

Center for American Progress Action Fund



Model Retirement Savings: How Public Sector Pension Plans Provide Adequate
Retirement Savings in an Efficient and Sustainable Way

Testimony before the Joint Economic Committee
“Your Money, Your Future: Public Pension Plans and the Need to Strengthen Retirement
Security and Economic Growth”

July 10, 2008

Christian E. Weller, Ph.D.
Associate Professor
Department of Public Policy and Public Affairs
McCormack Building 03-420
University of Massachusetts Boston
100 Morrissey Boulevard
Boston, MA 02125

and

Senior Fellow
Center for American Progress Action Fund
1333 H Street NW
Washington, DC 20005

Thank you Chairman Schumer, Senator Casey, Representative Maloney, Senator Saxton, and members of the Joint Economic Committee for this opportunity to speak to you today. My testimony this morning will address the public- and private-sector impacts of defined benefit pension plans in the public sector. I will specifically discuss the long-term economic performance of state and local defined benefit pension plans and how this performance compares with that of defined contribution plans.

A recent poll conducted by Bankrate Inc. found that only about 3 in 10 workers expect to have enough money to retire comfortably. Nearly 7 in 10 Americans have set low expectations about their retirement prospects. One in five Americans says they are afraid they will never be able to retire (*Austin Business Journal*, 2008).

It is not hard to see why so many Americans feel so uneasy about their future retirement prospects. An ever smaller share of workers has a retirement savings plan at work. For instance, only 43.2 percent of private sector workers had an employer-sponsored retirement plan, either a traditional pension or a retirement savings plan, in 2006, the last year for which data are available (Purcell, 2007). This is the lowest share in more than a decade and a substantial drop from 50.0 percent in 2000, the last peak. In addition, a growing number of workers are saving with defined contribution retirement savings plans. This can leave workers exposed to a number of new risks—a point I will return to later in my testimony. It also means that wealth creation carries unequal tax rewards, depending on one's earnings. Because contributions to these retirement savings plans are tax deductible, higher-income earners tend to receive a larger tax benefit from contributing to their DC plans than lower-income ones.

These longer-term trends have been overshadowed by recent drops in financial and nonfinancial market wealth. Families have lost a lot of financial wealth due to a sharp decline in stock prices. Since the beginning of the year alone, the S&P 500 had lost 12.5 percent of its value by the end of June 2008. Also, the fact that homeowners were highly leveraged due to the recent mortgage boom meant that they stood to lose a lot when house prices began to fall (Weller, 2006). Recent data from the Federal Reserve, for example, show that home equity relative to income dropped by 5.0 percentage points by March 2008, compared to a quarter earlier, the largest such drop on record.¹ These adverse trends have meant that a growing number of families will have to rely solely on Social Security as source of retirement income (Baker and Rosnick, 2008).

In light of such trends, policy solutions are necessary to restore the promise of a retirement in dignity for the all working families in America. Here, policymakers could focus on elements of our retirement system that are working well. State and local defined benefit, or DB, pension plans stand out as an example of what works when it comes to achieving broad-based retirement income adequacy at a reasonable cost. A review of the economic evidence on state and local DB plans tells us that these pension plans have proven themselves as model retirement systems. They have a successful track record of performance in delivering adequate benefits in a sustainable and efficient manner.

¹ Author's calculations based on BOG(2008).

Features of a Model Retirement Plan

If one were to design an ideal retirement plan, it would probably encompass the following features:

- ☐ broad-based coverage, which covers all workers automatically
- ☐ secure money for retirement, with limited opportunities for leakage of retirement assets
- ☐ portability of benefits, which will allow workers to retain benefits if they switch jobs
- ☐ shared financing, with contributions from both employees and employers
- ☐ lifetime benefits, so that retirement income cannot be outlived
- ☐ spousal and disability benefits to provide protections against death or the inability to work
- ☐ professional management of assets
- ☐ low costs and fees.

The DB plans that provide retirement benefits to employees of state and local governments typically meet all of these criteria for a model retirement system.

Broad-based coverage

Employees must simply meet the eligibility requirements of the DB plan to earn benefits in a public sector DB plan. They are then automatically enrolled without having to make any active decisions.

This truly “automatic” enrollment is a typical characteristic of DB plans. Private sector DB plans also automatically enroll all eligible workers.

Defined contribution, or DC, plans, on the other hand, often require employees to enroll themselves, and then to make difficult decisions about how much to save and where to direct their investments.

In passing the Pension Protection Act of 2006, Congress acknowledged this flaw inherent in DC plans, and attempted to make automatic enrollment and efficient asset allocation easier. It is too soon, however, to reach any conclusions about the law’s effectiveness on increasing automatic enrollment in DC plans.

Secure money for retirement

State and local DB plans provide a secure source of income in retirement for a number of reasons. First, one’s funds cannot be borrowed from, and typically are not distributed as a lump-sum payment. That is, benefits under a public sector DB plan, as well as many private sector DB plans, will be there to provide a lifetime stream of retirement income. Moreover, a rather obvious point is that the plan sponsors of public sector DB plans are

state and local governments, which typically do not go bankrupt, which is sadly not always the case for single-employer private sector DB plans.

The security of assets in DC plans for future retirement income is, in comparison, compromised. Importantly, the vast majority of individuals in DC plans can borrow from their retirement accounts or withdraw funds before retirement age. Economists use the term “leakage” to describe assets that are drawn out of retirement savings plans for purposes other than providing retirement income. According to one conservative estimate, a full 10 percent of all retirement wealth is lost due to leakage from DC plans (Englehart, 1999). Another study found leakage to be “concentrated among individuals vulnerable to poverty in old age” (Hurd and Panis 2006). Loans from DC plans have risen, especially to allow families to smooth over economic hard times, which will likely reduce their retirement income security (Weller and Wenger, 2008).

Portability of benefits

Public pension plans are responding to changing workforce needs in public service by offering much greater portability than in the past. Often, if employees move to another government position within the state, they are able to carry pension benefits with them; should they move to other jurisdictions, they can usually purchase service credits (Brainard, 2008).

This portability also exists for most DC plans and in some private sector DB plans, so-called multiemployer plans.

Shared financing

The funding of state and local DB plans is a shared responsibility between employee and employer unlike private sector DB plans, in which employers typically finance the entire benefit. In 2004, for workers covered by Social Security, the median employer contribution rate was 7 percent of salary, while the employee contributed an additional 5 percent of salary (Munnell and Soto, 2007).

Also, because public sector DB plans are prefunded—they accumulate assets to cover all expected current and future benefit payments—employer contributions account for only a small share of the funds flowing into public plans that can be used to pay benefits. According to data from the Census Bureau, employer contributions comprised about 18 percent of all public pension revenue over the 10-year period 1996 to 2006. Investment earnings made up 73 percent of revenue during that time, and employee contributions accounted for the remainder (Census, 2008).

Lifetime benefits

State and local DB plans are designed so that retirement income can never be outlived—retirees are a guaranteed paycheck for life. This is also the case with private sector DB

plans that have to offer an annuity benefit, even if it is as an alternative to a lump-sum distribution.

This is in stark contrast with DC systems. Here, the burden of managing one's retirement income, so that retirees do not run out of savings in retirement falls mostly on the individual. In many cases, though, employees do not understand how much money they will need in retirement, the result being that many workers do not save sufficiently and face inadequate income in retirement. In order for a private sector worker to purchase a modest annual annuity of \$20,000, she must accumulate an estimated \$260,000 in a 401(k). The median 401(k) balance for heads of households approaching retirement in 2004, however, was just \$60,000 (Munnell and Soto, 2007). Further, Boston College researchers have found that, in part due to the shift from DB to DC plans in recent years, between 44 percent and 61 percent of households are at risk of being unable to maintain their living standards in retirement (Munnell, Webb, and Golub-Sass, 2007).

Spousal and disability benefits

State and local DB plans typically provide special protections for spouses of married beneficiaries, as well as disability benefits for active employees who are stricken by illness or injury that prematurely ends a career.

Disability benefits are especially important for state and local government employees, since many workers, such as police officers and firefighters, have high-risk jobs.

Spousal benefits are particularly important as well, as women have much lower retirement incomes than men (Even, 2004) and single elderly women have even lower incomes. According to one recent study, among the entire population aged 65 and older, 19.1 percent of women living alone were in poverty in 2006, compared to 11.5 percent of all women and 6.6 percent of all men who lived in poverty in that year (Hounsell, 2008).

Professional management of assets

Public sector plans and private sector DB plans are managed by professionals with "considerable financial education, experience, discipline, and access to sophisticated investment tools" (Watson Wyatt, 2008).

The individualized nature of DC plans, though, means that these rely on self-management. I will elaborate in greater detail on the significant economic benefits professional management provides further below.

Low costs and fees

Evidence shows that administrative costs are substantially higher for DC plans as compared to DB plans. An international study of plan costs finds that while, on average, fees can range between 0.8 percent and 1.5 percent of assets, larger institutional plans can reduce such fees to between 0.6 percent and 0.2 percent of assets (James, Smalhout and

Vittas, 2001). The UK Institute of Actuaries finds very high administrative costs for DC plans—of 2.5 percent of contributions and up to 1.5 percent of assets—leading to the equivalent of a 10 to 20 percent reduction in annual contributions; DB administrative costs, however, amount to just 5 to 7 percent of annual contributions (Blake, 2000). Similar differences exist in the United States, with DB plans incurring substantially lower fees than DC plans (CII, 2006; Weller and Jenkins, 2007).

Adequate retirement benefits

Obviously, designing a model retirement plan is not a means unto itself. It is intended to generate adequate retirement income for beneficiaries. DB plans, whether in the public or private sector, tend to be very effective at ensuring that employees will have adequate resources in retirement to support themselves because these types of retirement plans often incorporate all of the features laid out in the previous section.

An “adequate” replacement rate is typically defined as one that allows a retired household to enjoy roughly the same standard of living as it did before retirement. This standard of adequacy might be deemed to fall anywhere between 75 percent and 85 percent of preretirement income.

Research shows that retirees with DB pensions are much more likely to have adequate retirement income than those relying on DC plans (Munnell et al., 2008). Also, a 2007 Federal Reserve study found that the median wealth held in a DB pension plan is about two times larger than the median holdings in DC plans and IRAs. This indicates that DB pension plans tend to be better at ensuring employees are able to accumulate adequate resources for retirement (Love, Smith, and McNair, 2007).

In a DB plan, an individual employee’s benefit is typically determined based on a simple formula; this benefit is calculated by multiplying the employee’s final salary (averaged over three to five final years of employment) by their number of years of service, and then by a set retirement multiplier. For example, under a system with a retirement multiplier of 1.8 percent, an employee with a final average salary of \$40,000 and 30 years of service will receive an annual benefit of \$21,600 ($\$40,000 \times 30 \times 1.8\%$). This benefit, then, would replace 54 percent of the employee’s final average salary. This amount, when added to Social Security benefits, would enable the employee to maintain their middle-class standard of living throughout their retirement years.

However, it should be noted that approximately 25 percent of all state and local government employees do not participate in Social Security (Brainard, 2007) and therefore require a larger pension benefit in retirement in order to compensate for their lack of Social Security income. In 2006, the median retirement multiplier was 1.85 percent for Social Security-eligible employees and 2.20 percent for non-Social Security-eligible workers (Brainard, 2007). This means, on average, employees who work for a full 30 years in public service will receive a pension that replaces 55.5 percent of final earnings if they are Social Security eligible, and 66 percent of final earnings if they are not Social Security eligible.

Given these replacement rates, public pensions offer income adequacy in retirement that is manageable and sensible. In 2006, for example, the median public sector retiree received a benefit of \$22,000 per year (McDonald 2008). Combined with Social Security, such pension benefits generally add up to an adequate retirement income. For instance, a typical worker in Pennsylvania, where the multiplier is 2.5 percent of the final average pay for each year of service, could expect to replace about 78 percent of their pre-retirement earnings after a full-career and 52 percent with a partial career in state employment due to the combination of a DB pension, Social Security, and savings in a DC plan (Weller, Price, & Margolis, 2006). State and local DB plans, then, comprise a system of reasonable and adequate income replacement in retirement.

Sustainability and efficiency of DB plans

Importantly, these adequate benefits are sustainable in the long run. Because of their group nature, public sector DB plans create significant economies for taxpayers and employees, which allow them to offer retirement benefits in an efficient manner.

Two sets of factors drive these economies. First, because public DB plan assets are pooled and managed by professionals, these systems can achieve higher returns, at a lower cost, than DC plans based on individual accounts. Second, DB plans lower costs for participants and plan sponsors by pooling mortality and other risks.

The benefits of pooled, professional asset management

By pooling assets, state and local DB plans are able to drive down administrative costs and reduce asset management and other fees. Asset management fees average just 25 basis points for public pension plans. By comparison, asset management fees for private 401(k) plans range from 60 to 170 basis points (Munnell & Soto 2007). Thus, DC plans suffer from a 35 to 145 basis point cost disadvantage.

This disadvantage may appear small, but like water carving a canyon out of rock, over a long period of time, it compounds to create a significant affect on assets. For example, over 40 years, a 100 basis point cost disadvantage compounds to a 24 percent reduction in the value of assets available to pay for retirement benefits (Weller & Jenkins, 2007).

Investment decisions in state and local DB plans are made by professional investment managers, whose activities are overseen by trustees and other fiduciaries. Public pension plan assets are broadly diversified and managers follow a long-term investment strategy.

In analyzing public sector pension plan investment behavior, Professor Jeffrey Wenger and I have found that state and local plans exercise a great deal of prudence, tending to rebalance their assets regularly in response to large price changes. Also, public sector plans holdings of higher-risk/higher-return assets increases when these plans have higher funding levels, thereby indicating that plans do not “chase return” in response to lower funding levels. Specifically, the equity allocation is larger in the period after we observe

higher funding levels, which suggests that trustees wait to know what their financial situation is before they change the risk exposure of their portfolio. In addition, public sector plans' holdings of equities is smaller when demands on employers in the form of higher contributions increase. This relationship seems to have become stronger after 2000, which suggests that public sector plans not only avoided employer conflicts of interest as larger demands on employers in the previous period translated into a "flight from risk," but if anything, these plans may have become more cautious in their asset allocation following a period of underfunding (Weller & Wenger 2008).

The prudent investment behavior of professionally managed DB plans stands in contrast to the situation in DC plans where individuals direct their own investments. Research finds that asset allocation in retirement savings plans is considerably more volatile than what is found in professionally managed DB plans (Boivie & Almeida 2008).

In addition, a wide literature in the field of behavioral finance finds that despite their best efforts, individuals often make poor decisions when it comes to investing for retirement (Benartzi & Thaler 2007). For example, Holden and VanDerhei (2001) found that more than half of all DC plan participants had either no funds invested in stocks—which exposes them to very low investment returns—or had almost all their assets allocated to stocks, making for a much more volatile portfolio. Other research has found that many individuals' inertia subjects asset allocation in individual accounts to acute imbalance. At the other extreme, some individuals engage in excessive trading, which results in the problem of buying high and selling low (Mitchell & Utkus 2004; Munnell & Sunden 2004). This puts individual savers at a disadvantage *vis a vis* professionally managed DB plans, leaving individual savers to pay more for fewer benefits.

Another advantage of pooling and professional management is that DB plans can take advantage of broader diversification strategies. In recent years, some DB plans have allocated a small percentage of their holdings to include so-called "alternative" investments such as private equities, venture capital, and hedge funds. These investments can help to improve the returns and/or reduce the overall risk of a plan's portfolio by introducing assets whose returns are uncorrelated (Seco 2005; Phillips & Surz 2003; Indjic & Partners 2002).

Such diversification may allow a plan to show just single-digit losses in a market decline, for example, when other equities may show double-digit losses—a result that can significantly affect a retirement plan's compounded rate of return over time. Data from Watson Wyatt (2008) show that during the 2000 to 2002 market downturn, DB plans outperformed DC plans, in part because of their exposure to a broader range of assets, including alternatives.

However, in order to successfully invest in such "alternative" assets, investors must have a long time horizon and must have a high degree of sophistication to understand these often complex investments. Such factors make alternative investments a sound investment choice for some DB plans. Individual investors in retirement savings plans typically have neither the access nor the expertise to invest in these types of assets.

Because of these three effects—lower fees, professional and pooled investment management, and access to more sophisticated diversification strategies—it should not be surprising that professionally managed DB plans consistently outperform individually managed DC plans. One widely cited estimate from Munnell and Sunden (2004) puts the difference in annual return at 0.8 percent. Over a 30-year time period, this compounds to a 25-percent difference in total return. A 2007 report from the global benchmarking firm, CEM, Inc., concluded that between 1998 and 2005 DB plans showed annual returns 1.8 percentage points higher than DC plans, largely due to differences in asset mix (Flynn & Lum 2007). And Watson Wyatt (2008) found that between 1995 and 2006 DB plans outperformed DC plans by 109 basis points, on average.

The benefits of risk pooling

DB plans create additional economies for participants and plan sponsors by pooling mortality and other risks. By pooling the mortality risks of large numbers of people, DB plans need only accumulate assets sufficient to fund retirement benefits over the *average* life expectancy. By contrast, in a DC plan based on individual savings accounts, more assets will be required. Because an individual does not know what their ultimate lifespan will be, it is extremely difficult to know exactly how much one needs to save for retirement and to be certain that one will not outlive those savings. Thus, in a system of individual accounts, each person must ensure that he or she accumulates enough savings to last for the *maximum* lifespan. Thus, a DB plan will require fewer assets to be accumulated than a comparable DC plan, reducing costs by 15 percent to 35 percent (Fuerst, 2004).²

To summarize, state and local DB pension plans provide taxpayers an excellent “bang for the buck.” DB plans possess several sources of economic efficiencies when it comes to delivering retirement benefits. They combine the effects of lower fees, professional management, more sophisticated diversification strategies, and risk pooling. Actuaries have determined that DB plans are much more efficient than DC plans and that they provide retirement benefits at a far lower cost (Fuerst 2004; Waring and Siegel 2007). Thus, to the extent that public retirement systems are supported (at least partially) by taxpayer funds, a DB plan design for state and local retirement systems supports the goal of fiscal responsibility.

Conclusion

My review of the economic evidence on state and local DB plans tells the story of a thriving, well-designed system. State and local DB pension plans have been remarkably successful in providing adequate benefits to public sector retirees in a sustainable and efficient manner. Their proven performance makes these plans a model to emulate.

² Employers that offer individual retirement savings plans could come close to approximating these economies by offering annuity distribution options. In practice, however, it is the rare plan that does so (Perun 2007).

DB plans in the public sector incorporate the features policymakers should look for in successful retirement systems: broad-based coverage, secure money for retirement, portability, shared financing, lifetime benefits with spousal and disability protections, professional management of assets, and low costs and fees.

Public sector DB plans have been highly successful in ensuring that the millions of middle-class Americans who work in service to the public have the resources they need to take care of their own needs in retirement. They provide modest benefits that retirees can count on to last as long as they do.

And public DB plans serve taxpayers and public employees alike with their cost-effective structure. The sustainability and efficiency of public sector DB plans hinge on the pooling of assets and risks. By pooling assets, DB plans can benefit from professional management which drives down costs and enhances return. By pooling longevity risks, DB plans reduce the cost of providing retirement benefits even further.

The lessons that we can learn from the experience of DB plans in the public sector can and should be applied to private sector retirement savings. This is particularly true for the design of DC plans. Much is already done in this way to make saving in these plans more automatic, increase its coverage, and secure its assets. In the end, though, much of what public sector DB plans can offer will be hard or impossible to recreate in the DC setting. For instance, mortality risk will likely remain a feature of DC plans for the foreseeable future. Hence, policymakers should help strengthen existing DB plans, in the private and public sector. Against the backdrop of widespread and rising retirement income insecurity, models of strong retirement security are rare and yet desperately needed.

References

- Almeida, B. 2008. "Retirement Readiness: What Difference Does a Pension Make?" Issue Brief. Washington, DC: National Institute on Retirement Security.
- Almeida, B., K. Kenneally, and D. Madland. 2008. *The New Intersection on the Road to Retirement: Public Pensions, Economics, Perceptions, Politics, and Interest Groups*. Submitted to the Pension Research Council, The Wharton School, University of Pennsylvania.
- Austin Business Journal. 2008. "Poll reveals Americans feel ill-prepared for retirement." June 23.
- Baker, D., and D. Rosnick. 2008. "The Housing Crash and the Retirement Prospects of Late Baby Boomers." CEPR Report. Washington, DC: Center for Economic and Policy Research.
- Benartzi, S. and R.H. Thaler. 2007. "Heuristics and Biases in Retirement Savings Behavior." *Journal of Economic Perspectives* 21 (3): 81-104.
- Blake, D. 2000. "Does it matter what type of pension scheme you have?" *The Economic Journal* 110 (461): F46-F81.
- Board of Governors, Federal Reserve System. 2008. Release Z.1 Flow of Funds Accounts of the United States. Washington, DC: BOG.
- Boivie, I. and B. Almeida. 2008. "Patience is a Virtue: Asset Allocation Patterns in DB and DC Plans." NIRS Issue Brief. Washington, DC: National Institute on Retirement Security.
- Brainard, K. 2007. "Public Fund Survey Summary of Findings for FY 2006." National Association of State Retirement Administrators and National Council on Teacher Retirement.
- Brainard, K. 2008. "Redefining Traditional Plans: Variations and Developments in Public Employee Retirement Plan Design." Prepared for presentation at the Pension Research Council Symposium, May 1-2, 2008.
- Council of Institutional Investors. 2006. "Protecting the Nest Egg: A Primer on Defined Benefit and Defined Contribution Retirement Plans." Washington, DC: CII.
- Flynn, C., and H. Lum. 2007. "DC Plans Underperformed DB Funds." Toronto, ON: CEM Benchmarking, Inc.
- Fuerst, D. 2004. "Defined Benefit Plans: Still a Good Idea?" AARP Global Report on Aging. Washington, DC: AARP International.

- Holden, S. and J. VanDerhei. 2001a. "401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2000." EBRI Issue Brief 239. Washington, DC: Employee Benefit Research Institute.
- Indjic, D. and F. Partners. 2002. "Strategic asset allocation with portfolios of hedge funds." *Alternative Investment Management Association Journal* (December): 29-33.
- Love, D. A., P.A. Smith and L. McNair. 2007. "Do Households Have Enough Wealth for Retirement?" Finance and Economics Discussion Series. 2007-17. Washington, DC: Federal Reserve Board,
- Mitchell, O. and S. Utkus. 2004. *Pension Design and Structure: New Lessons from Behavioral Finance*. New York: Oxford University Press.
- Munnell, A. H., A. Webb, and F. Golub-Sass. 2007. "Is There Really A Retirement Savings Crisis? An NRRI Analysis." CRR Issue in Brief No. 7-11. Boston: Boston College, Center for Retirement Research.
- Munnell, A. H. and M. Soto. 2007. "State and Local Pensions are Different from Private Plans." Center for Retirement Research State and Local Pension Plans, No. 1. Boston College.
- Munnell, A. H. and A. Sunden. 2004. *Coming Up Short: The Challenge of 401(k) Plans*. Washington, DC: Brookings Institution Press.
- Phillips, K.S. and R.J. Surz. 2003. *Hedge Funds: Definitive Strategies and Techniques*. New York: John Wiley & Sons.
- Purcell, P. 2007. "Pension Sponsorship and Participation: Summary of Recent Trends." CRS Report RL30122. Washington, DC: Library of Congress, Congressional Research Service.
- Seco, L.A. 2005. "Hedge funds: Truths and myths." *Revista de Economía Financiera* 6: 82-114.
- U.S. Census Bureau. 2008. "State and Local Government Employee Retirement Systems." Washington, DC: Census.
- Watson Wyatt. 2008. "Defined benefit vs. 401(k) plans: Investment returns for 2003-2006." *Watson Wyatt Insider* 18(5).
- Waring, M. B. and L.B. Siegel. 2007. "Don't Kill the Golden Goose." *Financial Analysts Journal* 63 (1): 31-45.

Weller, C. 2006. "The End of the Great American Housing Boom." Center for American Progress Economic Policy Report. Washington, DC: Center for American Progress.

Weller, C., and S. Jenkins. 2007. "Building 401(k) Wealth One Percent at a Time: Fees Chip Away at People's Retirement Nest Eggs." CAP Economic Policy Report. Washington, DC: Center for American Progress.

Weller, C., M. Price, and D. Margolis. 2006. "Rewarding Hard Work: Give Pennsylvania Families a Shot at Middle Class Retirement Benefits." CAP Economic Policy Report. Washington, DC: Center for American Progress.

Weller, C., and J. Wenger. 2008a. "Robbing Tomorrow to Pay for Today." CAP Economic Policy Report. Washington, DC: Center for American Progress.

Weller, C. and J. Wenger. 2008. "Prudent Investors: The Asset Allocation of Public Pension Plans." Unpublished manuscript. University of Massachusetts Boston.