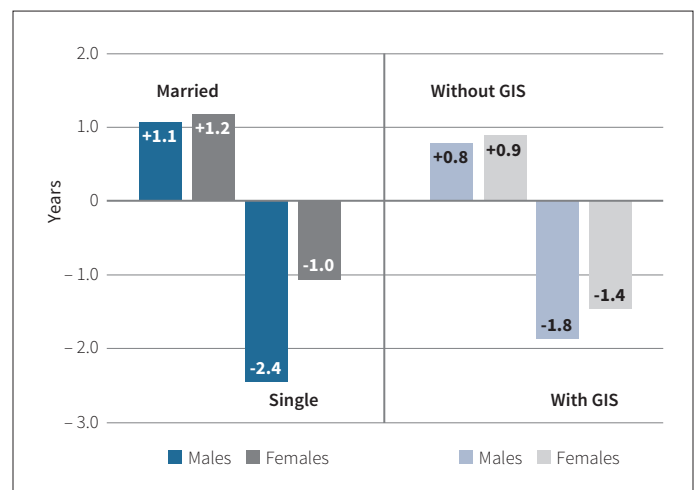
Source: Robert Anderson, National Center for Health Statistics (U.S.)

Common to all three country projections and contributing most to the mortality improvements of the last 30 years has been a drastic reduction in deaths due to cardiovascular and related diseases—resulting from enhancements in prevention and treatment of these diseases, as well as from more effective control of their direct risk factors. This reduction has driven overall improvement in all economically developed countries. Nevertheless, even if this improvement continues, due to cardiovascular’s decreasing share of total mortality, corresponding reductions will not have as large an effect on overall future mortality improvement.

In addition, an increasingly important reported cause of death at older ages has been dementia (including Alzheimer’s disease). Note that this increase is partly because of an increasing attribution of deaths to this cause. An example of the importance of dementia can be seen in the U.K., where the two leading causes of death for males of all ages in the U.K. in 2013 were heart disease (14.3 percent of total) and dementia (7.3 percent), while for females they were dementia (15.2 percent) and heart disease (8.8 percent). Dementia and Alzheimer’s disease are the leading cause of deaths for both males and females aged 80 and over (at 13.7 percent for males and 21.2 percent for females). A reason why the percentage of dementia is higher for females is that the average age of females over age 65 is older than that for males.

Those with lower income experience a shorter life expectancy at age 65 than those with higher income—this is illustrated in the right side of Figure 4 (Canadian experience) by comparing those provided with GIS (Guaranteed Income Supplement—in

Figure 4 – Differences in life expectancy at age 65 (2013) between those who are married and single, and of those collecting Old Age Security benefits between those collecting GIS benefits and those who are not (Canada)



Source: Office of the Chief Actuary, Actuarial Study No. 17: Old Age Security Program Mortality Experience, June 2016

Canada, those who receive monthly benefits from the Old Age Security pension program due to their lower income). The left side of Figure 4 shows that those who were married in 2013 at age 65 experience longer longevity than those who were single.

Several factors expected to affect future longevity may prove either beneficial or detrimental. Some of the issues involved include the following questions:

- In view of budget and cost pressures, will investments in and effects of health care infrastructure and financing, new medical treatments, medical technology and drugs continue at their recent pace?
- What will be the effect of behavioural changes, including smoking prevalence, lifestyles, physical activity/sedentary living and obesity?
- What will be the effect of possible new diseases (e.g., HIV, SARS) or re-emergence of old diseases (e.g., tuberculosis and yellow fever), either on a gradual or pandemic basis?
- Will antibiotic resistance become a widespread issue?
- What environmental changes, disasters or wars will take place?
- What changes in population composition will arise, including cohort effects and migration between countries.

It will be difficult to match the effect of the various and wide-ranging sources of historical mortality improvement that included the introduction of antibiotics, increases in standard of living, expanded education, public health programs such as improved sanitation, and vast spending on medical technology, medical care and drugs.

As shown in Figure 1, all three panelists projected continued mortality improvement. However, Goss expressed an opinion that it is likely that the combined effects of several key contributors to reductions in mortality over recent decades will not have matching effects in the future.

In fact, a significant development so far in the early 2010s has been the larger than expected decline in rates of mortality improvement in all three countries. Although there is a great deal of speculation regarding the causes for this emerging pattern change, there is, as yet, no definitive consensus regarding the primary cause of this change, or, indeed, whether it is a temporary blip or represents a structural change in mortality improvement.

Some country-specific observations that were made included:

- Canadian mortality experience, although at a middle-of-the-OECD (a group of 30 economically developed countries) level at middle attained ages, has recently been more favorable than most of these countries at the oldest ages. Over the

last few decades, Canadian mortality levels have generally been significantly better than both that of the U.K. and the United States.

- Mortality for the disabled has been significantly greater than for the non-disabled. For example, for Canadians 55 to 59 years of age, mortality experience for the disabled has been five or six times greater than for those who are not disabled.
- Mortality rates of Americans and Canadians with larger retirement income are better than that of those with lower income. The U.S. white population has recently experienced an increase in mortality in middle ages.
- Based on heat map analyses, certain cohorts in the U.K., especially those born during the period between 1925 and 1938, and Canadian males born in that period have experienced significantly better mortality improvement than those born both before and after that period, although it is uncertain whether these cohort effects will continue.
- U.S. mortality experience is likely to continue to be affected by both smoking and obesity levels, with somewhat offsetting mortality results—mortality increases due to increased obesity may partly offset the favorable results from decreases in smoking.

There is a great deal of uncertainty associated with future longevity. Mortality projections remain controversial and will continue to be discussed and debated by demographers, economists and actuaries. For instance, the recent slowdown in mortality improvement compared with the extraordinary last half of the 20th century will challenge all of these professionals in the years to come.

CONSIDER THESE RESULTS, BUT USE WITH CAUTION

The projection methods and results used by Social Security actuaries have proven to be of value to actuaries in other fields. For instance, I am aware of actuaries practicing in life insurance, annuities, pensions and long-term care insurance who have based their mortality improvement assumptions on corresponding projections made for the national population.

The projection methods and results used by Social Security actuaries have proven to be of value to actuaries in other fields.

Although the estimated mortality rates of the overall population and their improvement are appropriate for projections of social security, they may not be appropriate, without adjustment, for applications other than those intended. This is due, in large part, to differences between the overall population and a segment of the population. Social security programs cover almost all of a country's population, while the characteristics of a population segment that most actuaries address are much different.

Actuaries who develop or rely on mortality estimates should keep up-to-date with developments in this area, while, at the same time, recognizing the limitations in applying these methodologies and projections.

A key takeaway from this panel is that the study of mortality from many sources remains important for both social security projections and also for other applications. The size and shape of mortality projections will likely remain dynamic and controversial. Special care is needed if the population to which experience is to be applied is not the population from which experience is available. Join us. ■

Special thanks to the panelists who also reviewed and helped finalize this article for publication: Jean-Claude Ménard, chief actuary of the Canada Pension Plan, jean-claude.menard@osfi-bsif.gc.ca; Adrian Gallop, of the advice to government team of the Government Actuary's Department in the U.K., adrian.gallop@gad.gov.uk; and Steve Goss, chief actuary of the U.S. Social Security Administration, stephen.c.goss@ssa.gov.



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ENDNOTES

- 1 Presentations available at <https://livingto100.soa.org/sym-agenda-Day3.aspx> (Concurrent Panel IV)
- 2 Jean-Claude Ménard shared the floor with Annie St-Jacques during his presentation.
- 3 Steve Goss shared the floor with Mark Bye during his presentation.

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Selling Health Insurance Across State Lines

By Lawrence Mitchell

Editor's note: This article was originally published by the Conference of Consulting Actuaries (CCA) with input from the CCA Health-care Community. Reprinted, with edits, by permission.

EXECUTIVE SUMMARY

There is considerable discussion concerning the revision or replacement of the Affordable Care Act (ACA).

One of the proposed revisions is to allow an insurance company to get a policy approved in any state¹ and then sell that policy in any other state without having to meet any of the requirements imposed by the other state.

The proponents of this change assert this will lead to more competition, which will then lead to lower premiums for health care services.

Although the topic entails all types of health insurance, this article concentrates on the confluence of these principles as they apply to the small group and individual markets, with primary focus on individual health insurance premiums. In most instances, large group plans have the ability to enroll eligible persons across state lines, as long as they are members of the group.

This article discusses various aspects of the suggested revision and comes to the conclusions that, absent changes in the uniformity of benefit, rate and underwriting reforms required by the ACA, cross-state selling in and of itself:

1. Will produce no change in health care costs, and
2. Could result in less competition.

PROLOGUE

A basic tenet of the free market school of economic theory is that competition leads to more efficient production of products which, therefore, results in lower costs to the consumer.

One of the continuing problems involved in the financing of health care services is the persistent rise in the cost of premiums charged by insurance companies to provide health insurance.



Applying the basic tenet concerning competition to the problem of rising premiums, many observers have proposed to encourage competition by allowing any company licensed to sell health insurance in any state to market health insurance in any other state if their insurance product is approved in that particular state.

A basic premise of capitalism is that the sale price of an item should be sufficient to cover the cost of the product, including the costs of developing, manufacturing, marketing and distributing that product, plus an adequate amount for profit, risk and for the development of other products.

With respect to health insurance, the premiums charged by an insurance company must be sufficient to pay the benefits promised plus the costs of doing business, with a margin for risks, contingencies and addition to surplus.

In the large group market, we assume the group health insurance buyer or consultants involved are sophisticated and can negotiate a fair premium rate for a given set of benefits. In this market, purchasers have the means to hire specialized employees or consultants to represent their interests when negotiating with insurers.

On the other hand, in the small group and individual markets, the sophistication balance leans heavily in favor of the insurance

company, with very little ability by the consumer to negotiate on his or her own behalf. Therefore, regulators have a role to play within these markets to even the playing field between consumer and insurer.

CURRENT STATUS OF STATE AND FEDERAL REGULATION

Currently, each state has the right to and actually does issue its own laws concerning health insurance and insurance companies.

These laws detail, to varying degrees, almost every aspect of the business of insurance. These include such things as financial requirements for entry into the market, as well as remaining in the market, limits on who may be involved in ownership or management of the company, types of policies that may be offered, types of providers that must be covered, whether these policies and their premium rates need to be approved by regulators, and the ability of consumers to appeal. These laws also mandate not only what benefits must be included, but what may be excluded.

For insurance intended to cover the wide range of comprehensive medical needs, the federal government through the ACA has mandated, among other rating rules, a minimum set of benefits (which are very comprehensive compared to the pre-ACA markets in most states), a restriction on the variation in rates by age, and a limit upon the portion of the premium that may be allocated to anything other than “benefits” (as defined by the law) and taxes. For individual policies, this retention limit is approximately 20 percent of the premiums charged to all policyholders in the individual market in the state.

Individual states retain the right to approve policies and their rates and to require broader benefits if they so choose.² However, the ACA removed the ability of states to allow the sale of medical policies that offer fewer benefits than those mandated by the federal law, thereby resulting in significantly less variation in benefits among the states than there had been prior to implementation of the ACA.

The ACA allows the U.S. Office of Personnel Management (OPM) to oversee the selling of health insurance in a manner similar to that of selling across state lines.³ It does require the states to agree to participate. Approximately 36 states are participating in this OPM oversight program.

In summary, under the ACA, we have a federally mandated set of benefits,⁴ a federally mandated limit on the gross profit of an insurance company, and a federally mandated set of rating rules⁵ and underwriting rules, as well as variations in premium rates presumably reflecting differences in costs.

Currently, there are many insurance companies that sell across state lines, even though they must modify each policy to meet the standards of each state in which that policy is sold.

ADVANTAGES TO SELLING ACROSS STATE LINES AND OTHER EFFECTS UPON THE INSURANCE COMPANY

What are the advantages, to an insurance company, of being able to get a health insurance policy approved in one state and then to sell it in any other state without meeting any of the requirements of the other states?

Among the states and territories, there is widespread variation in laws and regulations concerning such items as:

- Financial requirements of the insurance company
- The relationship between premium rates and expected claims

The ACA has a retrospective restriction, the Minimum Loss Ratio, which requires the insurance company to pay at least 80 percent of the premium as claims or refund the difference to the policyholder. In setting premiums, the states (and insurance companies) vary in the approach they take toward the estimates of prospective claims. This results in a variation in the acceptable premium rates.

- Types of medical providers (hospitals, doctors, pharmacies, etc.)
- Breadth of coverage

In addition to the ACA standard benefits, some states have added a few of their own.

- Process for claims appeal
- Policy language (what must be included)
- Advertising of policy benefits
- Size of type used in policy

By needing to fulfill the requirement of approval of their product in only one state, the insurance company eliminates the expenses it would otherwise have in filing in all other states in which it chooses to do business. It eliminates the variations in benefits, premium rate requirements and all the other variations that would be needed to meet each of the other state’s requirements.

On the other hand, the insurance company must still meet the minimum essential benefits and premium rate limits that are federally mandated by the ACA.

Theoretically, an insurance company whose policy is approved in a state with the fewest number of additional mandates can price

In the ... individual markets, sophistication leans heavily in the favor of the insurance company.

the product at a lower premium than the insurance company whose policy is approved in a state with additional mandates.

The reduction in premium level is achieved on a number of fronts, including:

1. The elimination of the costs involved in filing in each state
2. The elimination of the marginal costs for mandated benefits
3. For some, the reduction in the capital and surplus required of the insurance company. Some territories have very low capital and surplus requirements.
4. Avoidance of paying premium taxes in the other states. States may have difficulty collecting premium taxes from an insurance company that is not licensed to do business within that state.

In the individual and small group market, insurance companies that do not provide coverage for the additional mandated benefits will have a price advantage. If they do not have to pay premium taxes in those states, the advantage is compounded.

As a result, insurance companies, large and small, will be forced to gravitate to the jurisdiction with the least amount of oversight and regulation in order to take, maintain or attain a competitive advantage.

Eliminating mandated benefits does not, by itself, decrease the overall costs of health care. It only decreases the portion of health care expenses to be covered by the insurance policy. On the other hand, requiring health insurance companies to cover these benefits usually increases the utilization of these benefits, the charges made by providers for these benefits, and the administrative expenses of the insurance companies. This would then result in increased premium rates because of these factors.

Eliminating the requirement to be licensed in other states, other than the state of domicile, will allow smaller, regional companies to compete in more states. However, they will face a major obstacle, which is the establishment of a provider network with competitive reimbursement levels.

In the free market business of insurance, the companies with the biggest surplus will be able to subsidize their health insurance line.

A primary factor in reducing the costs of health care, while still maintaining the good health of the individual, is to limit services to those doctors and other medical professionals who will provide the right service at the right time for a reasonable cost. Insurance companies' networks should be established within that framework.

It will be extremely difficult for a small regional insurance company to enter a new market and then find a significant number of providers who will agree to the levels of discounts and limitations that are similar to those granted to insurance companies with large blocks of insureds.

It is also difficult for a new insurance company to be able to initially price its product appropriately. There are a number of factors causing this, including:

1. Health care costs vary dramatically from one community to the other. The data used by an insurance company to price its policy is based upon its own experience. The claim costs in another state will not be the same, and the insurance company will have to estimate the differences. Companies can hire consultants who have information on costs across the country, but this will be an additional expense, and the consultants' estimated costs may not reflect those that the company will incur because of differences in claims practices and enrollment.
2. The market is such that those insureds who are relatively happy tend to stay with the company with which they are familiar. The newly arrived insurance company may find its initial policyholders include a large number of persons who are discontented with their previous company and who may also have higher-than-average claim costs.

If, as a result, the insurance company has underestimated the costs in its first year, it can face a large loss, from which it may take a long time to recover (if it ever does). The ability to replace capital resulting from losses is limited by the minimum medical loss ratios in the ACA. Therefore, once a loss is sustained, it may require multiple years to replace this capital via normal business practices, because the insurance company cannot include in any future premium rates any provision to recapture losses from prior years.

In the free market business of insurance, the companies with the biggest surplus will be able to subsidize their health insurance line. By undercutting the premium needed, they will force the smaller companies to leave the market. This result is an unintended consequence, and it is contrary to one intention (that of increased competition among companies) of the proposed revision to sell health insurance across state lines.

The bigger surpluses of the larger insurance companies give them another advantage in having the capital to establish the provider networks needed to be competitive.

Based upon examinations of Minimum Loss Ratio exhibits, the amounts attributed to general overhead, excluding claim administration and marketing, were less than 4 percent of premium. Therefore, if we eliminate the state-mandated benefits and eliminate the need for insurance companies to get approvals in every state, it would be surprising if the initial effect would be to reduce the premiums materially. However, even this small potential decrease will not stem the rising overall health care cost trends. After the initial dip, the premium rates necessary to cover the costs of the benefits will continue to rise.

Some states, such as New York, do not allow insurance companies to charge a rate that varies by age. They require a rating basis that averages the costs of all the persons insured by the insurance company within the community, often referred to as pure community rating.

A company subject to this pure community-rating requirement will be at a tremendous disadvantage in competition with a company selling across state lines. The latter is allowed to vary premiums by age. As such, they can charge younger persons less than older ones.

If both insurers provide the same benefits, younger persons will buy coverage from the out-of-state insurance company. This will drive the average claim costs of the domestic insurance company higher and result in an increase in the pure community rate. The cycle continues. As the pure community rate goes higher, more people gravitate to the out-of-state insurance company.

Eventually, the domestic insurance company will be left with only relatively old and sick persons.

The domestic insurance company is left with three choices:

1. It withdraws from the state, leaving the market to the out-of-state insurance company.
2. It withdraws its health insurance policies from the state's approval and, if its domestic state permits it, develops a policy that is approved in another state that can be age-rated. It then returns to its domestic market as if it were a foreign insurance company.
3. It moves its state of domicile, which is a drastic measure and one that would not be taken lightly, or forms a subsidiary in another state and allows the subsidiary to sell using the parent's provider network and marketing and administrative resources.



STATE OF UNINTENDED CONSEQUENCES (OPINION)

The intent of permitting insurance companies to sell across state lines is to increase competition and reduce the costs of health insurance. There is a good possibility the most likely scenario will be to decrease competition and, without affecting the cost of health care, allow premium rates to increase faster than required by the rise in health care costs.

Competition will decrease because the larger insurance companies are in a better position to:

1. Buy business (by subsidizing premiums in order to increase their market share).
2. Maintain the networks of providers needed to reduce costs and improve the quality of health care.
3. Market the product.

These practices will make it extremely difficult for smaller companies to make a profit in these markets. As a secondary result of the lack of competition, premium rates will rise, even if the 20 percent cap on gross profits remains in effect.

Many states have strict controls on the premium rates a company can charge. There are a number of jurisdictions primarily concerned with whether the premium rates are sufficient to pay the expected benefits and are not concerned, or hardly concerned at all, with the level of expected loss ratios.

Therefore, once an insurance company has the major share of insureds in a state, it could increase its premium beyond that which might be reasonable for an expected 80 percent loss ratio. Even though it must return 80 percent of the gross premium as either claims or premium refunds, it would still keep a larger dollar amount, as shown by the following example.

Let's assume the health care benefit costs for a particular company are \$76,000,000 for the year. In a competitive environment, the insurance company may have charged a gross premium of \$100,000,000. In this case, it would refund \$4,000,000 to policyholders and would keep \$20,000,000, based on the 80 percent loss ratio, for expenses and profit.

Without significant, if any, competition, the insurance company might choose to charge as much as \$125,000,000. The total refund to policyholders becomes \$24,000,000, and the insurance company retains 20 percent, or \$25,000,000, for expenses and profit. In this scenario, the insurance company has incurred almost no additional expense and the extra \$5,000,000 for retention goes directly into surplus. Though the insureds' refund (well after the policy year is over) is increased by \$20,000,000, they had to pay an extra \$25,000,000 in premiums during the year to receive it.

EPILOGUE

As noted in this article, premiums must be adequate to pay the costs. This was true before the ACA. It is true during the ACA and it will be true with whatever, if anything, replaces or revises the ACA.

If we want to lower the costs of health care, we must focus on those factors involved in the cost of providing health care. When health care costs are lowered, then premium rates will follow. ■



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ENDNOTES

- 1 A state means the 50 states of the United States of America, the District of Columbia and the U.S. Territories.
- 2 From Kaiser Health News: State coverage mandates vary widely. They may require coverage of broad categories of benefits, such as emergency services or maternity care. These are now required under ACA so I do not think this adds to any case for or against cross state selling. You may want to add something like, (Prior to ACA, state coverage mandates varied widely(..., or of very specific benefits such as autism services, infertility treatment or cleft palate care. Some mandates require that certain types of providers' services be covered, such as chiropractors. These mandates may apply to all individual and group plans regulated by the state, or they may be more limited.
- 3 <https://www.federalregister.gov/documents/2015/02/24/2015-03421/patient-protection-and-affordable-care-act-establishment-of-the-multi-state-plan-program-for-the>
- 4 Technically, there is slight variation across state lines for ACA-mandated benefits, because each state was allowed to establish its own essential health benefit benchmark plan. However, since the 10 required essential benefits were identified in federal legislation, the variation among states due to variation in benchmark plans is minimal.
- 5 There are a few states that have adopted even stricter rating rules than those required under the ACA (New York and Vermont have pure community rating), and a couple of states have adopted unique age curves.



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Gender Differences in Social Security

By Bruce D. Schobel

When the Social Security program was enacted into law in 1935, equal treatment of men and women was clearly not a consideration. In those early days, most families consisted of a man who went off to work every day in employment or self-employment, a woman who did not work substantially outside the home or in paid employment, and young children. The original Social Security Act provided benefits for retired workers only, but in 1939, before any monthly benefits could be paid under the original law, the program was expanded—for the first time, but hardly the last—to include benefits for eligible spouses, children and survivors of deceased insured workers. Of course, the vast majority of “workers” were men, and the vast majority of eligible spouses and surviving spouses were women. Equal treatment of the genders wasn’t very meaningful in an environment where their circumstances were so different.

Over the past 80+ years, things have changed quite a lot, and the Social Security law changed, too. Some of the changes resulted from Supreme Court decisions, and others were made by Congress itself in various amendments to the original Act, especially in 1983. Today, essentially all gender-based differences in the law have been repealed, but differences in **outcomes** by gender still exist for other reasons.

Reciting **all** of the gender-based differences that existed in the Social Security Act during the first half-century of its existence would not be especially useful considering that they are of only historical interest today, but a brief list clearly illustrates their great significance. Note that every one of these provisions favored women over men:

1. The 1939 amendments allowed women to collect benefits as spouses and widows (even if they had never worked in covered employment themselves). Men did not get this benefit until 1950.
2. Similarly, the 1939 law allowed women caring for minor or disabled children to receive so-called “mother’s” benefits. Men got the right to receive analogous “father’s” benefits in 1975 as a result of the Supreme Court’s unanimous decision



in *Weinberger v. Weisenfeld*. A conforming change in law was included in the 1983 amendments.

3. The 1956 amendments allowed women who had worked in covered employment to claim reduced retirement benefits starting as early as age 62. (The normal retirement age was 65 then.) Men did not get the same option until 1961.
4. The 1950 amendments extended eligibility for spousal and survivor benefits to **divorced** women with children in their care and to **divorced** widowers (men) in the same circumstances but who were also financially dependent on their deceased wives. In both cases, the previous marriage had to have lasted 20 years or more. In 1965, the requirement for children in care was removed by legislation. In 1977, the required length of marriage was reduced from 20 years to 10 years. The 1983 amendments wiped out all of the differences between men and women in this context, treating widows, widowers and divorced spouses (both women and men) whose marriages had lasted 10 years or more almost exactly the same as current spouses and widows/widowers in terms of benefit eligibility. (Actually, divorced spouses have a slight advantage over current spouses with regard to the right to receive spousal benefits while the ex-spouse is still alive, but this right is not gender-related in any way.)
5. The 1977 amendments allowed women who remarried at age 60 or older to have their new marriages disregarded for purposes of eligibility for survivor benefits; in other words, their widows’ benefits did not end upon remarriage, as they had previously. The 1983 amendments extended this treatment to men on identical terms.

One difference that was **not** removed over the years was a better benefit formula—a shorter computation period, to be precise—for women born before 1912 than for men the same age. Of course, that’s a tiny, closed group of beneficiaries at this point. It’s interesting to observe that this provision, too, favors women over men.

Now that the Social Security law is almost completely gender-blind, and has been for 34 years, one might assume that the program is “fair” to both genders. Fairness is always in the eye of the beholder, of course, but some observations might call that conclusion into question:

1. One seemingly inescapable gender difference involves mortality experience. Women, on average, live longer than men do. Thus, based on individual equity principles, the actuarial reduction factors applied to early retirement benefits (and, likewise, actuarial increase factors applied to delayed retirement benefits) should differ between men and women. The reduction applied to retired-worker benefits starting at age 62 cannot be actuarially fair to men and women simultaneously. But if the factors differed to reflect mortality experience, then the program wouldn’t be gender-blind. This conundrum cannot be solved. The courts and Congress have concluded that the Constitution requires the program to be gender-blind, even if that has disparate effects by gender due to underlying factors outside the government’s control.
2. Women, on average, have lower earnings than men do. Social Security has a weighted benefit formula that provides a higher replacement rate to low-income workers than to higher-income workers. This weighting has an aggregate effect of wealth redistribution from men to women, even though the benefit formula itself is gender-blind.
3. On the other hand, women, on average, have shorter, less consistent earnings histories than men do. Social Security benefits are based on the 35 highest years of earnings in each worker’s lifetime, after adjusting earnings before age 60 for changes in the national average wage. Workers with fewer than 35 years of earnings in covered employment must

Social Security law is now completely gender-blind, but the effects of Social Security’s various provisions on each gender vary quite a bit.

include zero years in computing the average, which brings it down. This hurts women more than men because most men reaching retirement age have 35 years of earnings in covered employment, while a higher proportion of women do not.

Another complicated factor involves couples living together, whether married or not. Two people living together in one home obviously can live more cheaply than they could live apart in two, separate homes. Because men have higher mortality rates than women, combined with the fact that the average American husband is two to three years older than his wife, most married women can anticipate some period as a widow. The average time as a widow might be about a decade. During this time, her standard of living can be expected to drop, due to the absence of the spouse—and his retirement income, whatever that might have been—and the fact that she is older and likely has higher health care expenses and less assets than the couple had when they were younger.

In conclusion, Social Security law is now completely gender-blind, but the effects of Social Security’s various provisions on each gender vary quite a bit. Some of the differences in outcomes by gender may be exogenous and not amenable to any legislative solution. ■



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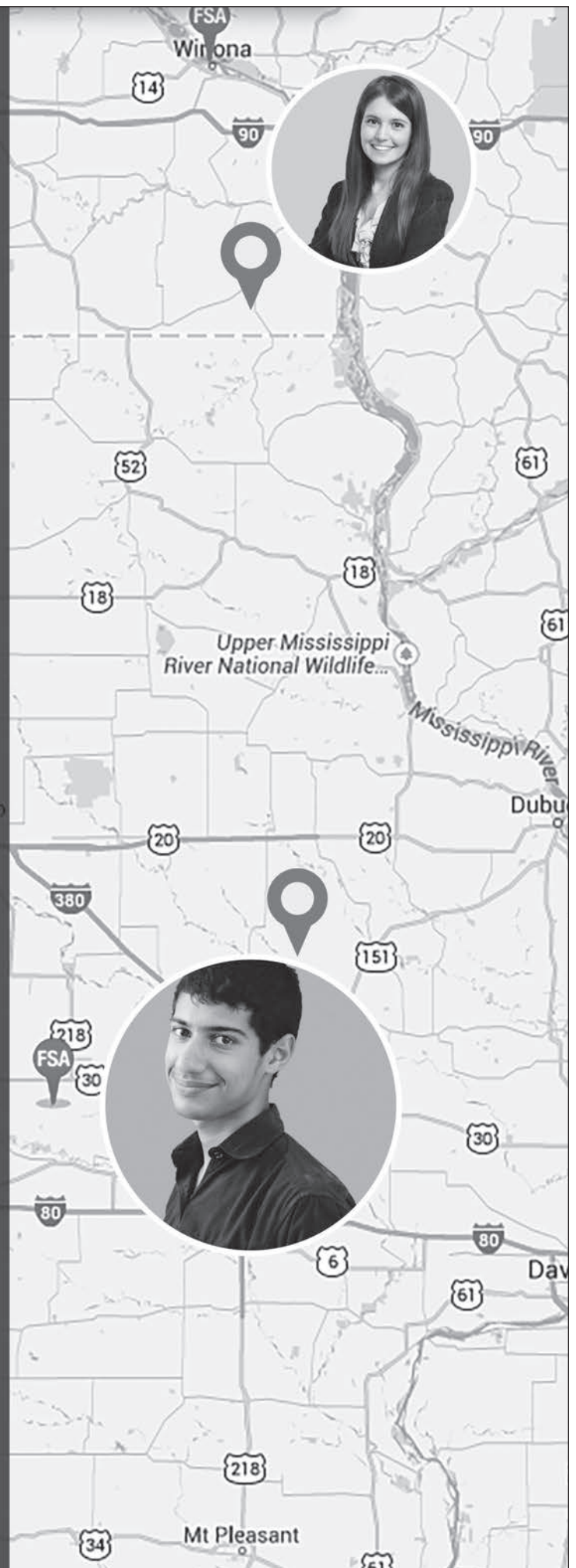
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Appropriateness of Risk-Taking by Public Pension Plans, Part I

By Don Boyd and Yimeng Yin

This article first appeared in the February 2017 issue of the Nelson A. Rockefeller Institute of Government publication Pension Stimulation Project. The Table of Contents and the Executive Summary of this article have not been included in this reprint. It is reprinted here with permission.

INTRODUCTION

Public pension funds receive contributions from governments and employees, and invest those funds with the goal of having enough money to pay future benefits when due. Governments and pension funds can't predict the future with certainty, so they adjust contribution requirements to reflect experience – requesting higher contributions if experience hasn't been as good as expected, or reducing requirements if experience has been better than expected.

The biggest uncertainty is how well the pension fund's investments will do. Currently public pension funds have approximately \$3.7 trillion in assets, about two-thirds of which are invested in stocks, real estate, hedge funds, and other assets subject to substantial investment risk. Thus, investment returns can be much greater or less in any given year than pension funds expect. This creates risks that employer contributions may have to rise considerably, or may be able to fall considerably. It also creates risks that plan funding will fall to very low levels, particularly if governments do not pay actuarially determined contributions. Conversely, very good investment returns could lead to significant plan overfunding.

Understanding these issues is important because if contributions rise sharply, governments may have to raise taxes significantly, or cut services sharply. Or governments may be unwilling to pay requested contribution increases and may seek to cut pension benefits.

In a previous report we examined how plan funding policies and practices affect the risks of underfunding and of sharp contribution increases.¹ In this report we examine the risk-taking behavior of pension funds and insights from research about



both the causes of this risk-taking and the appropriate degree of risk.

THE RISE OF PUBLIC PENSION FUND RISK-TAKING

In investing, there is a trade-off between risk and reward: investing in safe assets involves little or no risk of loss, but the return generally will be small. Investors can seek higher returns but that comes at the price of greater risk: the actual return may be higher or lower than expected, and the investor may even lose money. This is true for individuals, and it is true for pension funds.

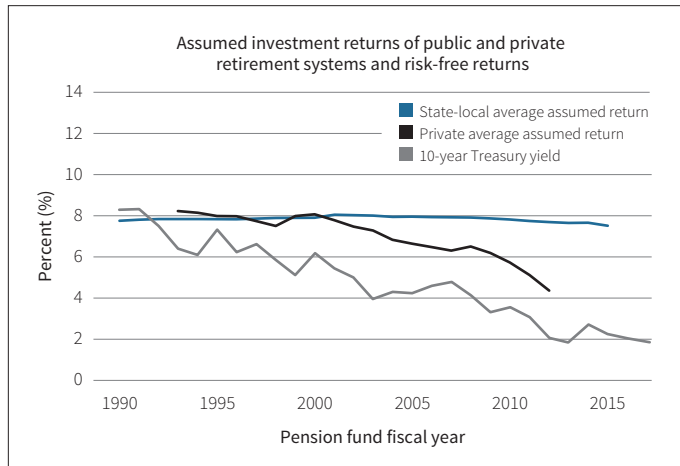
Declining interest rates have forced public pension funds to either lower assumed returns or take more risk

In 1990 the typical public pension fund assumed it would earn about 7.8 percent.² At the same time, 10-year U.S. Treasury securities were yielding 8.3 percent, so a pension fund could achieve its assumed return with minimal risk.³ In the quarter-century since, interest rates on 10-year Treasury have fallen markedly and are now below 3 percent; rates on other securities fell as well. The decline was part of a longer-term trend that accelerated during and after the Great Recession.⁴

This decline has created an extremely difficult investing environment for public pension funds and all retirement savers. Because expected returns and risks are related, the decline in risk-free rates and in expected returns for many assets more generally means that plans needed to either reduce their assumed investment returns, or take greater risk to justify those returns.

Figure 1 shows what happened: while nominal risk-free returns declined, public pension funds' earnings assumptions have been "sticky," barely falling at all, even though private plans reduced

Figure 1. As yields on risk-free Treasuries fell, private plans lowered assumptions but public pension plans did not



Sources: State-local assumed return from Public Plans Database
Private assumed returns provided by Andonov, Bauer, and Cremers
10-Year Treasury yield from Federal Reserve Bank of St. Louis (FRED)

their assumptions. Between 1990 and 2015, the average public pension plan’s assumed investment return fell from 7.8 percent to 7.5 percent while the 10-year Treasury yield fell from 8.3 percent to 2.2 percent.⁵

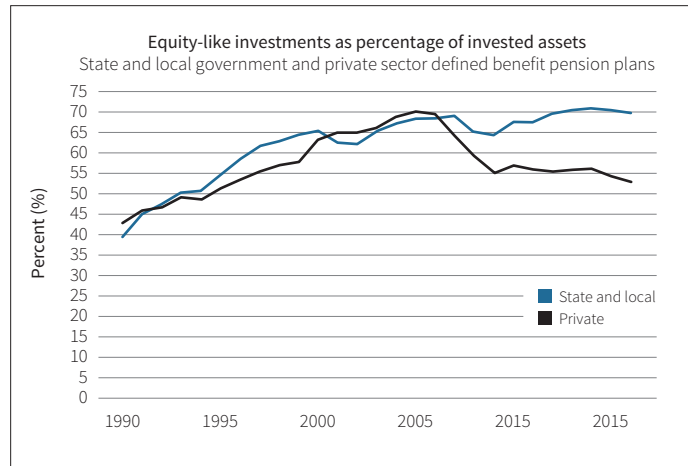
Although public sector plans in the U.S. barely lowered their assumptions, private sector defined benefit plans in the U.S. lowered their assumptions, as did both public and private plans in Canada and Europe. For example, between 1993 and 2012 (the final year of the study from which the data are drawn), when the 10-year Treasury yield fell by 4.3 percentage points, large private sector U.S. plans lowered their discount rates by 3.8 percentage points, from 8.2 percent to 4.4 percent.⁶ By contrast, the average liability discount rate used by large public plans for funding purposes fell from 7.8 percent to 7.7 percent in this period.

Public pension plans have shifted into riskier assets

Public pension funds used to be stodgy investors, although that has been changing for a long time. Even before risk-free yields began falling, public plans had been moving away from portfolios that were sharply constrained by “legal lists” (i.e., lists in statute) of allowable investments. In an effort to increase investment returns and to diversify portfolios, states changed laws to allow broader investments, and pension funds changed their cultures and practices, increasing their equity investments.^{7 8}

This trend accelerated with the steep sustained fall in risk-free returns: In an effort to construct portfolios that might achieve returns similar to the 8 percent assumption of days gone by, public pension plans in the U.S. increased their allocation to risky assets to the point where they now invest over two-thirds of their assets in equity-like investments, up from one-quarter

Figure 2. Public plans increased their exposure to equity-like assets while private plans moved in the other direction



Source: Authors’ analysis of Z.1 Financial Accounts of the United States, Federal Reserve Board, Tables L. 118.b, L. 120.b, and L. 122

in the 1970s. While public plans once were more conservative investors than private defined benefit plans, they now have a much greater share of their assets in equity-like investments than do private plans. (Figure 2.)⁹

This shift has increased risk to pension fund assets and to state and local governments

The movement toward equity assets has increased the riskiness of public pension fund assets. One measure of risk is the “standard deviation” – a measure of how volatile investment returns are likely to be, relative to the expected return.¹⁰ Under common assumptions *actual* investment returns would be *expected* to fall within one standard deviation of the expected investment return about two-thirds of the time.¹¹ The rest of the time they would be outside this range: at least one standard deviation better than the expected return one-sixth of the time, and at least one standard deviation below the expected return the remaining one-sixth of the time.¹²

To illustrate: If a portfolio has an expected return of 8 percent and a standard deviation of 12 percent, then over the very long run about one-sixth of the time actual returns will be above 20 percent, and about one-sixth of the time the portfolio will have a loss of more than four percent.¹³ The other two-thirds of the time returns would fall between a gain of 20 percent and a loss of four percent. The higher the standard deviation the greater the volatility of returns, and the greater the likelihood of very large unexpected gains and losses.

As public plans moved into riskier assets, what happened to the expected volatility of assets – to the expected standard deviation? Andrew Biggs of the American Enterprise Institute has estimated

that the standard deviation of a portfolio designed to have an expected return of 8 percent had been about 4.3 percent in 1995, but approximately tripled by 2013.¹⁴ (One industry-association publication has argued that the investment risk-taking of public pension funds has not increased over the last several decades, but that analysis was based on erroneous measures of risk.¹⁵)

Table 1 shows that a one-standard deviation shortfall resulting from a single year's investment underperformance would now amount to more than one-quarter of a year's worth of state and local government taxes.¹⁶ This is more than three times as large as in 1995, and about 10 times as large as in 1985. We compare to taxes because they are the primary source that would be used to repay shortfalls or, alternatively, that might be reduced in the face of large investment gains. The conclusion that risks have increased dramatically holds if we compare investment risk instead to overall budget size or to gross domestic product.¹⁷ (The amounts in Table 1 have been adjusted for inflation and are in constant 2016 dollars, to make it easier to compare dollar values across years.)

To give a sense of how great the risks have become, a one standard deviation shortfall – which has about the same likelihood as rolling a “1” with a single six-sided die – would be roughly equivalent to what state and local governments in the United States spend on highways, police, fire, and corrections combined in a single year.^{18,19} If the shortfall were amortized (spread out with interest) in a manner similar to what many pension funds do, it would

require increased contributions from governments of about \$25 billion now, rising at the rate of 3 percent annually for 30 years after which the amount would be paid off.²⁰ This is equivalent to about a 50 percent cut in parks spending for 30 years, or a 25 percent cut in highway capital spending for 30 years – *resulting from a single year of moderately bad investment returns.*²¹

WHY DO U.S. PUBLIC PENSION FUNDS INVEST SO HEAVILY IN RISKY ASSETS?

The decision-making environment encourages U.S. public plans to invest in risky assets

Researchers, politicians, and others have pointed out that the unique environment in which U.S. public pension plans operate encourages investment risk taking.

U.S. public pension plans face at least two incentives that encourage them to invest in risky assets: (1) doing so keeps reported pension liabilities lower than they otherwise would be, and (2) investing in risky assets keeps actuarially determined contributions requested from governments lower than they otherwise would be, at least in the short term. The second incentive – lower near-term pension payments by governments – probably is more powerful than the first.

Investing in risky assets helps to keep reported liabilities low

Under accounting standards and actuarial practice, U.S. public pension funds calculate liabilities based on the investment

Table 1. Riskiness of public pension portfolios relative to state and local government taxes has increased more than 3-fold since 1995

Potential magnitude of public pension fund investment risk as % of taxes					
Pension fund fiscal year	Invested assets, (billions of 2016 \$) (A)	Volatility (risk) for a portfolio with 8% expected return (Standard Deviation) (B)	One standard-deviation risk, (billions of 2016 \$) (C = A x B)	State & local government taxes, (billions of 2016 \$) (D)	One standard-deviation risk, as % of taxes (E = C ÷ D)
1975	\$335	3.7%	\$12.4	\$516.6	2.4%
1985	698	2.7%	18.8	685.3	2.7%
1995	1,719	4.3%	73.9	978.3	7.6%
2016	3,554	12.0%	426.5	1,576.8	27.0%
2016 / 1985	5.1	4.4	22.6	2.3	9.8
2016 / 1995	2.1	2.8	5.8	1.6	3.6

Sources and notes:

- Volatility estimates for 1975, 1985, 1995 are from Biggs (2013); 2016 is authors' assumption. There is about a 1 in 6 chance of a shortfall of 1 standard deviation or larger in a single year, under plausible assumptions.
- Invested assets from Federal Reserve Board, Financial Accounts of the United States.
- Taxes from Bureau of Economic Analysis, NIPA Table 3.3.
- Taxes and assets are in fiscal year 2016 dollars, adjusted using GDP price index.
- Risk measure is for a single year. Longer-term investment risks are larger.

The assumed investment return that a plan chooses does not change the benefits that ultimately must be paid.

return they assume they will earn on their assets. The greater the assumed return, the lower the pension liability shown in financial reports and actuarial valuations. By contrast, financial theory teaches that liabilities do not depend upon how assets are invested: the proper discount rate depends on characteristics of the liabilities. Because pension benefits are bond-like liabilities consisting of fairly predictable and highly secure annual payments, they should be valued using bond-like rates, not rates linked to the pension fund portfolio. Private pension plans in the U.S., and public and private pension plans in Canada, the U.K., and the Netherlands value their liabilities using rates that do not depend upon the assets they choose to invest in.²² The standards and practices for U.S. public pension plans are an outlier.

Because large reported and unfunded liabilities can be controversial and politically awkward, U.S. public plans have an incentive to invest in riskier assets with higher expected returns, allowing them to keep reported liabilities lower than they otherwise would be. (Again, U.S. private plans and plans in many other countries do not have this incentive.) Many researchers have remarked on this incentive.²³

Investing in risky assets can keep government contributions low in the short term

Even more important, the choice of discount rate affects actuarially determined contributions. The higher the rate, the lower the calculated liability. A lower reported liability means that actuarially determined contributions will be lower - governments can pay less into the fund now, and have more money for education spending, tax cuts, or other near-term priorities.

This is a powerful incentive, and governments and plans have acted on it many times, sometimes quite boldly. For example, in 1990 New York City stated forthrightly that it was raising its investment return assumption from 8.25 percent to 9 percent so that it could reduce its pension contribution, freeing up money in the budget for raises under a proposed new teacher contract. Some analysts and officials questioned whether it was too high, but the city and the union were in favor, and it carried the day.²⁴

The assumed investment return that a plan chooses does not change the benefits that ultimately must be paid. If investment return assumptions do not pan out, current contributions will be

too low and will have to rise in future years – but that may be a problem for future politicians and future taxpayers.

The investment-return assumption generally is recommended by actuaries and approved by boards, although informal communication and signaling might influence both recommendation and approval. In some cases, as in the New York City example, the government plays an open and public role in choosing the assumption. There are no formal statutory limits on how high or low this assumption may be but it may be constrained by professional judgment and practices.

This again is in contrast with the rules and standards for private pension plans and sponsors in the United States, and private and public plans in Canada, the U.K., and the Netherlands. In these cases, the rates used for funding purposes generally are either based on market interest rates rather than portfolio earning assumptions, or are constrained by law, or are coupled with mechanisms to induce conservatism such as requirements to shoot for more than full funding.

The net result is that public pension funds in the United States generally use higher discount rates for financial reporting and for funding than private plans in the United States, and public and private plans in Canada, the U.K., and the Netherlands.

These incentives put public plan trustees in a difficult situation

Public pension fund boards often have complex relationships with governments, which sponsor funds, pay contributions, and generally must backstop any investment return shortfalls. On one hand, a pension fund board that wants to be sure assets will be available to pay benefits might want a low earnings assumption so that investment risk can be low and contributions will be high. On the other hand, the board may not want to trigger financial and political difficulties for the government by forcing contributions to be high. Another consideration is that if risk-taking is unsuccessful, governments usually have legal responsibility to ensure benefits are paid, and eventually will have to step in and pay higher contributions. Thus, benefit payments may be quite secure in the case of a deeply underfunded plan with strong legal protection of benefits (assuming the government has the capacity to pay up eventually).

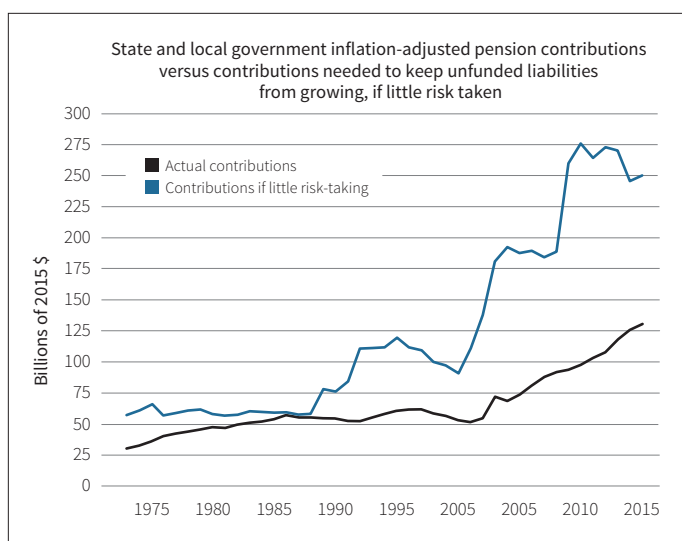
Complicating the situation further, boards generally include a mix of people who represent the perspectives and perhaps interests of different groups, including workers, unions, retirees, the government, and the public at large. The relative power of these groups can vary significantly from fund to fund. Boards generally have fiduciary responsibilities but these responsibilities do not appear to lead boards to change earnings assumptions substantially in response to changing economic conditions,

as Figure 1 demonstrated. In some cases boards have actively resisted lowering earnings assumptions.

These are not just arcane issues – the amounts involved, and therefore the incentives, are huge. Figure 3 shows actual contributions to defined benefit pension plans by state and local governments in inflation-adjusted 2015 dollars (green line). It also shows a rough estimate of the contributions governments would have to make if they were to fund pensions in a highly secure manner, taking very little investment risk (blue line). The blue line assumes governments fund new benefits as they are earned, and cover the interest on unfunded liabilities to keep them from growing, but do not make payments to reduce those unfunded liabilities. The gap between what governments currently pay and what it would take to fund benefits much more securely is large: approximately \$120 billion in 2015.²⁵ In other words, state and local governments would have to approximately double their pension contributions to fund benefits without taking much risk.²⁶

Increasing contributions by this much would be quite difficult for elected officials, and for taxpayers and other stakeholders in government who would bear the cost in some combination of higher taxes or lower services. It is roughly equivalent to permanently increasing all state and local sales taxes by a third, or permanently reducing all K-12 education spending by a fifth.²⁷

Figure 3. State and local government contributions would have to increase by more than \$120 billion annually if public pension plans were to de-risk substantially



Source: Rockefeller Institute analysis of Bureau of Economic Analysis NIPA Table 7.24. 'Little-risk' contributions are based on BEA estimates of ABO liability, which were calculated using low-risk market-based discount rates. In recent years, the rate was 5%. Liabilities and contributions estimated with risk-free rates would be considerably higher. Note that little-risk contributions would be higher still if we included amounts needed to amortize unfunded liabilities.

Because changes in earnings assumptions have such large impacts on contributions, plans come under pressure not to reduce assumptions, and face criticism when they do. The Illinois Teachers Retirement System (TRS) recently reviewed whether to reduce its investment earnings assumption from 7.5 percent to 7 percent. In response Governor Rauner's administration said that lowering it could have a devastating impact on funding for social services and education.²⁸ The governor reportedly attempted to stack the pension board by quickly filling vacancies, but the effort was unsuccessful and the board voted to reduce the assumption. Annual contributions are projected to rise by \$400-500 million.²⁹

Pressures like those encountered by the Illinois TRS can lead pension funds to cast their earnings assumption in cement and look for an investment mix that justifies the assumption. The fixed assumption determines the level of risk the plan considers acceptable. This is backward: Pension funds should decide how much investment risk to take based on the risk tolerance of their stakeholders. That should determine their asset allocation, which in turn should determine their expected investment rate of return.

U.S. public pension plans have responded to incentives by taking more risk

According to recent research, U.S. public plans have responded to these incentives in a big way. Economists Andonov, Bauer, and Cremers examined the behavior of public and private pension funds in the United States, Canada, the United Kingdom, and the Netherlands from 1993 through 2012 using statistical techniques to control for differences across funds and countries.³⁰ Their sample included more than 850 pension funds, including 164 public U.S. funds. They hypothesized that the regulatory environment creates an incentive for U.S. public funds to invest in risky assets that U.S. private funds and the foreign funds do not have, due to their different standards and rules.³¹ Their analysis shows that "...only U.S. public plans significantly increase their allocation to risky assets when interest rates are falling." The impact was large: the approximately 5 percentage point decline in 10-year Treasury yields over their analysis period was associated with a 15 percentage point increase in U.S. public plans' allocation to risky assets, relative to other plans. They conclude that, "*gradually, U.S. public funds have become the biggest risk-takers among pension funds internationally.*" (Emphasis added.)

To summarize, in the face of falling risk-free interest rates, unlike other pension funds, public pension funds in the United States have increased the riskiness of their assets substantially. The current actuarial, accounting, and political environment creates incentives for this sort of behavior.³² The risk is more than three times larger, relative to state and local government taxes than it was in 1995. Risks cut in both directions. The

potential consequences of investment shortfalls are quite large, and could result in substantial cuts in services or increases in taxes. Investment gains could result in benefits of similar size.

HOW MUCH RISK IS APPROPRIATE?³³

Does public pension fund investment risk even matter?

Some researchers have pointed out that under restrictive assumptions, pension fund risk taking could be irrelevant.³⁴ The idea is that if taxpayers understand fully the risk-taking of the pension funds they are responsible for, they could adjust their own portfolios, increasing investments in risky assets or scaling them back depending on whether the pension funds are taking less or more risk than the taxpayers want. Their tax payments would be volatile because government contributions would rise and fall based on investment returns, but they could keep their standard of living stable by borrowing and saving as needed.³⁵ While this might be possible for some taxpayers, most won't know much about the investments of pension funds, many won't be able to build portfolios to adjust, and many won't be able to borrow and lend to keep their own consumption smooth.³⁶

Thus, as a practical matter, pension fund risk-taking is important – it can lead to higher or lower contributions from government, leading to higher or lower taxes, or cuts or increases in services that affect the well-being of taxpayers and other stakeholders in government.

But public pension plans are long-term investors, so isn't their long-term risk minimal?

The fallacy of time diversification: Assets become more uncertain over long time horizons, not less uncertain

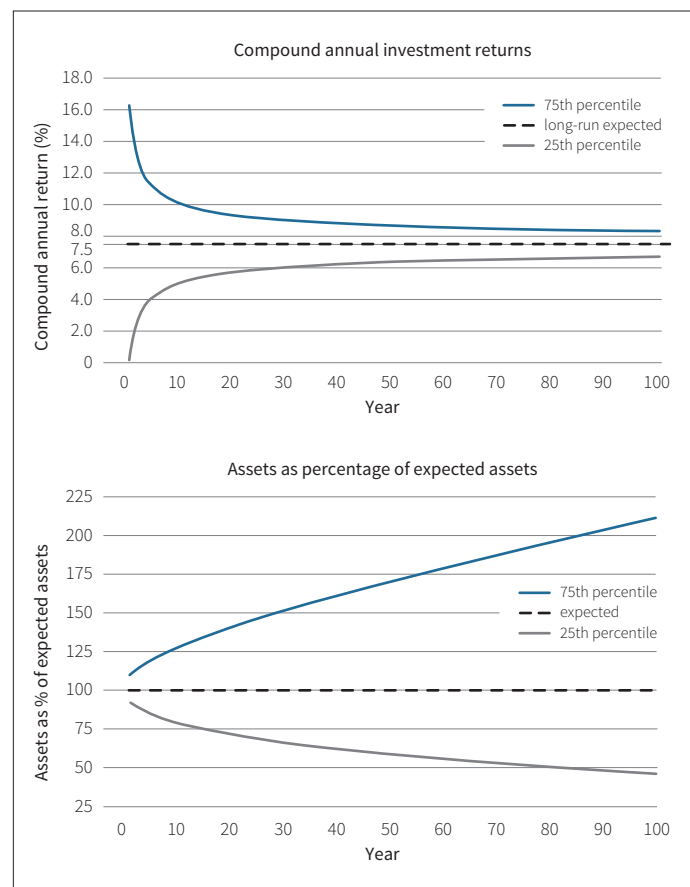
Public pension funds are long term investors in the sense that most of their assets are needed to pay benefits far in the future, with a relatively small amount needed to pay current benefits. Currently, annual benefit payments by most plans are less than 10 percent of their assets; given that contributions come in each year, their net outflow (benefits minus contributions) is even less. Thus, most plans do not currently need to sell assets to make benefit payments and can afford to invest with a longer-term horizon. (As public plans continue to mature, they may become increasingly susceptible to short term risks. They have relatively fixed liabilities that must be paid, and maturing plans may find themselves in a situation where they need to sell assets to meet benefit payments.)³⁷

Because public pension funds and governments that pay into them will be around for generations, and because long-run average returns are less volatile than short-run returns, some people have argued that the risks of investing public pension funds diminish over the longer term and are quite small.

This argument focuses on the wrong risk. It is not the average compound return that is important to a pension fund's ability to pay benefits, but the assets accumulated in the fund. Under traditional assumptions that investment returns are independent of each other from year to year, the likely range around compound investment returns shrinks as the investment horizon lengthens, *but the likely range around future asset values actually increases*. The impact of compounding investment returns over a longer period outweighs the narrowing of the range around expected returns, causing asset values to be more uncertain as the investment horizon lengthens.³⁸

Figure 4 shows that the uncertainty around asset values increases with time, using assumptions similar to those commonly used by public pension funds: a long-run expected return of 7.5 percent and a standard deviation of 12 percent. The illustration further assumes that investment returns are normally distributed and are not related from one year to the

Figure 4. The likely range around compound annual returns decreases with time, but the range around asset values – which are needed to pay benefits – increases



Source: Authors' simulations. Assumes: 7.5% expected long-run compound return, 12% standard deviation, normally distributed and independent over time.

next. We simulated one million investment returns from this distribution for each of 100 years. The top panel shows the 75th percentile of the compound annual investment returns from the simulation (blue line) and the 25th percentile (green line), as well as the long run expected return (red line).³⁹ The bottom panel shows the 75th percentile of accumulated assets as a percentage of assets that would be expected if 7.5 percent were earned every year (blue line) and the 25th percentile (green line), as well as the expected value of this measure, which is always 100 (red line).

To illustrate the calculation, if we only look at the first year, the range around expected returns is quite large – the 25th percentile for expected returns in the first year (the leftmost point on the green line in the top panel), which equals the compound return because we are compounding over one year, is 0.1 percent. We would expect \$1 in assets to grow to \$1.075 after one year but at the 25th percentile, assets will only be about \$1.001 or 93 percent of expected assets (leftmost point on the green line in the bottom panel). By year 100 the likely range for expected compound returns has narrowed considerably so that at the 25th percentile the compound return is 6.67 percent (top panel, green line, rightmost point). However, returns are now compounded over 100 years: expected assets will be about \$1,393 but at the 25th percentile assets will be only \$639 – just 54 percent of the expected amount (bottom panel, green line, rightmost point).

Thus, even though the uncertainty around compound investment returns diminishes with time, assets become more uncertain as the time horizon extends, because returns are compounded over so many years – assuming, as we do here, that returns are independent from year to year.

Governments almost never go out of business, so can't they tolerate more financial risk?

One common but erroneous corollary to the time diversification argument is that because governments will exist for many generations and have the power to tax, public pension funds can accept more risk than private pension funds. However, as Federal Reserve Board economist David Wilcox noted in comments to the Actuarial Standards Board: “If governments truly ... are more tolerant of financial risk than the typical participant in financial markets, then governments should be the preferred providers of all types of financial products involving financial risk, including life insurance, commercial loans, and mortgages, to name but a few. But few analysts really believe that the government is the preferred provider of such products, suggesting that the premise—that governments can afford to be more tolerant of risk—is highly suspect.”⁴⁰

Similarly, if states can be more tolerant of risk then they should invest lottery prize funds in risky assets, similar to

pension funds. Lotto games have financial characteristics that are similar to pensions in important ways, although the political characteristics are different: prizes often are paid as fixed annuities for 20 years; while payments do not have the legal protections of pension benefits, as a practical matter states could not run successful lotteries if they did not plan to make full prize payments. If states can count on riding out ups and downs in investment markets and being almost certain of earning a risk premium, they would be wise to invest prize funds in risky assets and make additional contributions as needed if investment returns fall short, as they do with pension funds. Yet no state does this as far as we can tell. Instead, most appear to invest in conservative portfolios, often matching the cash flow characteristics of the prize payouts, or else they purchase annuities to pay prizes.⁴¹

Won't good returns follow bad, and vice versa, lowering the long-term risk?

A second common but erroneous corollary is that risks for pension plan investments are less than we might expect over the long term because bad spells in investment markets will be followed by periods of good returns and vice versa. This is sometimes called “mean reversion” or “time diversification” – the idea that investment returns may revert to the average (or mean) over time, thus providing benefits similar to diversification. If this is true and substantial, then long-run risk would not be as great as Figure 4 suggests, which assumes that returns are independent from year to year.

There has been a great deal of academic research into this topic and the results are mixed. Much of the work is specific to stock market returns, although our concern must be broader: the presumption that pension funds will eventually get their returns typically pertains to portfolios as a whole.

Two early frequently cited papers by Poterba and Summers and by Fama and French, published in 1988, concluded that there was evidence of long-term mean reversion in stock market returns between 1926 and 1985, generally for period lengths of 3–5 years.⁴² This view was popularized by the book, *Stocks for the Long Run*, by Jeremy Siegel, which analyzed two centuries of stock returns.⁴³ However, that work may have been misinterpreted. According to the author, “I never said that that means stocks are safer in the long run.... We know the standard deviation of the average [return] goes down when you have more periods... What I pointed out here is that the standard deviation for stocks goes down twice as much—twice as fast as random walk theory would predict. In other words, they are relatively safer in the long run than random walk theory would predict. Doesn't mean they're safe.”⁴⁴

Recent research generally concludes that either there is no evidence for long-term mean reversion, or that the evidence is

mixed and has been limited to specific markets such as United States equities, or that mean reversion is more than offset by other factors. Jorion pointed out shortcomings in past research, particularly its reliance on U.S. equities. He expanded the sample to 15 countries and concluded, “The results are not reassuring. We find no evidence of long-term mean reversion in the expanded sample. Downside risk declines very little as the horizon lengthens.”⁴⁵ Dimson, Marsh, and Staunton examined stock market data for 20 countries over 113 years and concluded, “much of the popular evidence for mean reversion is attributable to optical illusions that employ perfect hindsight... We find that, without the benefit of foresight, the evidence on mean reversion is weak. Market-timing strategies based on mean reversion may even give lower, not higher, returns.”⁴⁶

Research by Pastor and Stambaugh concluded that there is evidence for mean reversion but other factors such as uncertainty about parameters (we don’t know the true mean or standard deviation of expected investment returns) more than outweigh mean reversion and make long-run asset values and compounded returns more uncertain than those in the short run, “Mean reversion contributes strongly to reducing long-horizon variance but is more than offset by various uncertainties faced by the investor.... We find that stocks are actually more volatile over long horizons from an investor’s perspective.”⁴⁷

The Pastor-Stambaugh conclusion about uncertainty of parameters bears elaboration: Pension plans are subject to two kinds of risk. The first risk is that returns in any given year will be higher or lower than the long-run expected return, even if plans’ long-run assumptions are accurate. This risk is the focus of much of this report. But in addition to this year-to-year volatility, plans face a second major risk: neither they, nor anyone, truly knows what to expect for returns over the long run. Investment advisors and others develop estimates based on their analysis of financial markets, but they are just estimates, and they could be quite wrong. Because plans don’t truly know what returns might be over the long run, they face much greater investment return uncertainty than can be summarized in our shorthand measure of year-to-year volatility, the standard deviation.

Academic and practitioner research does not rule out mean reversion but it hardly suggests that investors can count on mean reversion in the future, particularly for a diversified portfolio that consists of global stocks, bonds, and other assets.

To the extent there is mean reversion in investment returns, empirical analyses suggest that it is not large. Marlena Lee simulated the impact of mean reversion with a model that used historical sequences of global stock returns, thus incorporating any mean reversion that was in historical data. She concluded that this mean reversion did reduce long-run volatility, but only had a mild impact on overall simulation results.⁴⁸

Thus, research suggests that there is mixed evidence for mean reversion, and that it is not likely to have a major impact on investment volatility. Because it takes decades to accumulate sufficient returns to observe patterns over time, this question is unlikely to be answered more definitively anytime soon.

Risk taking has a cost – that’s why insuring against shortfalls is so expensive – a cost that grows with time

Finally, economist Zvi Bodie offered evidence against mean reversion based on analysis of option pricing (the cost of insuring against shortfalls in investment income). He concluded, “If it were true that stocks are less risky in the long run, then the cost of insuring against earning less than the risk-free rate of interest should decline as the length of the investment horizon increases. But the opposite is true.”⁴⁹ In essence, public plans offer a guarantee against long-run market risk. The cost of these options rises as the duration of the guarantee lengthens, rather than falling as mean reversion would suggest.⁵⁰

Will public pension funds outperform other investors? Historically they have not.

While it is attractive to think that public pension funds might be better investors than their private sector peers, that is not what history and research shows. Several recent studies show that U.S. public pension funds have earned lower returns in public equities (e.g., stocks) than other investors, and that they have also underperformed in private equity and real estate.⁵¹ Recent research concluded that U.S. public pension funds underperform other pension funds by 34 to 58 basis points annually and that this is related to their allocation to risky assets, with the underperformance greater for the more mature public pension funds.⁵² Although public pension funds have not outperformed other investors, some evidence suggests that they have taken more risk than is needed for their expected rates of return.⁵³ ■

The second part of this article will appear in the next issue of In The Public Interest which will be published in early 2018.



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ENDNOTES

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- The private U.S. plan rates are liability discount rates as reported in Aleksandar Andonov, Rob Bauer, and Martijn Cremers, "Pension Fund Asset Allocation and Liability Discount Rates," Available at SSRN 2070054, March 2016, http://papers.ssrn.com/sol3/Papers.cfm?abstract_id=2070054. These can differ from earnings assumptions but generally move similarly. We are unaware of a source for private pension fund earnings assumptions.
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- The source is the Financial Accounts of the United States from the Federal Reserve Board. We define equity-like investments to include corporate equities, directly owned real property, and an allocated share of mutual funds and certain other assets (Financial Accounts code FL223093043); we allocated the latter using the share that corporate equities are of mutual fund assets for the economy as a whole. We do not treat as equity-like investments the following: (1) cash and short-term assets such as time deposits, money market funds, checkable deposits, and repurchase agreements, (2) debt securities, and (3) mortgage loans, although some securities in the latter two categories clearly can be risky.
- There are other important ways of measuring and evaluating risk, but the standard deviation is widely used, widely understood, and generally very useful. For a discussion of an approach to thinking about risk that attempts to limit large losses, see Ranji Nagaswami, "The Road Ahead: Rethinking the Investment Policy Roadmap," *Rotman International Journal of Pension Management* 5, no. 1 (2012): 42, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2061693.
- This assumes that investment returns are normally distributed. While much research examines ways in which investment returns deviate from normality, normality often is a good first approximation.
- This is what we would expect to happen over a sufficiently long time period, if our 8 percent and 12 percent assumptions are correct. Actual outcomes could be very different, over shorter time periods.
- And this may be optimistic. A recent analysis by Callan Associates, reported on in the Wall Street Journal, suggested that a portfolio with an expected compound return of 7.5 percent would have a standard deviation of about 17.2 percent. See Jay Kloepper and Julia Moriarty, "Risky Business" (Callan Institute, September 2016).
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- This analysis is similar to and an elaboration on a discussion in Andrew G. Biggs, "The Public Pension Quadrilemma: The Intersection of Investment Risk and Contribution Risk," *The Journal of Retirement*, Summer 2014.
- Taxes are not the only revenue source available for state and local governments to pay pension contributions. Some contributions may be supported in part by fees, or even in part by revenue from the federal government. However, based on our experience with state and local government finances we do not believe these other sources play a significant role and we don't believe including them would alter the trend over time. In addition, state and local governments could devise other revenue sources, so another useful measure of capacity to pay is gross domestic product. When GDP is the denominator, the trends over time are virtually identical to those shown in the table.
- The 1 in 6 statement assumes normally distributed investment returns.
- Authors' analysis of U.S. Census Bureau, 2013 Annual Surveys of State and Local Government Finances.

- 20 Based on 30-year amortization as a level percentage of pay. We ignore asset smoothing for purposes of the example. Assumes a shortfall of \$426.5 billion, an 8 percent interest rate, and a 3.5 percent annual growth rate in payments.
- 21 Based on authors' analysis of data from U.S. Bureau of the Census, Annual Surveys of State and Local Government Finances, 2013 (<http://www.census.gov/govs/local/>). Assumes shortfall would be amortized over 30 years as a level percentage of payroll, with annual payroll growth of 3 percent.
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- 26 In several ways these numbers understate what it would take to reduce risk: they are based on estimates, assume no payments to reduce unfunded liabilities, and they were calculated by the U.S. Bureau of Economic Analysis using a discount rate based upon high-quality corporate bond rate that is considerably higher than risk free rates.
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- 31 They defined risky assets as public equities, alternative assets, and risky fixed income such as high yield bonds.
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- 33 For concise review of important academic research on the appropriateness of equity investing by public pension funds, see Alicia H. Munnell, *State and Local Pensions: What Now?*, 1st ed. (Brookings Institution Press, 2012), 65–67. and Jeffrey R. Brown, Robert L. Clark, and Joshua D. Rauh, "The Economics of State and Local Pensions," *Journal of Pension Economics and Finance* 10, no. 2 (2011): 165–66, doi:10.1017/S1474747211000138. Brown et al. 2011, pp.165-166
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