

LONG-TERM COMMITMENTS:

The Interdependence of
Pension Security and Private Equity

**PRIVATE EQUITY
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THE INTERDEPENDENCE OF PENSION SECURITY AND PRIVATE EQUITY

Bronwyn Bailey, Ph.D. | Draft Date: April 8, 2013

EXECUTIVE SUMMARY

American pension funds face an unprecedented challenge in the wake of the Great Recession. Pension funds suffered large losses during the financial crisis and ensuing economic recession due to falling real estate values and declining stock prices. Now more than ever there is interdependence between private equity and pension funds. Private equity needs pensions for capital commitments, and pensions rely on private equity to provide superior returns to help meet their investment targets.

Private equity funds depend on pension plans for capital. Private equity describes an investment strategy that provides capital and expertise to companies, with the goal of improving them over the long-term. These investments are made through fund partnerships, of which pension funds have committed 43% of all invested capital. When invested companies are sold or go public, gains are distributed back to outside investors such as pension funds and the private equity fund's investment managers.

Private equity performance has provided one of the few bright spots in pension funds' investment returns. A recent study found that the median public pension portfolio received 8.8% in returns from private equity, compared to 3.7% in public equity and 5.7% in total portfolio returns, annually over the past 10 years. This relative investment performance indicates that the retirement security of pension members is boosted by the superior returns provided by private equity investments.

The financial strain pensions currently face, coupled with the outperformance of private equity encourage more pensions to increase their investment allocation to private equity funds. The ratio of pension assets to liabilities fell from 103% in 2000 to 75% in 2011. Investment returns make up more than 60% of pension revenues. If investment returns do not meet or surpass pensions' target returns, pensions' ability to fund retirement payments decreases. The gap between assets and promised retirement payments will be paid by pension employees or their employers, i.e., state and local governments which are funded by taxpayers.

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During the economic recession of 2008-2009, U.S. pension funds experienced sharp losses along with other global investors. At this time, equity markets fell by half and real estate values declined almost 20%.¹ Pension funds lost significant value in their investment portfolios and faced enormous pressure to maintain their asset pool, relative to liabilities. Five years later, financial markets are still recovering and the majority of public pension funds² continue to face shortfalls needed to fund projected retirement payments.

Retirement security is an essential ingredient for a durable social fabric. Public pensions assure retirement income for almost 20 million Americans.³ Since investment returns make up the majority of public pensions' revenue, their performance is under intense scrutiny. This white paper addresses one investment that has consistently provided pensions significant returns and where pensions have increasingly turned to maintain returns – private equity investing. As their investment in public equity declines, pensions increasingly make larger commitments to private equity funds. This paper will show that financial security of pension funds relies on the superior performance provided by private equity investments.

WHAT IS PRIVATE EQUITY?

Private equity is a term describing a class of investors that provide capital and expertise to private companies or to public companies, with the goal of making them private.⁴ Private equity investors then work with the companies to nurture expansion, new product development, or restructuring of firm operations. The Private Equity Growth Capital Council (PEGCC), the private equity trade association, estimates that 2,600 private equity firms are headquartered in the United States, sponsoring more than 15,300 companies over the last decade (2002-11). In 2012 alone, private equity firms invested more than \$313 billion in U.S.-based firms.⁵

¹ Equity market declines based on change in S&P 500 from January 4, 2008 and March 6, 2009. Real estate market declines based on [NCREIF Property Index Returns](#) from first quarter 2008 to first quarter 2010. The NCREIF Property Index includes residential and commercial properties at appraised values.

² This paper will focus mainly on public pension funds, due to data availability. As the paper discusses, the financial challenges facing public pension funds are shared by many of their corporate counterparts.

³ Figure from United States Census Bureau "[2011 Annual Survey of Public Pensions: State & Local Data.](#)"

⁴ "Private equity" is a term that is sometimes used 1) to describe all private investing using a fund model or 2) only buyouts and growth capital investments. Unless otherwise noted, private equity data in this paper refers to the latter definition, i.e., only buyouts and growth capital.

⁵ Figure from Private Equity Growth Capital Council. "[PEGCC Q4 2012 Private Equity Index and Industry Update](#)," 2013, based on data from PitchBook.

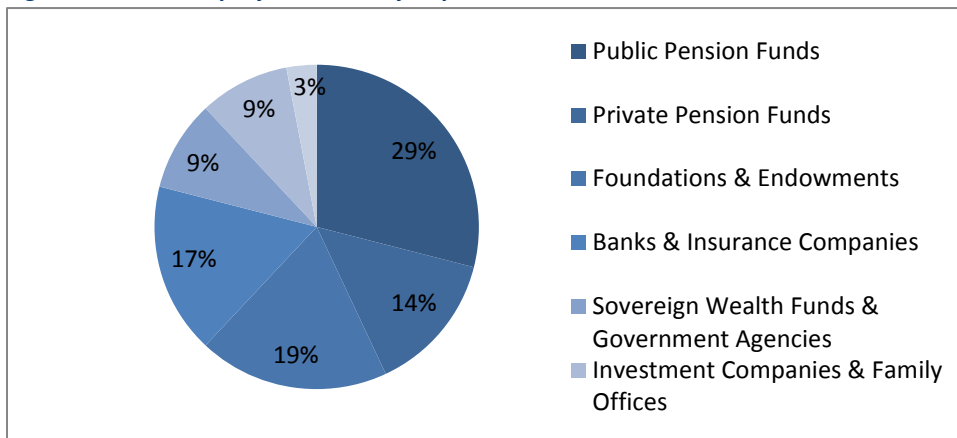
Private equity firms raise investment funds by combining capital from outside investors and their own investment managers. Outside investors become limited partners (LPs) in these funds and receive the bulk of returns on these investments. The typical fee structure includes a 1.5% to 2.0% annual management fee to private equity fund general partners (GPs) and 20% of profits on the investment only after returns reach a specified hurdle rate, which traditionally has been 8%. Private equity investing is a long-term commitment, with a fund life of typically 10 years, and therefore, more compatible with the long-term investment horizon of institutional investors, such as pension funds.

PENSIONS ARE THE PRIMARY INVESTORS IN PRIVATE EQUITY FUNDS

Pensions are the largest investors in private equity in terms of capital invested. Private equity funds have existed since the 1940s, and the industry mainly raised capital from individual investors until 1979 when the U.S. Department of Labor clarified the “prudent man rule”.⁶ This clarification allowed corporate pension funds to invest in a variety of investment products beyond bonds and stocks of very large companies. Public pensions, such as the Oregon Investment Council, followed this guidance and began investing in private equity funds in the early 1980s.

Since the 1980s, pensions’ investment in private equity funds has grown. According to Preqin, a provider of data on the private equity industry, pension funds have been the largest contributor of capital in private equity investments during 2001-2011. Figure 1 shows that pension funds make up 43% of capital invested, of which public pension funds comprise almost 30%. In addition, endowments and foundations contributed 19% of capital invested in private equity.

Figure 1: Private Equity Investors by Capital Invested, 2001-2011

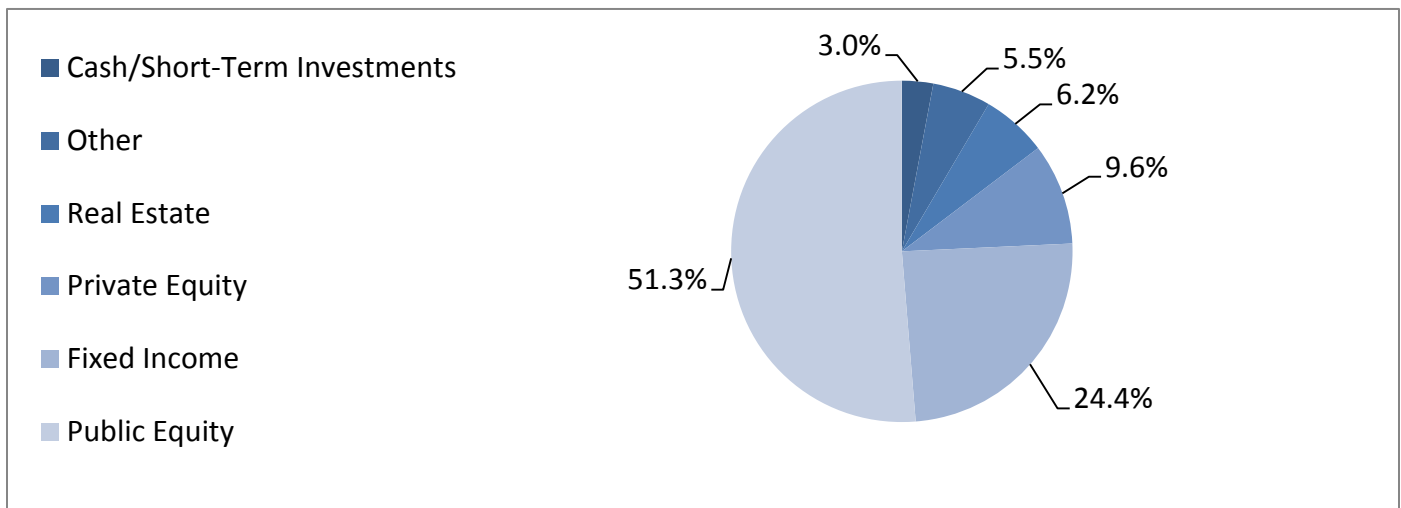


Source: Private Equity Growth Capital Council based on data from Preqin.

⁶ As part of the Employee Retirement Income Security Act (ERISA), the prudent man rule dictated federal standards for investing by pension funds. The original passage stipulated that pension funds were prohibited from holding certain risky investments, including investments in privately held companies. The 1979 clarification allowed for a measurement of risk at the aggregate portfolio level, rather than by individual investments. Source: 44 Fe. Reg. 37,222 (June 26, 1979).

Since the end of the dot-com fueled stock market bubble, pension funds have increased their allocations to private equity, as a share of their overall portfolio. According to Wilshire Consulting, the percentage of assets allocated to private equity by state pension plans more than doubled from 3.9% in 2001 to 8.2% in 2011.⁷ Similarly, *The Wall Street Journal* reported that larger public pensions with assets of \$5 billion and greater allocated 12.7% of their portfolios to private equity in 2012.⁸ The PEGCC’s analysis found that the largest 151 US-based public pension funds currently have \$277 billion invested in private equity, or just under 10% of their investment portfolios totaling \$2.88 trillion.⁹

Figure 2: Public Pension Fund Asset Allocation



Source: Private Equity Growth Capital Council.

In the current uncertain macroeconomic environment, public pension funds continue to pursue commitments to private equity due to superior investment returns over the long-term. *Pensions & Investments* finds that pension allocations to alternative investments, such as private equity, over the past seven years outpace commitments to traditional assets of public equity and bonds – and it is quickening.¹⁰ “The biggest slice of total commitments to alternatives so far this quarter [third quarter

⁷ Julia K. Bonafede, Steven J. Foresti and Russell J. Walker. “2012 Report on State Retirement Systems: Funding Levels and Asset Allocation.” Wilshire Consulting, March 2, 2012, p. 14.

⁸ Michael Corkery. “Pensions Bet Big with Private Equity,” *The Wall Street Journal*, January 24, 2013.

⁹ PEGCC. “Public Pension Analysis,” September 2012. Due to inconsistencies in reporting, “Private equity” in these data includes some investments in venture capital funds. Allocation figures are calculated from data reported by 151 large public pension funds with \$1 billion or more in assets under management. Most recent publicly-reported financials at the time of analysis were used with reporting dates varying between June 30, 2010 and June 30, 2012.

¹⁰ Arleen Jacobius. “Institutional investors quicken shift to alternative investments,” *Pensions & Investments*, September 3, 2012.

2012] went to private equity... Institutional investors, especially public pension plans, are expected to continue to shift into alternatives and out of fixed income and equities.”¹¹

What makes private equity so attractive to pension funds is superior investment returns. According to Cambridge Associates, an investment adviser and benchmark publisher, private equity delivered annualized returns equaling 13.71% over the 10-year horizon ending on September 30, 2012, while the S&P 500 yielded 8.01% and the Russell 2000 returned 10.17%.¹² These performance measures are based on funds invested by pensions, university endowments, charitable foundations and others. The outperformance of private equity funds – net of management fees and carried interest¹³ – relative to public markets has been confirmed empirically by numerous academic studies.¹⁴

Figure 3: Annualized Investment Returns (%), as of Sept. 30, 2012

Index	5-Year	10-Year	25-Year
Private Equity	6.55	13.71	13.10
S&P 500	1.05	8.01	8.61
Russell 2000	2.21	10.17	8.16

Source: Cambridge Associates LLC.

With large allocations to stocks, pension funds returns have followed equity market trends. The PEGCC’s analysis of public pension financial statements found that the median private equity portfolio returned an annualized 8.8% over the last 10 years, compared to only 3.7% for the median public equity portfolio. These returns compare to an annualized 5.7% return for the median public pension fund during the same period.¹⁵ In other words, while private equity only makes up 10% of the portfolio, it is one of the top performing investments strategies and buoyed pension returns during the last decade.

¹¹ Ibid.

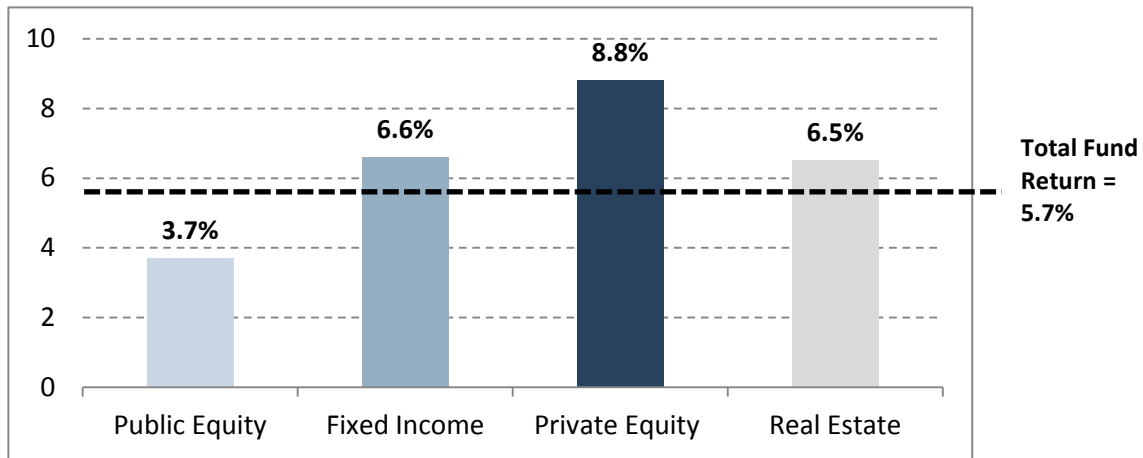
¹² Cambridge Associates publishes quarterly benchmarks of the private equity funds invested by their clients. Return figures are net of management fees and carried interest.

¹³ Carried interest is a share of profit from the sale of a capital asset. Historically, private equity firms have kept 20% of profits from the sale or public offering of funds’ portfolio companies.

¹⁴ David T. Robinson and Berk A. Sensoy. “Do Private Equity Fund Managers Earn their Fees? Compensation, Ownership, and Cash Flow Performance” AFA 2012 Chicago Meetings Paper, March 14, 2012; Chris Higson and Rüdiger Stucke. “The Performance of Private Equity,” mimeo, March 2, 2012; Robert S. Harris et al. “Private Equity Performance: What Do We Know?” mimeo, February 18, 2012.

¹⁵ Source: Private Equity Growth Capital Council. “Public Pension Analysis,” September 2012. Due to inconsistencies in reporting, “Private equity” in these figures includes some investments in venture capital funds. Returns analysis is based on returns reported by 68 large public pension funds that reported 10-year returns as of June 30, 2011 at the time of analysis. The sample includes returns that are both net and gross of fees and carry to increase sample size. An analysis limiting the sample to only net of fee and carry performance provides similar results.

Figure 4: Median 10-Year Annualized Pension Fund Return by Asset Class, 2011

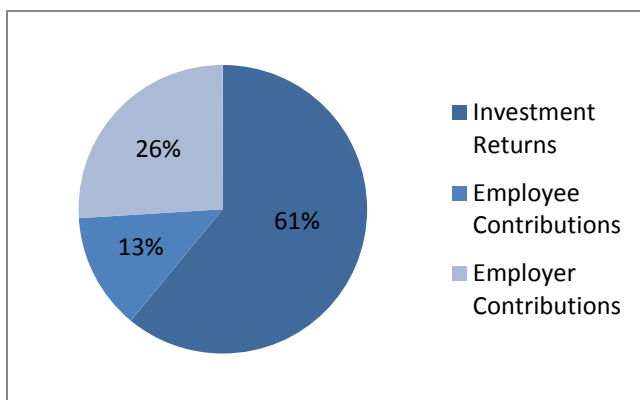


Source: Private Equity Growth Capital Council.

PENSIONS RELY ON INVESTMENT RETURNS AS A KEY REVENUE SOURCE

Investment returns are important to public pensions because they constitute 61% of public pension revenues.¹⁶ Other revenue sources include contributions by current employees (13%) and the employer (26%). A shortage in investment returns for an extended period may require that the other sources, i.e., employers and employees, make up the deficit. For public pensions, employers are the state and city governments, which are funded by local tax payers. Any increase in contributions by states and cities to their pensions would likely be financed by an increase in taxes paid by local residents.

Figure 5: Sources of Public Pension Revenues

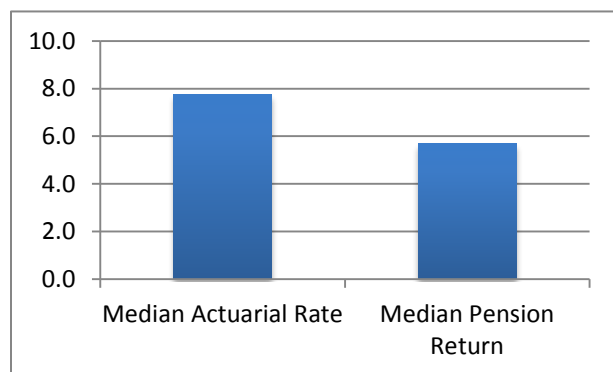


Source: US Census Bureau.

¹⁶ Data from U.S. Census Bureau, published in "NASRA Issue Brief: Public Pension Plan Investment Return Assumptions," National Association of State Retirement Administrators, August 27, 2012.

Over the last 10 years, the main source of pension funding, investment returns, has fallen short compared to the assumed rate of return. The annual return target used by most pension funds is roughly 8%. This rule of thumb was confirmed by a PEGCC analysis of 90 public pension funds that had a median target return of 7.8%. By comparison, the median return in this sample equaled 5.7% annually over last 10 years, substantially below the target rate. Without investments in private equity, pension returns would be even lower.¹⁷

Figure 6: Target Return Compared to 10-Year Annualized Return, as of June 2011



Source: Private Equity Growth Capital Council Analysis. Actuarial rate and pension return are based on median of 90 public pension plans. The total value of these pensions' investments equal \$1.86 trillion.

Pensions are underfunded to meet projected retirement payments

When pension funds do not meet investment targets, retirement payments to their members may be jeopardized. The U.S. Census Bureau reported that 44% of the 19.5 million state and local pension members received benefit payments in 2011.¹⁸ Who are the recipients of public pensions? They are retired public school teachers, fire fighters, police officers and state and city employees. Many private sector companies provide employees with matching contributions to a 401k retirement plan, but most public employees rely on defined benefit pensions for retirement income. In a *defined contribution* program, such as a 401k plan, the investment risk lies with the individual employee. When a public pension provides *defined benefits*, investment risk rests with the pension's investment team making decisions on behalf of its members. Public pensions have traditionally been structured as defined benefit plans, but some are moving towards hybrid plans with a defined contribution component.

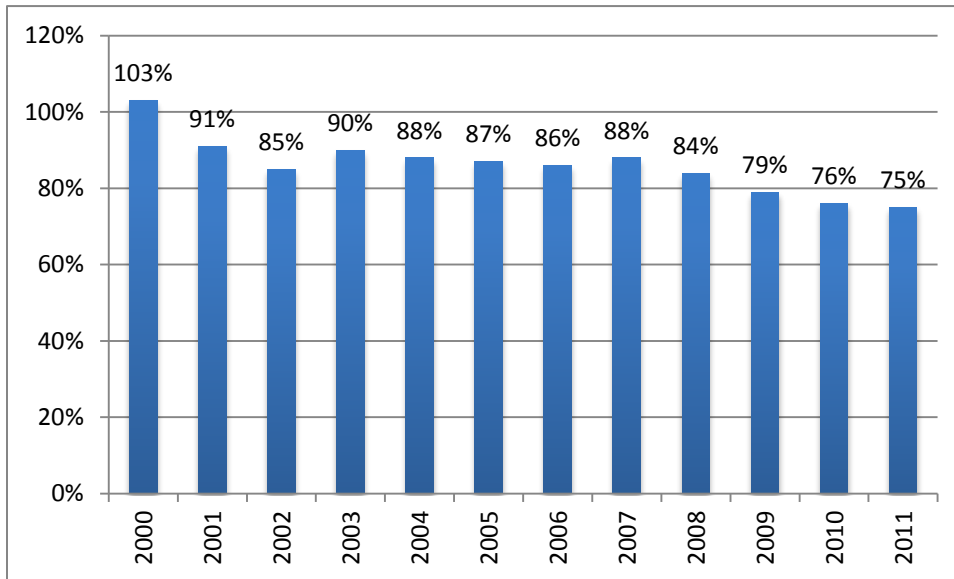
Over the last decade, the funded ratio of most pension funds deteriorated. A study from the Center for Retirement Research (CRR) at Boston College found that the funded ratio of state and local pension

¹⁷ Source: Private Equity Growth Capital Council. "Public Pension Analysis," September 2012.

¹⁸ United States Census Bureau "2011 Annual Survey of Public Pensions: State & Local Data."

funds declined from 103% in 2000 to 75% in 2011, falling more than 25 percentage points.¹⁹ The highest aggregate funded ratios in Figure 7 correspond with the peak of the stock market and fall with declines in stocks. Changes in public markets directly affect pensions' funded ratios.

Figure 7: Distribution of Funded Ratios for Public Plans, 2011



Source: Munnell et al., 2012.

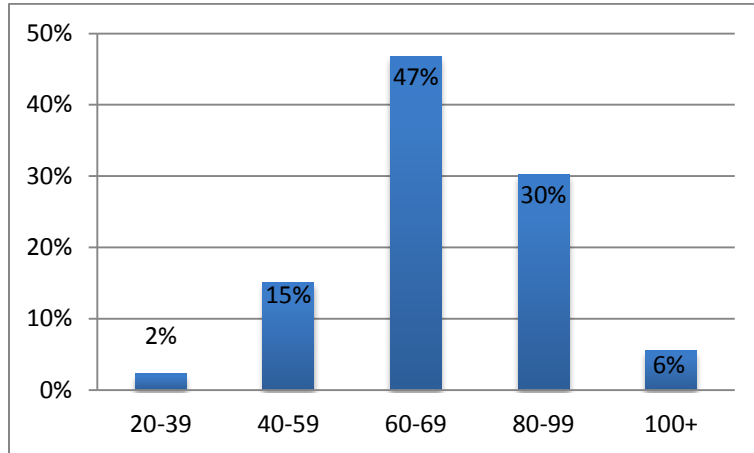
Figure 8 shows that in 2011 almost half of the public plans in the CRR study had funded ratios between 60% and 69% and only six percent were considered fully funded, with ratios over 100%.²⁰ Like their public counterparts, corporate pensions are increasingly facing stress on their funded status. The Milliman 100 Pension Funding Index reports that the 100 largest U.S. corporate pensions have an average funded ratio of 81.5%, equating to a deficit of \$311 billion.²¹

¹⁹ Alicia H. Munnell, Jean-Pierre Aubry, Josh Hurwitz, Madeline Medenica and Laura Quinby. "The Funding of State and Local Pensions: 2011-2015," Center for Retirement Research at Boston College, Number 24, May 2012, Figure 1.

²⁰ Distribution is based on 2011 actuarial valuations and the authors' calculations. For information about the funded status of individual pensions used in the CRR study, see the Appendix in Munnell et al., 2012.

²¹ Kevin Olsen. "Milliman: Largest corporate pension plans' funded status dips slightly in February." *Pensions & Investments*, March 6, 2013.

Figure 8: Distribution of Funded Ratios for Public Plans, 2011



Source: Munnell et al., 2012.

While the concept of a funded ratio seems straightforward – assets divided by liabilities – one assumption used in this calculation – the discount rate – has come under scrutiny. To determine the current value of projected liabilities, future costs must be discounted back to the present time using a discount rate. In finance, the discount rate is considered a measure of uncertainty in the projected future cash flow. If the level of uncertainty is low, the discount rate most often used is the “risk-free rate,” i.e., the yield on Treasury bills corresponding to the appropriate time period.²² For instance, if future cash flows are fairly certain and occur over a 10-year period, the yield on a 10-year Treasury bill would be the appropriate discount rate.

U.S. pension funds typically do not use the risk-free rate when computing the present value of retirement liabilities. Instead, they apply their respective target return as the discount rate. Pensions discount future liabilities by the anticipated long-term return on assets held by the pension fund. There are two critiques to this methodology. First, target return rates compared to actual returns were inflated over the past decade, and they may continue to be overstated for future returns. In fact, some pension funds have begun to lower their target return rate.²³ Second, critics argue that future cash flows should be discounted by a rate that reflects risk, i.e., the uncertainty that these payments will be made. Since many states guarantee these pension payments, the riskless rate would be appropriate.²⁴

While selecting the appropriate discount rate may seem like an arcane accounting question, the choice has a significant impact on estimates of pension liabilities. The calculation of liabilities is highly sensitive

²² The formula for the present value of liabilities is: $CF_1 / (1 + r)^1 + CF_2 / (1 + r)^2 + \dots + CF_n / (1 + r)^n$, where CF = cash flow of liabilities, r = discount rate, and n = number of years.

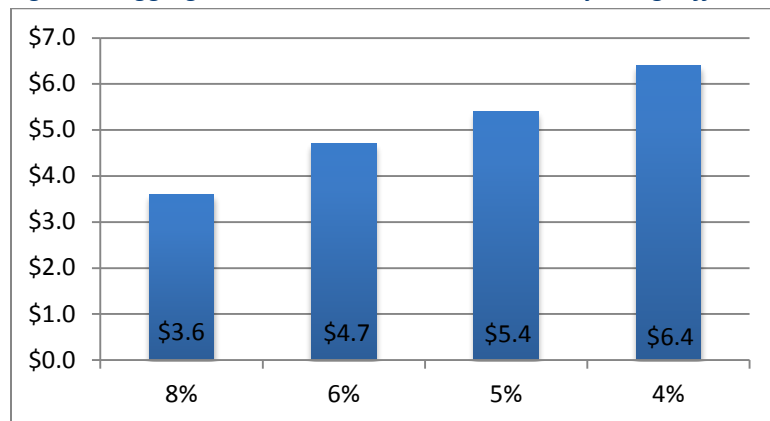
²³ In 2012 CalPERS lowered its target rate from 7.75% to 7.50% and the New Jersey State Investment Council lowered its target rate from 8.25% to 7.95%. In September 2012 the board of trustees for Illinois Teachers Retirement System voted to lower its return target from 8.5% to 8.0%.

²⁴ For additional discussion about the debate over public pension fund discount rates, see Frances Denmark. “[Debate Heats Up over Public Pension Fund Discount Rates](#),” *Institutional Investor*, February 4, 2013.

to the discount rate. Higher discount rates reduce the present value of liabilities; lower liabilities produce higher funded ratios.

The Center for Retirement Research at Boston College analyzed the sensitivity of calculating aggregate pension liabilities using different discount rates. Based on an 8% rate, which closely mirrors rates used by pension funds, the total liability equals \$3.6 trillion. However, using a 4% rate, which is more similar to the riskless rate, the liability almost doubles to \$6.4 trillion.²⁵

Figure 9: Aggregate State and Local Pension Liability Using Different Discount Rates, 2011 (\$ Trillions)



Source: Munnell et al., 2012.

In contrast to public pensions, corporate plans are required by federal regulations to apply the riskless rate as their discount rate, i.e., rates based on Treasury yields. Like interest rates, Treasury rates can vary greatly year over year, and this methodology produces large swings in the estimate of pension costs. Many corporations have abandoned their defined benefit pension plans, in part due to the volatility of estimated pension costs.²⁶ The benefit of using a stable discount rate, such as a target return, is reduced volatility in cost estimates.

Figure 10 illustrates that the choice of discount rates can greatly affect estimates of pension deficits.²⁷ In the actuarial rate scenario, which uses pensions' 8% target return as the discount rate, unfunded liabilities are estimated at \$0.9 trillion. However, if a rate closer to the Treasury rate is applied, the deficit estimate climbs to \$3.7 trillion.²⁸ In the Treasury discounting scenario, U.S. public pension funds

²⁵ Alicia H. Munnell, Jean-Pierre Aubry, Josh Hurwitz, Madeline Medenica and Laura Quinby. "The Funding of State and Local Pensions: 2011-2015," Center for Retirement Research at Boston College, Number 24, May 2012, Figure 4.

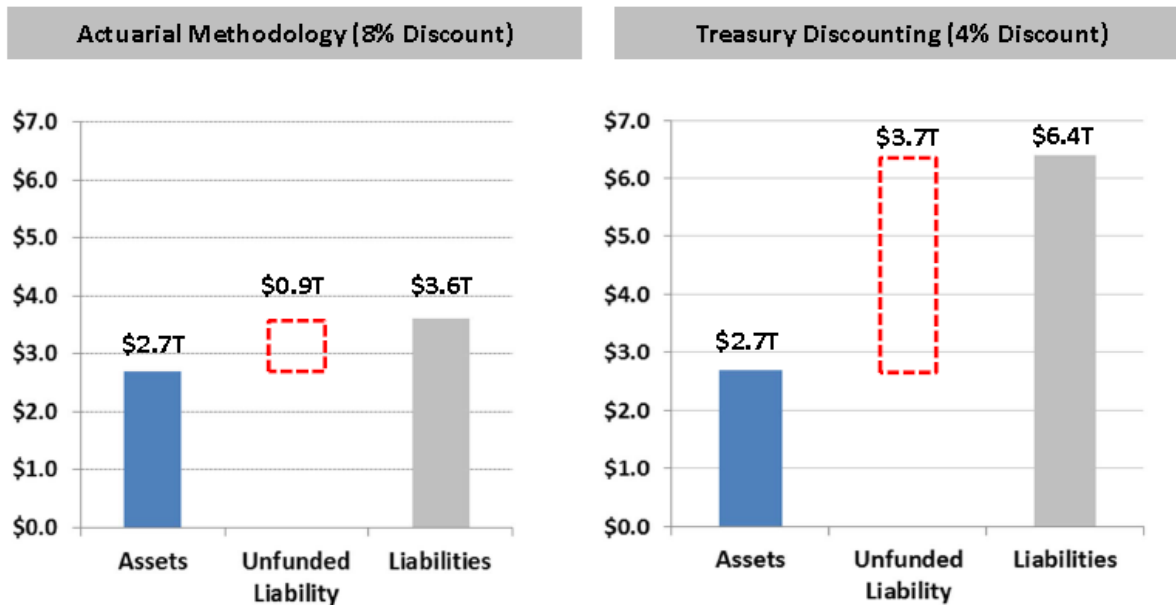
²⁶ "NASRA Issue Brief: Public Pension Plan Investment Return Assumptions," National Association of State Retirement Administrators, August 27, 2012.

²⁷ PEGCC analysis is based on 2011 liability and asset calculations in Alicia H. Munnell et al. (2012) for a sample of 109 state plans and 17 local plans. Liabilities under the Treasury discounting scenario are based on a 4% discount rate, as calculated by Munnell et al. As of April 4, 2013, the Treasury rate for a 30-year Treasury bill was 2.99%.

²⁸ One study using the Treasury discounting method estimates the deficit at \$4.4 trillion. (Source: Joshua Rauh. "Shortfall for State and Local Pension Systems Today: Over \$4 Trillion," State Budget Solutions website, October 10, 2011.) See also

are only 42% funded, compared to 75% funded under the actuarial method. To put these deficit figures in perspective, \$3.7 trillion is 6% of \$62.7 trillion in GDP produced by the United States during 2012.²⁹

Figure 10: Pension Fund Deficits Using Different Discounting Methods



Source: Munnell et al, 2012.

PENSIONS HAVE BECOME MORE RELIANT ON PRIVATE EQUITY

By following widely accepted modern portfolio theory,³⁰ pensions have suffered from the low public equity return environment in the 21st century. Given the consistent positive performance of private equity funds, it is no surprise that pensions are increasing allocations to this investment strategy. As one of the top performers in pensions’ portfolios, private equity has pushed total portfolio performance closer to the assumed rate of return. Greater allocations to private equity will likely continue as pensions look to these funds to provide protection against volatility and to lock in long-term returns. The goal for pension funds is simple. They must generate a return that matches or beats the 8% assumed rate of return. The last 15 years have shown that this cannot consistently be achieved by public equity or fixed income.

discussion in Thomas J. Healey, Carl Hess and Kevin Nicholson. “Underfunded Public Pensions in the United States: The Size of the Problem, the Obstacles to Reform and the Path Forward,” M-RCBG Faculty Working Paper No. 2012-08, Harvard Kennedy School, 2012.)

²⁹ Source: Bureau of Economic Analysis.

³⁰ Ronnie G. Jung and Nari Rhee. “How do Public Pensions Invest? A Primer,” National Institution of Retirement Security, January 2013.

As the Oregon State Treasurer and Chairman of Oregon Investment Council wrote:

Since 1981, private equity has been the top performer in the Oregon Public Employees Retirement Fund. For the past decade, the time-weighted annual return for Oregon's private equity investments was 11.35%, versus 4.71% for the S&P 500.

... If Oregon had not been invested in private equity over the past decade -- and had put those dollars into the regular stock market instead -- it would have translated into an estimated \$4 billion less in earnings -- \$400 million per year...[T]o lose the \$400 million in additional returns would be to lose the equivalent of 4,000 teachers per year.³¹

PRIVATE EQUITY AND PENSION FUNDS HAVE AN INTERDEPENDENT RELATIONSHIP

The private equity industry relies on pension funds to commit significant capital in their funds. Pension plans are the “limited partners” in investment funds and often long-term partners in through generations of funds. From the pension fund perspective, they are looking for investment exposure to a high performing asset class to increase the likelihood their portfolio will hit the assumed rate of return.

Now more than ever, there is interdependence between private equity and pension funds. A better understanding of these dynamics will aid the dialogue between investors and fund managers in their long-term commitment.

³¹ Ted Wheeler and Keith Larson. [“With pension fund investments, private equity pays off for Oregon,”](#) OregonLive.com, June 23, 2012.

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Dr. Bailey advised commercial clients for more than six years as a business consultant. In this role she provided financial and economic analysis at PricewaterhouseCoopers and advised telecommunications and media clients as a strategy consultant at Capgemini in London.

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