NASRA Issue Brief:
Public Pension Plan Investment Return Assumptions

Updated October 2014

As of June 30, 2014, state and local government retirement systems held assets of $3.70 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.
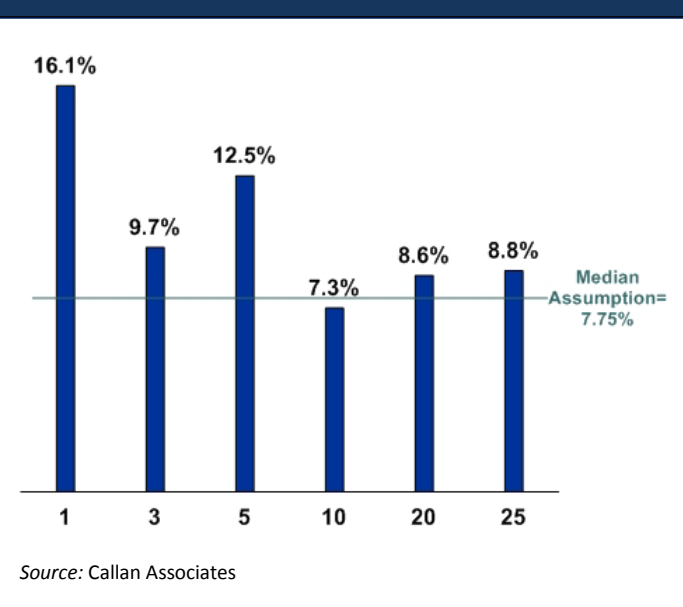
As with other actuarial assumptions, projecting public pension fund investment returns requires a focus on the long-term. This brief discusses how investment return assumptions are established and evaluated and compares these assumptions with public funds' actual investment experience.

Public pension fund investment return assumptions have been the focus of growing attention in recent years. 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 too much 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 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.

Figure 1: Median public pension annualized investment returns for period ended 6/30/2014

Source: Callan Associates

Although public pension funds, like other investors, experienced sub-par returns in the wake of the 2008-09 decline 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, at 8.8 percent, the median annualized investment return for the 25-year period ended June 30, 2014, exceeds the median assumption of 7.75 percent (see Figure 4), while the 10-year return is below this level.

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[1] Federal Reserve, *Flow of Funds Accounts of the United States: Flows and Outstandings, Second 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 in pension contributions, corporate vs. public

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.
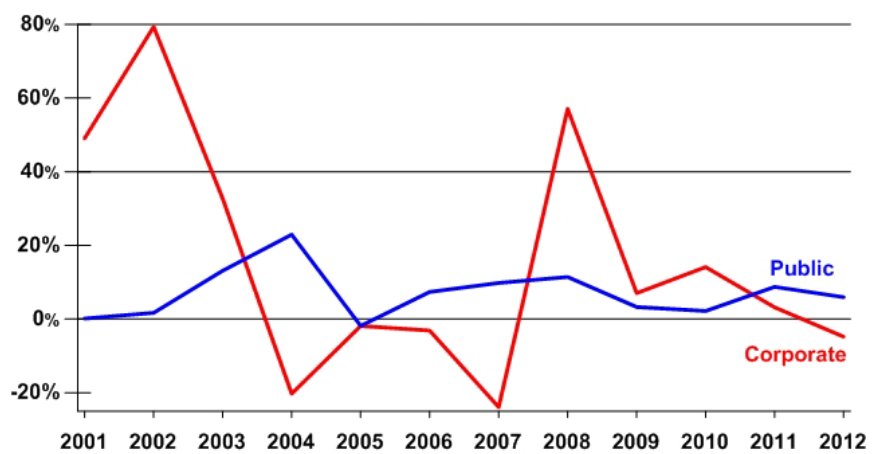
As Figure 3 shows, since 1983, public pension funds have accrued an estimated $5.3 trillion in revenue, of which $3.2 trillion, or 60 percent, is estimated to have come from investment earnings. Employer contributions account for $1.4 trillion, or 27 percent of the total, and employee contributions total $662 billion, or 13 percent.[i]

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.

Figure 3: Public Pension Sources of Revenue, 1983-2012

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

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.
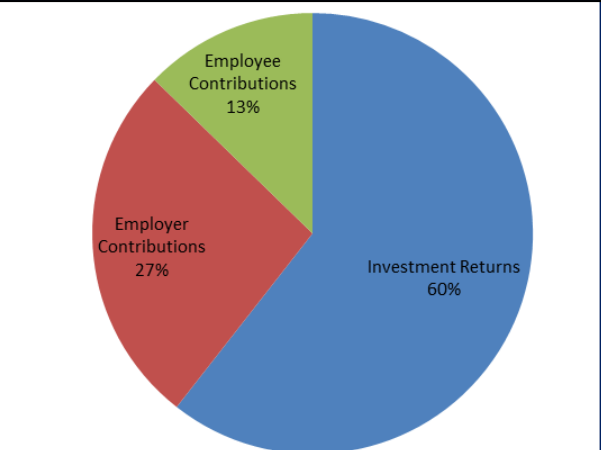
The investment return assumption is established through a process that considers factors such as economic and financial criteria; the plan's liabilities; and the plan's asset allocation, which reflects the plan's capital market assumptions, risk tolerance, and projected cash flows. Investment return assumptions for most public plans are composed of two components: the real return, and the rate of inflation. The sum of these figures equals the plan's

nominal investment return assumption, and most public pension plans regularly appraise each component of the nominal return pursuant to the aforementioned process.

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 median return assumption is 7.75 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 October 2014
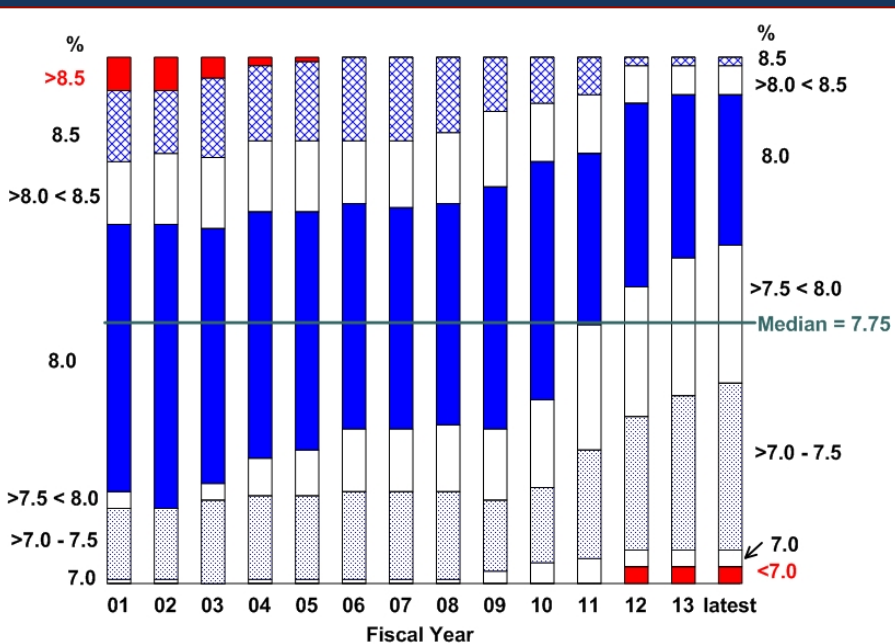
Source: Compiled by NASRA based on Public Fund Survey, Oct. 2014

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.

See Also:

- [Actuarial Standards of Practice No. 27](#), Actuarial Standards Board
- [The Liability Side of the Pension Equation](#), Missouri SERS, February 2012
- The [Public Fund Survey](#) is sponsored by the National Association of State Retirement Administrators and the National Council on Teacher Retirement (registration required)

Figure 5: Distribution of investment return assumptions

Source: Compiled by NASRA based on Public Fund Survey, Oct. 2014

Contact:

Keith Brainard, Research Director, keith@nasra.org
Alex Brown, Research Manager, alex@nasra.org
National Association of State Retirement Administrators, www.nasra.org
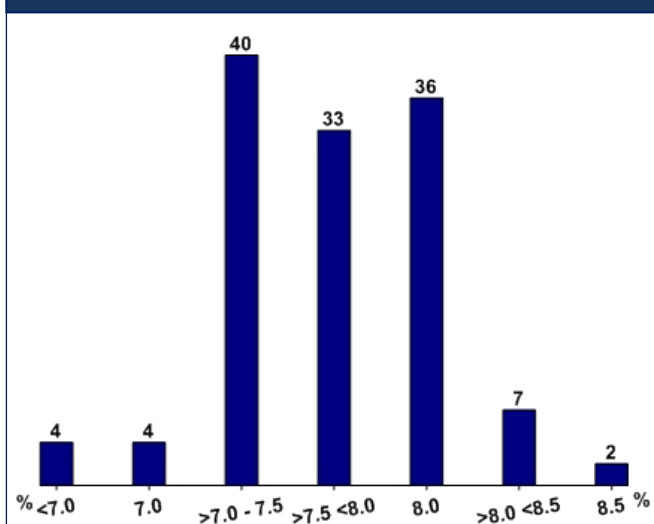
Appendix A: Investment Return Assumption by Plan

(Figures reflect the nominal assumption in use, or announced for use, as of October 2014)

Plan	Rate (%)		Plan	Rate (%)
Alabama ERS	8.00		Iowa PERS	7.50
Alabama Teachers	8.00		Kansas PERS	8.00
Alaska PERS	8.00		Kentucky County	7.75
Alaska Teachers	8.00		Kentucky ERS	7.75
Arizona Public Safety Personnel	7.85		Kentucky Teachers	7.50
Arizona SRS	8.00		LA County ERS	7.50
Arkansas PERS	8.00		Louisiana SERS[1]	7.75
Arkansas Teachers	8.00		Louisiana Teachers[1]	7.75
California PERF	7.50		Maine Local	7.25
California Teachers	7.50		Maine State and Teacher	7.125
Chicago Teachers	8.00		Maryland PERS[2]	7.65
City of Austin ERS	7.75		Maryland Teachers[2]	7.65
Colorado Affiliated Local	7.50		Massachusetts SERS	8.00
Colorado Fire & Police Statewide	7.50		Massachusetts Teachers	8.00
Colorado Municipal	7.50		Michigan Municipal	8.00
Colorado School	7.50		Michigan Public Schools	8.00
Colorado State	7.50		Michigan SERS	8.00
Connecticut SERS	8.00		Minnesota PERF[3]	8.40
Connecticut Teachers	8.50		Minnesota State Employees[3]	8.40
Contra Costa County	7.25		Minnesota Teachers[3]	8.40
DC Police & Fire	6.50		Mississippi PERS	8.00
DC Teachers	6.50		Missouri DOT and Highway Patrol	7.75
Delaware State Employees	7.50		Missouri Local	7.25
Denver Employees	8.00		Missouri PEERS	8.00
Denver Public Schools	7.50		Missouri State Employees	8.00
Duluth Teachers[2]	8.40		Missouri Teachers	8.00
Fairfax County Schools	7.50		Montana PERS	7.75
Florida RS	7.65		Montana Teachers	7.75
Georgia ERS	7.50		Nebraska Schools	8.00
Georgia Teachers	7.50		Nevada Police Officer and Firefighter	8.00
Hawaii ERS	7.75		Nevada Regular Employees	8.00
Houston Firefighters	8.50		New Hampshire Retirement System	7.75
Idaho PERS	7.00		New Jersey PERS	7.90
Illinois Municipal	7.50		New Jersey Police & Fire	7.90
Illinois SERS	7.25		New Jersey Teachers	7.90
Illinois Teachers	7.50		New Mexico PERA	7.75
Illinois Universities	7.25		New Mexico Teachers	7.75
Indiana PERF	6.75		New York City ERS	7.00
Indiana Teachers	6.75		New York City Teachers	8.00
			New York State Teachers	8.00

North Carolina Local Government	7.25	St. Paul Teachers[3]	8.40
NC Teachers and State Employees	7.25	Texas County & District	8.00
North Dakota PERS	8.00	Texas ERS	8.00
North Dakota Teachers	8.00	Texas LECOS	8.00
NY State & Local ERS	7.50	Texas Municipal	7.00
NY State & Local Police & Fire	7.50	Texas Teachers	8.00
Ohio PERS	8.00	TN Political Subdivisions	7.50
Ohio Police & Fire	8.25	TN State and Teachers	7.50
Ohio School Employees	7.75	Utah Noncontributory	7.50
Ohio Teachers	7.75	Vermont State Employees[5]	8.10
Oklahoma PERS	7.50	Vermont Teachers[4]	7.90
Oklahoma Teachers	8.00	Virginia Retirement System	7.00
Oregon PERS	7.75	Washington LEOFF Plan 1[6]	7.90
Pennsylvania School Employees	7.50	Washington LEOFF Plan 2	7.50
Pennsylvania State ERS	7.50	Washington PERS 1[6]	7.90
Phoenix ERS	8.00	Washington PERS 2/3[6]	7.90
Rhode Island ERS	7.50	Washington School Employees Plan 2/3[6]	7.90
Rhode Island Municipal	7.50	Washington Teachers Plan 1[6]	7.90
San Diego County	8.00	Washington Teachers Plan 2/3[6]	7.90
San Francisco City & County	7.58	West Virginia PERS	7.50
South Carolina Police	7.50	West Virginia Teachers	7.50
South Carolina RS	7.50	Wisconsin Retirement System	7.20
South Dakota PERS[4]	7.25	Wyoming Public Employees	7.75
St. Louis School Employees	8.00		

1. This rate for the Louisiana plans, scheduled to be effective for their 7/1/14 actuarial valuations, is contingent on legislative approval scheduled in November 2014
2. The Maryland State Retirement Agency Board of Trustees began, with the actuarial valuation dated 6/30/13, a phased reduction in the assumption used for its PERS and Teachers plans from 7.75 percent, by .05% each year until the rate reaches 7.55.
3. The Minnesota Legislature, which sets in statute investment return assumptions used by public plans in the state, established in 2012 the use of "select-and-ultimate" rates for investment return assumptions. These plans are using an assumed rate of 8.0 percent for five years, through FY 16, after the assumption will return to 8.5 percent. The rate shown here for the Minnesota plans is the effective rate in use for FY 14. This rate will rise gradually until reaching 8.50 percent in FY 17. For more information on select-and-ultimate rates, please see Actuarial Standards of Practice No. 27: http://www.actuarialstandardsboard.org/pdf/asops/asop027_172.pdf.
4. The SDRS set the rate at 7.25% through FY 2018, after which it will rise to 7.50%.
5. 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.
6. 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.

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