Research Potpourri

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Aggregate Public Pension Funding Level, FY 01 to FY 15

Public Fund Survey
July 2016
Median Change in Actuarial Value of Assets and Liabilities, FY 02 to FY 15
Latest Public Pension Funding Levels

Size of bubbles is roughly proportionate to size of plan liabilities
Median change in membership, FY 01 to FY 15
Median Contribution Rates, Social Security-eligible and -ineligible, FY 02 to FY 15

*Public Fund Survey*  
July 2016
Distribution of Employer Contribution Rates, Social Security-eligible, FY 15, (general employees and teachers)

Median = 12.88%
Distribution of Employer Contribution Rates, Social Security-ineligible, FY 15
(general employees and teachers)

Public Fund Survey

Median = 17.89%
Distribution of Percentage of Pension Plan Normal Cost* Paid By Employees

*Normal cost is the cost of benefits accrued each year
Median and Aggregate Net Cash Flow, FY 02 to FY 15

Net cash flow equals contributions minus benefit payments and expenses, divided into assets.
Distribution of Net Cash Flow and Size of Benefits Distributed, FY 15

Size of bubbles is roughly proportionate to amount of benefits distributed.
Median Annual Change in Payroll, FY 06 to FY 15

Public Fund Survey
Median Annual Change in Payroll, Employment, and Wages and Salaries, FY 06 to FY 15

Public Fund Survey
The Role of Inflation in Public Pension Funding

- The inflation assumption typically serves as the basis of actuarial assumptions for payroll growth and investment return.
- Payroll growth is a major driver of liability growth.
- The investment return assumption has a major effect on a pension plan’s cost and funding level.
Annual Change in CPI-U for Periods Ended in June, 1992-2016

US Bureau of Labor Statistics
10-Year Rolling Average Inflation (CPI-U)

US Bureau of Labor Statistics
Expectations for Inflation Over the Next 10 Years

Fed target = 2.0%

Cleveland Fed
Yields on 10-Year Notes: US, Germany and Japan, Jan-03 to Jul-16
Change in Distribution of Investment Return Assumptions, FY 01 to Present

Change in Distribution of Public Pension Investment Return Assumptions, FY 01 to present

Fiscal Year

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 latest

%
8.5
>8.0 < 8.5
8.0
>7.5 < 8.0
>7.0 - 7.5
>7.0 - 7.5
8.0
>8.0 < 8.5
8.5

Median = 7.50%

< 7.0

Public Fund Survey, NASRA Sep-16
Change in Average Assumption for Inflation and Real Rate of Return, FY 05 to FY 15

Public Fund Survey
Median Annualized Public Pension Fund Investment Returns for Periods Ended 6/30/16
• Policy discussion of elements pertaining to public pension plan design, cost, financing, etc.

• Comprehensive data set
  – COLA formulas
  – Employee contribution rates
  – Investment return assumptions
  – Percentage of ARC/ADC received
Updated Issue Brief: Public Pension Plan Investment Return Assumptions

NASRA Issue Brief: Public Pension Plan Investment Return Assumptions
Updated February 2016

As of September 30, 2015, state and local government retirement systems held assets of $3.36 trillion. These assets are held in trust and invested to pre-fund the cost of pension benefits. The investment return on these assets matters, as investment earnings account for a majority of public pension financing. A shortfall in long-term expected investment earnings must be made up by higher contributions or reduced benefits.

Funding a pension benefit requires the use of projections, known as actuarial assumptions, about future events. Actuarial assumptions fall into one of two broad categories: demographic and economic. Demographic assumptions are those pertaining to a pension plan’s membership, such as changes in the number of working and retired plan participants when participants will retire, and how long they’ll live after they retire. Economic assumptions pertain to such factors as the rate of wage growth and the future expected investment return on the fund’s assets.

As with other actuarial assumptions, projecting public pension fund investment returns requires a focus on the long term. This brief discusses how investment return assumptions are established and evaluated, and compares these assumptions with public funds’ actual investment experience.

Some critics of current public pension investment return assumptions point out that current issue interest rates and volatile investment markets require public pension funds to take on excessive investment risk to achieve their assumption. Because investment earnings account for a majority of revenue for a typical public pension fund, the accuracy of the assumption has a major effect on the plan’s finances and actuarial funding level.

An investment return assumption that is set too low will overstress liabilities and costs, causing current taxpayers to be overcharged and future taxpayers to be undercharged. A rate set too high will understate liabilities, undercharging current taxpayers at the expense of future taxpayers. As an assumption that is significantly wrong in either direction will cause a misallocation of resources and unfairly distribute costs among generations of taxpayers.

Although public pension funds, like other investors, experienced subpar returns in the 2008–09 decline in global equity markets, and in 2015, median public pension fund returns over a longer period exceed the assumed rate used by most plans. Specifically, as shown in Figure 1, the median annualized investment return for the 25-year period ended December 31, 2015, exceeds the average assumption of 7.62 percent.

1Federal Reserve, Flow of Funds Accounts of the United States: Issuers and Outstandings, Second Quarter 2015, Table L.330

Figure 1: Median Public Pension Plan Investment Return Assumptions

<table>
<thead>
<tr>
<th>Years ended 12/31/15</th>
<th>1</th>
<th>3</th>
<th>5</th>
<th>10</th>
<th>20</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median annualized %</td>
<td>7.5</td>
<td>7.0</td>
<td>7.6</td>
<td>7.2</td>
<td>8.3</td>
<td>8.3</td>
</tr>
</tbody>
</table>

Of all actuarial assumptions, investment return assumption has the most significant impact on pension liabilities and costs.

Plans continue to reduce investment return assumptions.

The median investment return for the 25-year period ended 12/31/15 exceeds the current average return assumption.
• Cash balance and combination hybrid plans are optional or mandatory for groups of general, public safety, or educational employees

• Many hybrid plans retain all or most distinguishing elements of sound retirement plan design

• Many public plans already feature elements of hybrid plan design
Pensions accounted for approximately 4.1 percent of all state and local government general expenditures in FY 13.

Spending by state varies widely, from around 1.6 percent to nearly 8 percent.

Spending on pensions is projected to increase in FY 14, but still below levels observed in prior years.
Employer (taxpayer) Spending on Public Pensions, 1985 to 2014


PE6-27
Receipt of full actuarially determined contributions are vital to pension plan funding and sustainability.

State and local government funding discipline improved in FY 14.

Individual state contribution experiences vary widely.
Distribution of ARC/ADC Received by 112 Plans, FY 14

Median and Average ARC/ADC Received by 112 Plans, FY 01 to FY 14


PE6-30
Significant Reforms to State Retirement Systems

Executive Summary

Although states have a history of making adjustments to their workforce retirement programs, changes to public pension plan design and financing have never been more numerous or significant than in the years following the Great Recessions. The global stock market crash sharply reduced state and local pension fund asset values, from $3.5 trillion at the end of 2007 to $2.3 trillion in March 2009. And due to this loss, pension costs increased. These higher costs hit state and local governments just as the economic recession began to severely lower their revenues. These events played a major role in prompting changes to public pension plans and financing that were unprecedented in number, scope and magnitude.

Since this time, every state passed meaningful reform to one or more of its pension plans. Although the global market crash and recession affected all plans, differing plan designs, budgets and legal frameworks across the country dictated a single solution, instead, each state met its challenges with tailored changes specific to its unique circumstances.

For example, some states faced legal limitations on how much modifications could be made to their existing retirement plans. Other states did not request major changes due to their financial condition or the presence of automatic adjustments in their plan designs.

Balanced Objectives

Public pension reforms typically adjusted retirement plan provisions while balancing multiple stakeholder objectives:

- For employees, competitive compensation that includes income security in retirement,
- For employers, a management tool to maximize the training and experience invested in their employees, and
- For taxpayers, public services performed in the most effective and cost-efficient manner.

These objectives can both conflict with and complement one another. Retirement plan reforms focused on one of these goals, to the exclusion of others, are likely to produce unintended negative outcomes. While public pension changes took different forms throughout the country, reforms generally kept those core features known to balance retirement security, workforce management, and economic efficiencies sought by stakeholders, namely:

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States that reformed pension plans by year, 2007-2015
States That Increased Employee Contributions

“Significant Reforms to State Retirement Systems,” NASRA 2016
States That Reduced Pension Benefits

“Significant Reforms to State Retirement Systems,” NASRA 2016
States That Reduced Automatic COLAs

“A significant reduction in cost of living adjustments (COLAs) has been implemented in certain states, significantly affecting new hires and current employees. This chart highlights the states involved in these reforms.”

“Significant Reforms to State Retirement Systems,” NASRA 2016
States That Established New Hybrid Plans

“Significant Reforms to State Retirement Systems,” NASRA 2016

Plan Type  | Combination hybrid | Cash balance
New York State and Local Retirement System

Types of Pension Changes

Increased Employee Contributions • Reduced Pension • Increased Age/Service Requirements

Overview

The New York State & Local Retirement System (NYSERS) administers pension and other benefits for substantially all public employees, excluding school teachers, outside of New York City. The state comptroller serves as sole trustee and administrative head of the system. The system administers two plans: the ERS and the Police and Fire Retirement System. The plans administer six benefit tiers; membership in each tier is determined by the employee’s date of entry into the plan. Differences among the tiers are primarily the age of eligibility for retirement and required employee contributions.

In 2009 and again in 2012, the New York legislature created new tiers for newly hired teachers. Members of Tier V, who are hired between 1/1/10 and 4/1/12, contribute a greater percentage of their salary toward their pension, and are required to work longer to become eligible to receive a retirement benefit. Members of Tier VI, who are hired as of 4/1/12, receive reduced retirement benefits, contribute a greater percentage of their salary toward their pension, and are required to work longer to qualify for an unreduced retirement benefit. A member of Tier VI is estimated to have an initial benefit that is approximately 7 percent less than a member of Tier V.

The governor’s office estimates that the state will save $874 million over 10 years as a result of the changes approved in 2012. New York City, whose retirement plans are also subject to these reforms, will save $1.8 billion and other member governments and authorities will cumulatively save $5 billion, for a total of about $5.9 billion over 10 years.

Reform Detail

<table>
<thead>
<tr>
<th>Year</th>
<th>Affected Worker Groups</th>
<th>Modifications</th>
</tr>
</thead>
</table>
| 2012   | New hires as of 4/1/12 | • Lengthened the period used to calculate final average salary, from 3 years to 5 years.  
  • Increased employee contributions, from 3% of salary to a sliding scale based on salary, from 3% to 6%.  
  • Reduced the retirement multiplier for members with up to 20 years of service credit, from 2.0% to 1.75%; for members with more than 20 years of service credit, from 60% of final average salary plus 1.5% per year to 35% of final average salary plus 2% per year.  
  • Increased the retirement age to qualify for a normal (unreduced) benefit with 10 years of service, from 62 to 63. |
| 2009   | New hires as of 1/1/10 | • Increased the vesting period from 5 years to 10 years.  
  • Extended the period during which participants must contribute to the plan (3% of salary) from the first 10 years of service to as long as they are participating.  
  • Eliminated eligibility for a normal (unreduced) benefit at age 55 with 30 years of service.  
  • Increased the benefit reduction for retirement at age 55, from 27.0% to 38.33%. |
Final Reform Thoughts

• Most states retained plan features known to promote retirement plan sustainability and balance stakeholder objectives
• While most states retained their defined benefit plan, a greater share of the risk of accumulating and funding benefits was shifted to employees
• Generally, reforms were calibrated to states’ specific conditions
Annualized Quarterly Change in Wages and Salaries for Private and State and Local Government Employees, 2006-2016

U.S. Bureau of Labor Statistics

PE6-42
Total Public Pension Assets at Year-End, FY 03 to FY 15

Federal Reserve

Year: 03 04 05 06 07 08 09 10 11 12 13 14 15

Assets (in Trillions): $2.34 $2.57 $2.72 $3.05 $3.29 $2.54 $2.84 $3.1 $3 $3.55 $3.75 $3.62
Retirement Research

- Pension Protection Act & DB Plans 10 years later
- DB Pensions Effective and Efficient Workforce Management
- Pension Fairness
- DB Benefits: Security for Retirees and Jobs in the Economy
Pension Protection Act at 10: Impact on Private DB Plans

• NIRS Findings in 2011
  – Switching to DC plans, employers cut their cost by almost half and employees now pay the bulk of costs.
  – Federal and accounting regulations impacted cash flow and added volatility to plan funding.
  – Private sector industry changes have seen fewer new industries offering pensions.
  – Imperfect knowledge for employees preferences for traditional DB plans.
Pension Protection Act of 2006: Private Sector Cost Volatility Spurred Pension Freezes

Fortune 1000 Companies Pension Freezes, 1989-2011
Pension Protection Act at 10: Impact on DB Plan Investments

Public and Private Funds Similar Asset Allocation until 2006
Strengths of Defined Benefit Plans: Save Money Compared to DC Plans

- Pool the longevity risk.
- Maintain optimally balanced investment portfolio.
- Achieve higher investment returns as compared to individual investors.
DB Pension Provides Lowest Cost

NIRS looked at 3 plan designs and the cost to provide 58% of final salary.

Contributions based on payroll

16.3% 23.0% 31.3%

Figure 7: Per Employee Amount Required at Age 62 DB Plan vs. DC Plan
COPERA (DB and Member Account): Lowest Cost to Provide Benefit

Source: Colorado PERS summary of data from Colorado State Auditor and GRS report

PE6-52
COPERA (DB and Member Account): Highest Income Replacement

Colorado PERA delivers better benefits for all employment situations compared to all designs.

Source: Colorado PERS infographic, 2015
• DBs may improve public sector productivity:
• Pensions enable public employers to recruit and retain quality workers from the private sector and moving to a DC design could affect recruitment, retention, productivity among this workforce.
• DB plans encourage “efficient retirement,” which is eliminates “job lock” when workers with DC plans cannot retire.
DB Pensions: Relationship to Higher Public Sector Median Employee Tenure

Median years of tenure with current employer for private and public sector employees, 1996–2012

Retirement Benefits More Important Than Salary For Public Employees

Figure 24: Retirement Benefits are Significantly More Important to Public Workers as Compared to Private Sector Workers

When making job decisions, how important are the following job features to you?

- Salary Extremely or Very Important
- Retirement Benefits Extremely or Very Important

PUBLIC SECTOR EMPLOYEES
- Salary: 57%
- Retirement Benefits: 88%

PRIVATE SECTOR EMPLOYEES
- Salary: 82%
- Retirement Benefits: 65%

Source: NIRS Retirement Security 2015
Critics of Public Pension Argue Fairness to push DC and CP Plans

FIGURE 1.
Teacher Retirement Benefits and Teacher Attrition, New York City

Source: Authors' calculations based on data from the New York City Department of Education and the Teachers' Retirement System of the City of New York
Investment Risk: Pension Funding and Erratic DC Income Replacement

Critics: risky doubling of allocation to Alternatives.

More Women Are Working as They Approach Retirement

Labor force participation among women aged 55 to 64 climbed from 53% in 2000, to 59% in 2015.
The 3% Eligibility Gap Between Men and Women Lowers Women’s Retirement Plan Participation

In 2012, 9% of women were not eligible for their employers’ retirement plans, while just 6% of men were not eligible.

Source: NIRS Shortchanged in Retirement: Continuing Challenges to Women’s Retirement Future, 2016
Women and Retirement Investing

- Vanguard DC account values: Median for women is $22,212 compared to $33,001 and Average of $75,771 for women and $115,835 for men.
- Barber and Odean found that female investors had better rates of return than male investors.
- Women hold more balanced portfolios than men and invested more age appropriately. (Vanguard and Fidelity)
- Women contributed 6.9% of salary to DC accounts while men contributed 6.8% in 2015, down from 7.3% in 2006.

Women Have 26% Less Household Income than Men 65 and Over

Typical household income for men age 65 and over was $48,280 and for women age 65 and over it was $35,810.

Source: NIRS Shortchanged in Retirement: Continuing Challenges to Women’s Retirement Future, 2016
Sources of Household Income Shift as Women and Men Grow Older

Men’s 25% higher income advantage widens to a 44% income advantage for men 80 and older.

Social Security provides a greater share of income with age, while wage income declines with age.

DB pension income accounts for about 1/5 of income for most men and women across the age groups.

Source: NIRS Shortchanged in Retirement: Continuing Challenges to Women’s Retirement Future, 2016
Sources of Income By Ethnicity: Latina Women Face Largest Gap

Figure 9: The composition of median household income in relation to the Elder Index, for men and women, age 65 and over, by ethnicity, in 2013.
All Women Have Lower Incomes than Men by Marital Status; Single Women Challenged to Meet Basic Expenses
Women Are 80% More Likely To Live in Poverty Than Men

Women aged 75-79 are three times as likely to live in poverty, compared to men.

Women who are widowed have a poverty rate more than twice that of widowers.

Rates of poverty among Black and Latina women greatly exceed those of Black and Latino men.

Source: NIRS Shortchanged in Retirement: Continuing Challenges to Women's Retirement Future, 2016
Pensionomics 2016: Update Impact of Retirees’ Spending in Our Economies
Pensionomics 2016: Key Findings On Economy

• Expenditures from public and private pension benefits supported . . .
  – Over $1.2 trillion in economic output nationwide
  – Over 7.1 million jobs that paid over $355 billion in income
  – Over $627 billion in value added nationally
  – $190 billion in federal, state, and local tax revenue
Pension Expenditure Multiplier and Taxpayer Investment Factor

**Pension Expenditure Multiplier**

$1.00
pension benefits paid to retirees with DB pension income

$2.21
total output

**Taxpayer Investment Factor**

$1.00
contributed by taxpayers to state and local pensions over 30 years

$9.19
total output
State-by-State Analysis of Impact from State & Local Pensions
• Public pension funding levels are stabilizing, at least temporarily, but funding experience and required costs vary widely
• Investment returns in recent years are likely to reduce funding levels
• Liability growth rates remain low due to slow hiring, low inflation and salary growth, and benefit reductions
• Pension challenges vary from state to state and plan to plan; every case is unique
• An abundance of research on public pensions is available at www.nasra.org
• PPA had unintended consequences that increase retirement insecurity for future retirees.
• DB Pensions help manage workforces
• For women: Longevity, work history, income and change in marital status pose challenges.
• DB pensions help women as worker and spouses
• Pension benefits support U.S. economy
2017 Educational Programs
Public Plans

63rd Annual Employee Benefits Conference
October 22-25, 2017 | Las Vegas, Nevada
www.ifebp.org/usannual

Public Sector Benefits Institute
Held in conjunction with Trustees and Administrators Institutes
February 20-22, 2017
Lake Buena Vista (Orlando), Florida
www.ifebp.org/psbinstitute

Benefits Conference for Public Employees
System Highlight: Ohio Public Employees Retirement System (OPERS)
April 25-26, 2017 | Columbus, Ohio
www.ifebp.org/publicemployee

Certificate of Achievement in Public Plan Policy (CAPPP®)
Part I and Part II, June 13-16, 2017
San Jose, California
Part II Only, October 21-22, 2017
Las Vegas, Nevada
www.ifebp.org/cappp

Fraud Prevention Institute for Employee Benefit Plans
July 17-18, 2017 | Chicago, Illinois
www.ifebp.org/fraudprevention

Related Reading
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Employee Benefits Glossary, 13th Edition
Item #7570
www.ifebp.org/glossary