

NASRA Issue Brief: Public Pension Plan Investment Return Assumptions



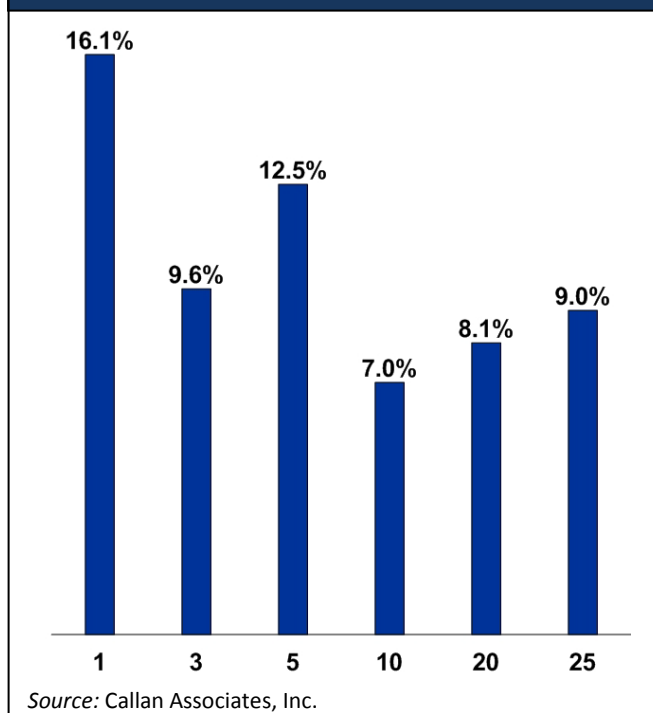
Updated April 2014

As of December 31, 2013, state and local government retirement systems held assets of \$3.88 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 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.

Figure 1: Median public pension annualized investment returns for period ended 12/31/2013



Public pension fund investment return assumptions have been the focus of growing attention in recent years. Some critics of current public pension investment return assumptions 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.

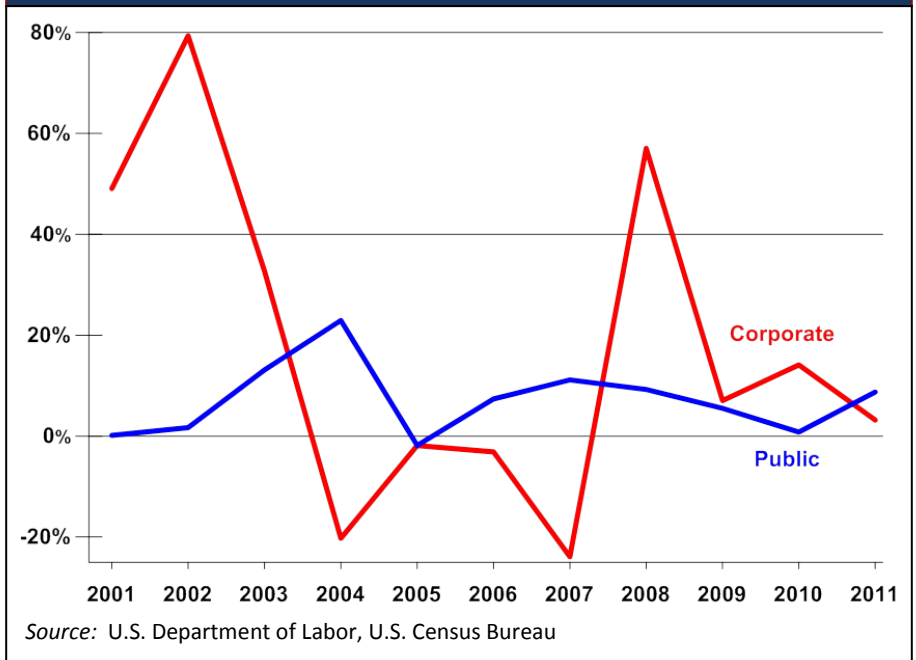
Although public pension funds, like other investors, experienced sub-par returns in the wake of the 2008-09 decline in global equity values, median public pension fund returns

over longer periods meet or exceed the assumed rates used by most plans. As shown in Figure 1, at 9.0 percent, the median annualized investment return for the 25-year period ended December 31, 2013, exceeds the average assumption of 7.72 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 2013*, 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



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.

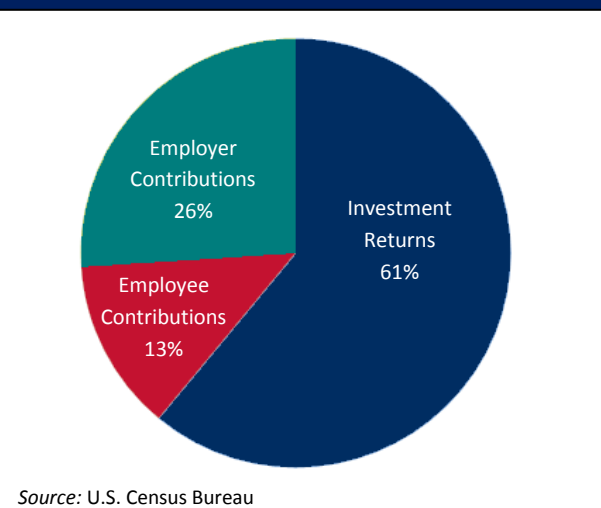
As Figure 3 shows, since 1982, public pension funds have accrued an estimated \$5.3 trillion in revenue, of which \$3.2 trillion, or 61 percent, is estimated to have come from investment earnings. Employer contributions account for \$1.4 trillion, or 26 percent of the total, and employee contributions 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. 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.

Figure 3: Public Pensions Sources of Revenue, 1982-2011



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 7.72 percent. Appendix A details the assumptions in use or adopted by the 126 plans in the 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.

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 and the National Council on Teacher Retirement (registration required)

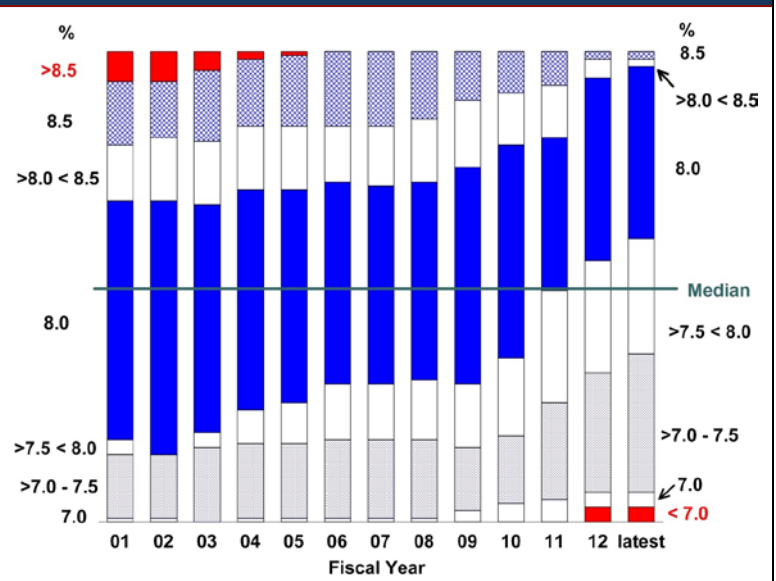
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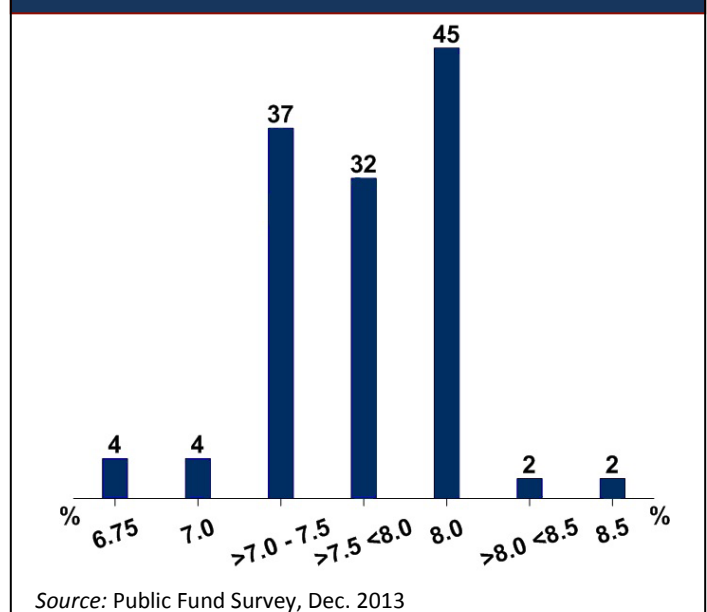
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Figure 4: Change in distribution of public pension investment return assumptions, FY 01 through Dec. 2013



Source: Public Fund Survey, Dec. 2013

Figure 5: Distribution of investment return assumptions



Source: Public Fund Survey, Dec. 2013

Appendix A: Investment Return Assumption by Plan

(Figures reflect the nominal assumption in use, or announced for use, as of December 2013)

Plan	Rate (%)
Alabama ERS	8.00
Alabama Teachers	8.00
Alaska PERS	8.00
Alaska Teachers	8.00
Arizona Public Safety Personnel	8.00
Arizona SRS	8.00
Arkansas PERS	8.00
Arkansas Teachers	8.00
California PERF	7.50
California Teachers	7.50
Chicago Teachers	8.00
City of Austin ERS	7.75
Colorado Affiliated Local	7.50
Colorado Fire & Police Statewide	7.50
Colorado Municipal	7.50
Colorado School	7.50
Colorado State	7.50
Connecticut SERS	8.00
Connecticut Teachers	8.50
Contra Costa County	7.25
DC Police & Fire	6.50
DC Teachers	6.50
Delaware State Employees	7.50
Denver Employees	8.00
Denver Public Schools	7.50
Duluth Teachers ²	8.00
Fairfax County Schools	7.50
Florida RS	7.75
Georgia ERS	7.50
Georgia Teachers	7.50
Hawaii ERS	7.75
Houston Firefighters	8.50
Idaho PERS	7.00
Illinois Municipal	7.50
Illinois SERS	7.75
Illinois Teachers	8.00
Illinois Universities	7.75
Indiana PERF	6.75
Indiana Teachers	6.75
Iowa PERS	7.50

Kansas PERS	8.00
Kentucky County	7.75
Kentucky ERS	7.75
Kentucky Teachers	7.50
LA County ERS	7.50
Louisiana SERS	8.00
Louisiana Teachers	8.00
Maine Local	7.25
Maine State and Teacher	7.25
Maryland PERS ¹	7.70
Maryland Teachers ¹	7.70
Massachusetts SERS	8.00
Massachusetts Teachers	8.00
Michigan Municipal	8.00
Michigan Public Schools	8.00
Michigan SERS	8.00
Minnesota PERF ²	8.00
Minnesota State Employees ²	8.00
Minnesota Teachers ²	8.00
Mississippi PERS	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
Montana PERS	7.75
Montana Teachers	7.75
Nebraska Schools	8.00
Nevada Police Officer and Firefighter	8.00
Nevada Regular Employees	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
New York City ERS	7.00
New York City Teachers	8.00
New York State Teachers	8.00
North Carolina Local Government	7.25
NC Teachers and State Employees	7.25

North Dakota PERS	8.00
North Dakota 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
Phoenix ERS	8.00
Rhode Island ERS	7.50
Rhode Island Municipal	7.50
San Diego County	8.00
San Francisco City & County	7.58
South Carolina Police	7.50
South Carolina RS	7.50
South Dakota PERS ³	7.25
St. Louis School Employees	8.00
St. Paul Teachers ²	8.00

Texas County & District	8.00
Texas ERS	8.00
Texas LECOS	8.00
Texas Municipal	7.00
Texas Teachers	8.00
TN Political Subdivisions	7.50
TN State and Teachers	7.50
Utah Noncontributory	7.50
Vermont State Employees ⁴	8.10
Vermont Teachers ⁴	7.90
Virginia Retirement System	7.00
Washington LEOFF Plan 1 ⁵	7.90
Washington LEOFF Plan 2	7.50
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
West Virginia PERS	7.50
West Virginia Teachers	7.50
Wisconsin Retirement System	7.20
Wyoming Public Employees	7.75

1. The Maryland State Retirement Agency Board of Trustees reduced the assumption used for its PERS and Teachers plans from 7.75 percent to 7.70 percent, effective 6/30/13, as the first step of a four-year phased reduction to 7.55 percent.
2. The Minnesota Legislature, which sets in statute investment return assumptions used by public plans in the state, established the use of “select-and-ultimate” rates for investment return assumptions. These plans will use an assumed rate of 8.0 percent for five years, through FY 16, then return to 8.5 percent. 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 2018, after which it will rise to 7.50%.
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.

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