NASRA Issue Brief:
Public Pension Plan Investment Return Assumptions

Updated May 2015

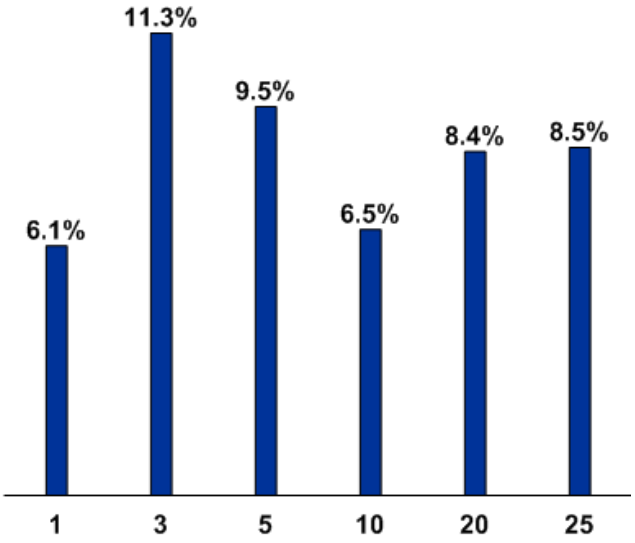
As of December 31, 2014, state and local government retirement systems held assets of $3.78 trillion.[1] These assets are held in trust and invested to pre-fund the cost of pension benefits. The investment return on these assets matters, as investment earnings account for a majority of public pension 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 assumption levels say that current low 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.

Figure 1: Median public pension annualized investment returns for period ended 12/31/2014



Source: Callan Associates

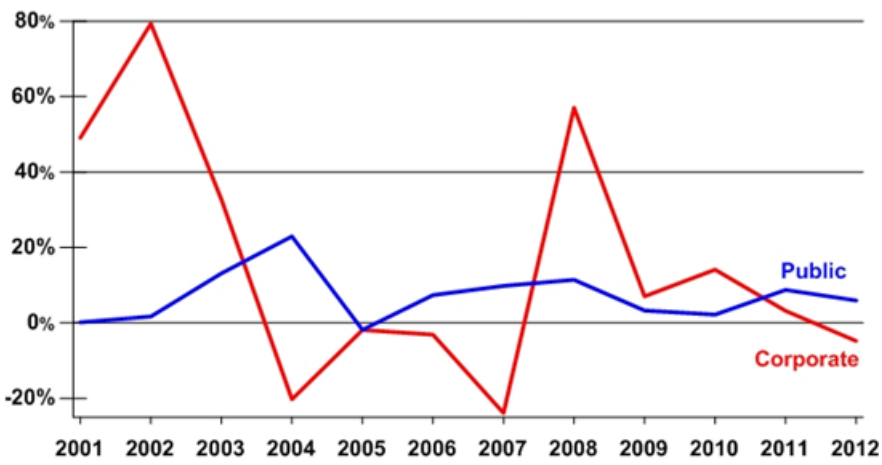
An investment return assumption that is set too low will overstate liabilities and costs, causing current taxpayers to be overcharged and future taxpayers to be undercharged. A rate set too high will understate liabilities, undercharging current taxpayers, at the expense of future taxpayers. An assumption 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 sub-par returns in the wake of the 2008-09decline in global equity values, median public pension fund returns over longer periods meet or exceed the assumed rates used by most plans. As shown in Figure 1, the median annualized investment return for the 3-, 5-, 20- and 25-year periods ended December 31, 2014, exceeds the average assumption of 7.68 percent (see Figure 5), while the 10-year return is below this level.

[1] Federal Reserve, *Flow of Funds Accounts of the United States: Flows and Outstandings, Fourth Quarter 2014*, Table L.118

Public retirement systems typically follow guidelines set forth by the Actuarial Standards Board to set and review their actuarial assumptions, including the expected rate of investment return. Most systems review their actuarial assumptions regularly, pursuant to state or local statute or system policy. Actuarial Standards of Practice No. 27 (Selection of Economic Assumptions for Measuring Pension Obligations) (ASOP 27) prescribes the considerations actuaries should make in setting an investment return assumption. As described in ASOP 27, the process for establishing and reviewing the investment return assumption involves consideration of various financial, economic, and market factors, and is based on a very long-term view, typically 30 to 50 years. A primary objective for using a long-term approach in setting public pensions' return assumption is to promote stability and predictability of cost to ensure intergenerational equity among taxpayers.

Figure 2: Annual change in contributions from prior year, corporate vs. public pensions

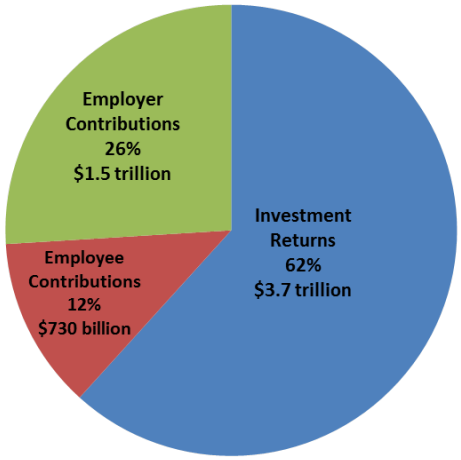


Source: Compiled by NASRA based on U.S. Department of Labor and U.S. Census Bureau data

Unlike public pension plans, corporate plans are required by federal regulations to make contributions on the basis of current interest rates. As Figure 2 shows, this method results in plan costs that are volatile and uncertain, often changing dramatically from one year to the next. This volatility is due in part to fluctuations in interest rates and has been identified as a leading factor in the decision among corporations to abandon their pension plans. By focusing on the long-term and relying on a stable investment return assumption, public plans experience less volatility of costs.

As shown in Figure 3, since 1984, public pension funds have accrued an estimated $5.9 trillion in revenue, of which $3.7 trillion, or 62 percent, is estimated to have come from investment earnings. Employer contributions account for $1.5 trillion, or 26 percent of the total, and employee contributions total $730 billion, or 12 percent.[2]

Figure 3: Public Pension Sources of Revenue, 1984-2013



Source: Compiled by NASRA based on U.S. Census Bureau data

Public retirement systems operate over long timeframes and manage assets for participants whose involvement with the plan can last more than half a century. Consider the case of a newly-hired public school teacher who is 25 years old. If this pension plan participant elects to make a career out of teaching school, he or she may work for 35 years, to age 60, and live another 25 years, to age 85. This teacher's pension plan will receive contributions for the first 35 years and then pay out benefits for another 25 years. During the entire 60-year period, the plan is investing assets on behalf of this participant. To emphasize the long-term nature of the investment return assumption, for a typical career employee, more than one-half of the investment income earned on assets accumulated to pay benefits is received *after* the employee retires.

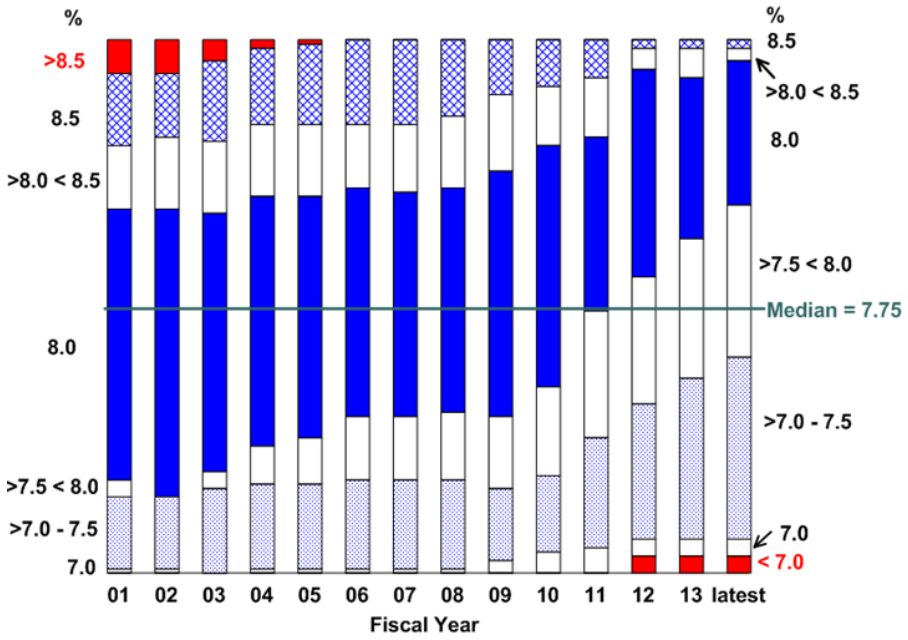
[2] US Census Bureau, Annual Survey of Public Pensions, State & Local Data

The investment return assumption is established through a process that considers factors such as economic and financial criteria; the plan's liabilities; and the plan's asset allocation, which reflects the plan's capital market assumptions, risk tolerance, and projected cash flows.

Standards for setting an investment return assumption, established and maintained by professional actuaries, recommend that actuaries consider a range of specified factors, including current and projected interest rates and rates of inflation; historic and projected returns for individual asset classes; and historic returns of the fund itself. The investment return assumption reflects a value within the projected range.

As shown in Figure 4, many public pension plans have reduced their return assumption in recent years. Among the 126 plans measured in the Public Fund Survey, more than one-half have reduced their investment return assumption since fiscal year 2008. The average return assumption is 7.68 percent. Appendix A details the assumptions in use or adopted by the 126 plans in the Public Fund Survey.

Figure 4: Change in distribution of public pension investment return assumptions, FY 01 through May 2015

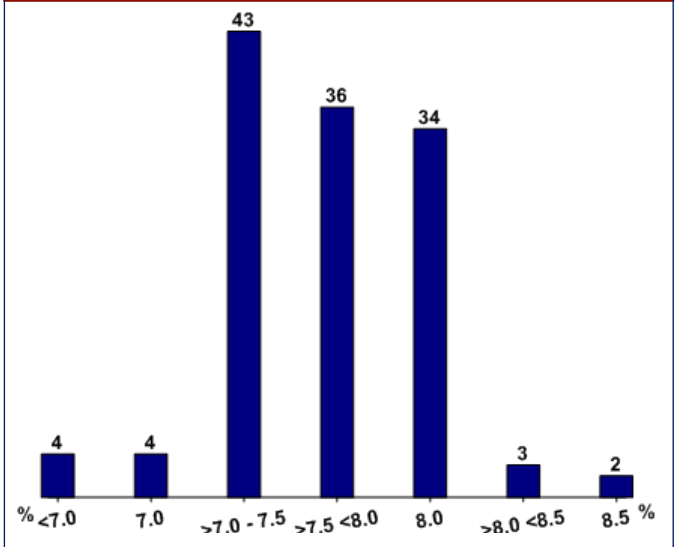


Source: Compiled by NASRA based on Public Fund Survey

Conclusion

Over the last 25 years, a period that has included three economic recessions and four years when median public pension fund investment returns were negative, public pension funds have exceeded their assumed rates of investment return. Changes in economic and financial conditions are causing many public plans to reconsider their investment return assumption. Such a consideration must include a range of financial and economic factors while remaining consistent with the long timeframe under which plans operate.

Figure 5: Distribution of investment return assumptions



Source: Compiled by NASRA based on Public Fund Survey, May 2015

See Also:

- Actuarial Standards of Practice No. 27, Actuarial Standards Board
- The Liability Side of the Equation Revisited, Missouri SERS, September 2006
- The Public Fund Survey is sponsored by the National Association of State Retirement Administrators (registration required).

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Appendix A: Investment Return Assumption by Plan

(Figures reflect the nominal assumption in use, or announced for use, as of May 2015)

Plan	Rate (%)
Alaska PERS	8.00
Alaska Teachers	8.00
Alabama ERS	8.00
Alabama Teachers	8.00
Arkansas PERS	7.75
Arkansas Teachers	8.00
Arizona Public Safety Personnel	7.85
Arizona SRS	8.00
Phoenix ERS	7.50
California PERF	7.50
California Teachers	7.50
Contra Costa County	7.25
LA County ERS	7.50
San Diego County	7.75
San Francisco City & County	7.50
Colorado Affiliated Local	7.50
Colorado Fire & Police Statewide	7.50
Colorado Municipal	7.50
Colorado School	7.50
Colorado State	7.50
Denver Employees	8.00
Denver Public Schools	7.50
Connecticut SERS	8.00
Connecticut Teachers	8.50
DC Police & Fire	6.50
DC Teachers	6.50
Delaware State Employees	7.20
Florida RS	7.65
Georgia ERS	7.50
Georgia Teachers	7.50
Hawaii ERS	7.75
Iowa PERS	7.50
Idaho PERS	7.00
Chicago Teachers	7.75
Illinois Municipal	7.50
Illinois SERS	7.25
Illinois Teachers	7.50
Illinois Universities	7.25
Indiana PERF	6.75
Indiana Teachers	6.75
Kansas PERS	8.00
Kentucky County	7.75
Kentucky ERS	7.75
Kentucky Teachers	7.50
Louisiana SERS	7.75
Louisiana Teachers	7.75
Massachusetts SERS	7.75
Massachusetts Teachers	7.75
Maryland PERS[1]	7.65
Maryland Teachers[1]	7.65
Maine Local	7.13
Maine State and Teacher	7.13
Michigan Municipal	8.00
Michigan Public Schools	8.00
Michigan SERS	8.00
Duluth Teachers	8.00
Minnesota PERF	8.00
Minnesota State Employees	8.00
Minnesota Teachers[2]	8.40
St. Paul Teachers	8.00
Missouri DOT and Highway Patrol	7.75
Missouri Local	7.25
Missouri PEERS	8.00
Missouri State Employees	8.00
Missouri Teachers	8.00
St. Louis School Employees	8.00
Mississippi PERS	8.00
Montana PERS	7.75
Montana Teachers	7.75
North Carolina Local Government	7.25
North Carolina Teachers and State Employees	7.25
North Dakota PERS	8.00
North Dakota Teachers	8.00
Nebraska Schools	8.00
New Hampshire Retirement System	7.75
New Jersey PERS	7.90
New Jersey Police & Fire	7.90
New Jersey Teachers	7.90
New Mexico PERF	7.75

New Mexico Teachers	7.75
Nevada Police Officer and Firefighter	8.00
Nevada Regular Employees	8.00
New York City ERS	7.00
New York City Teachers	8.00
New York State Teachers	8.00
NY State & Local ERS	7.50
NY State & Local Police & Fire	7.50
Ohio PERS	8.00
Ohio Police & Fire	8.25
Ohio School Employees	7.75
Ohio Teachers	7.75
Oklahoma PERS	7.50
Oklahoma Teachers	8.00
Oregon PERS	7.75
Pennsylvania School Employees	7.50
Pennsylvania State ERS	7.50
Rhode Island ERS	7.50
Rhode Island Municipal	7.50
South Carolina Police	7.50
South Carolina RS	7.50
South Dakota PERS[3]	7.25
TN Political Subdivisions	7.50
TN State and Teachers	7.50

City of Austin ERS	7.75
Houston Firefighters	8.50
Texas County & District	8.00
Texas ERS	8.00
Texas LECOS	8.00
Texas Municipal	7.00
Texas Teachers	8.00
Utah Noncontributory	7.50
Fairfax County Schools	7.50
Virginia Retirement System	7.00
Vermont State Employees[4]	8.10
Vermont Teachers[4]	7.90
Washington LEOFF Plan 1[5]	7.90
Washington LEOFF Plan 2	7.90
Washington PERS 1[5]	7.90
Washington PERS 2/3[5]	7.90
Washington School Employees Plan 2/3[5]	7.90
Washington Teachers Plan 1[5]	7.90
Washington Teachers Plan 2/3[5]	7.90
Wisconsin Retirement System	7.20
West Virginia PERS	7.50
West Virginia Teachers	7.50
Wyoming Public Employees	7.75

1. The Maryland State Retirement Agency Board of Trustees began, with the actuarial valuation dated June 30, 2013, a phased reduction in the assumption used for its PERS and Teachers plans from 7.75 percent, by .05% each year until reaching 7.55.

2. The Minnesota Legislature is responsible for setting the investment return assumption for plans in the state. Legislation approved in 2015 established a rate of 8.0 percent for all plans except the TRA, which is using a select and ultimate rate pending completion of an actuarial experience study. For more information on select-and-ultimate rates, please see Actuarial Standards of Practice No. 27: http://www.actuarialstandardsboard.org/pdf/asops/asop027_145.pdf.

3. The SDRS set the rate at 7.25% through FY 2017, after which the rate will rise to 7.50% unless the SDRS board takes action otherwise.

4. The Vermont retirement systems adopted select-and-ultimate rates in 2011; the rates shown reflect the single rates most closely associated with the funding results for the respective plans, based on their projected cash flows.

5. For all Washington State plans except LEOFF Plan 2, the assumed rate of return will be reduced to 7.8% on July 1, 2015, and to 7.7% on July 1, 2017.