

## ARE PUBLIC PENSIONS KEEPING UP WITH THE TIMES?



*Reuters*

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Retirement plans for public employees in the United States face serious challenges. These pension plans are increasingly costly, underfunded, and create incentives that undermine the recruitment and retention of the most talented public servants. Out-of-control pension costs have played a role in the high-profile bankruptcies of cities around the country, including Stockton and Vallejo in California; Central Falls, Rhode Island; and Pritchard, Alabama.

The costs of pension plans have steadily increased even as governments' ability to pay them has been decimated by the weak economy. Over the decade between 2001 and 2011, state and local government contributions to employee retirement systems nearly doubled in constant dollars, reaching a total of \$96 billion. Since 2007, these contributions have increased every year and have consumed an increasingly large share of total government spending. The true rise in costs is much greater than these numbers indicate because public pension plans are increasingly underfunded.

The underfunding problem has two key components. First, by their own calculations, most states are not contributing enough to keep up with the pension promises they are making to their employees. Some states are setting aside far less than they need to meet their obligations, thereby pushing the cost onto future taxpayers. At the bottom of the list are New Jersey and Pennsylvania, which made less than one-third of their required contributions in 2010.

Second, states' calculations seriously understate the extent of the funding problem. Most states assume that they will earn an average rate of return of 8 percent a year on their pension funds, a highly unlikely outcome in the current economic environment. This unrealistic assumption still produces a staggering unfunded liability: \$0.9 trillion in 2011. Using a more reasonable assumption of a 5 percent return increases the unfunded liability to \$2.7 trillion, which implies that the average state has only funded half of its pension promises. A funding gap of \$2.7

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trillion is more than four times the \$607 billion in general outstanding debt on states' books in 2012.

The result of years of underfunding and less-than-expected investment performance is that some states have far too little money set aside to fund their pension systems. Even by their own misleading calculations, many states have set aside less than two thirds of what they need to meet their pension obligations. In 2010, the state pension plans in Connecticut, Illinois, Kentucky, Louisiana, New Hampshire, Oklahoma, Rhode Island, and West Virginia were less than 60 percent funded. Using more accurate accounting techniques would surely show these states to be in even more dire straits. At the other end of the spectrum, seven states had plans that were at least 90 percent funded: Delaware, New York, North Carolina, South Dakota, Tennessee, Washington, and Wisconsin. But once again, overly optimistic assumptions about investment returns likely paint a rosier picture than reality.

These funding problems receive the lion's share of public attention because they affect the bottom line of state budgets and taxpayers' wallets. But many public employee pension systems also have design features that, even if the pensions are properly funded, compromise state and local governments' ability to attract and retain the best employees. Young workers have little incentive to join the state's workforce unless they plan to remain on the payroll for at least 25 years. Those who leave their jobs earlier forgo a significant portion of the retirement benefits from their employer.

This is because most pension systems provide very steep rewards late in employees' careers, penalizing those who work for the state for "only" 10 or 20 years. But there is also a problem at the other end of the career ladder, with pension systems punishing employees for staying too long past normal retirement age. This design feature makes it difficult for the state to retain experienced older workers, many of whom have specialized skills and deep institutional knowledge that are difficult to replace.

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A case study of New Jersey's retirement system for state employees highlights these perverse incentives. New hires receive no pension benefits if they leave within their first 10 years. After that, they earn a small increase in benefits each year for the next 15 years. At that point, there is a steep increase in the value of their pension once they become eligible for early retirement with a steady increase thereafter through the normal retirement age. After employees reach normal retirement age, they earn few additional benefits and eventually their pension declines in value. Ultimately, workers hired at age 25 essentially forfeit a quarter of their pay each year if they remain on the job in their early sixties.

Retirement plans are generally quite different in the private sector, where most employees are part of defined contribution plans in which benefits are deposited into an account that grows (or declines) in value over time. These are quite different from the traditional defined benefit plans common in the public sector, which guarantee a benefit level regardless of the performance of the pension fund. In 2012, 15 percent of full-time, private-sector workers participated in open defined benefit pension plans, compared to 86 percent of full-time state and local government employees. Retirement benefits form a much larger part of total compensation in the public sector, and this gap has increased over time. Between 2004 and 2012, public employee retirement savings plans rose from 6 to 9 percent of total annual compensation, an increase of about 50 percent. In the private sector, the percentage stayed the same at less than 4 percent.

By definition, defined contribution plans cannot be underfunded because each employee's benefit is simply their account balance. These accounts accumulate value relatively smoothly over time, and therefore do not penalize young workers and old workers or provide disproportionate benefits to workers who retire within a fairly narrow window. Their downside from the perspective of the employee is that they shift the investment risk from the employer to the employee.

The widespread use of defined contribution plans in the private sector has led to calls for the public sector to use this class of retirement

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plans as a replacement for traditional defined benefit plans. In a future report, we will delve into the advantages and disadvantages of transitioning to defined contribution plans as compared to reforming defined benefit plans. The funding problems that have plagued defined benefit plans are solvable in theory, but are there mechanisms that could be put in place to reduce the likelihood of underfunding in the future? How can the perverse incentives created by many defined benefit plans be solved through better plan design? How can policymakers ensure that reforms that reduce costs are not borne solely by new employees, making it even harder to recruit new talent?

Regardless of which route is preferable, it is obvious that the current situation is unsustainable financially in most states and undesirable in terms of recruiting and retaining the best public employees. Reform will have to come, and it will be far preferable to tackle it creatively before the problem worsens rather than be forced to act hastily down the road.

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# THE REAL CHALLENGES FACING STATE AND LOCAL PENSION PLANS

## Introduction

Traditional retirement plans that have provided state and local government workers with generous pensions are increasingly in peril. The cost to state and local governments of maintaining these plans is steadily rising, threatening to upend government budgets and crowd out other important public services or prompt sharp increases in tax rates. Out-of-control pension costs have already been implicated in the recent high profile bankruptcies of cities around the country, including Stockton and Vallejo in California; Central Falls, Rhode Island; and Pritchard, Alabama. Moreover, many states and localities have not been setting aside enough funds to cover the pensions they promised to the wave of government employees set to retire in the next decade, leading to predictions of an even greater fiscal calamity in the near future. Some experts estimate the shortfall at \$5 trillion (Novy-Marx and Rauh 2011b).

Many states have responded by cutting pension costs, primarily by reducing benefits or requiring participants to contribute more. From 2009 to 2011, 43 states enacted major changes to their state retirement plans (Snell 2012). Eight states made major structural changes to their retirement systems in the first eight months of 2012 (National Conference of State Legislatures 2012).

At issue is the very nature of the retirement promises made to state and local government employees. The vast majority of retirees from the public sector still receive traditional defined benefit pension plans, which guarantee lifetime benefits based on earnings and years of service. Critics contend that taxpayers can no longer afford these benefits, especially as life expectancy rises and retirees collect payments longer. Many plans still offer generous early retirement benefits, enticing many government employees to leave the public payrolls as early as age 55 and collect pension benefits for three or more decades. These types of plans are

*From 2009 to 2011, 43 states enacted major changes to their state retirement plans.*

unavailable to most workers in the private sector, who instead fund their retirement with tax-deferred savings accounts.

As the debate swirls, this report assesses the real challenges facing state and local government retirement plans. We begin by describing typical defined benefit plans provided by state and local governments, and then consider what the erosion in defined benefit pension coverage for private-sector workers portends for state and local government workers. If such plans are not sustainable in the private sector, can and should they survive in the public sector? We next discuss whether the political dynamics of state and local government doom the chances that public plans can be consistently well funded. The remaining sections assess whether state and local plans are too generous, whether they satisfy the staffing needs of government, and whether state and local government employees really value traditional pension plans.

### **The State and Local Public Employee Retirement System**

There were 19.4 million state and local government workers employed in the U.S. in 2011 (U.S. Census Bureau 2012a). Nearly three-quarters were employed by local governments, including counties, municipalities, townships, school districts, and special districts. More than half of state and local government employees worked in education, including about 40 percent in elementary and secondary education and another 16 percent in higher education (U.S. Census Bureau 2012a). Public school teachers accounted for slightly more than a quarter of the state and local government workforce. Additionally, about 10 percent of employees worked in police or fire protection or corrections, and 5 percent worked in hospitals.

In 2011, 3,418 state and local public employee retirement systems were operating, 222 administered at the state level and 3,196 administered at the local level (U.S. Census Bureau 2012b). Pennsylvania has by far the most local systems, accounting for nearly half of the nationwide total. However, locally-administered plans are much smaller than state plans, which hold about five of every six dollars invested in these systems.

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Combined, they held \$3 trillion in assets in 2011 and covered 19.5 million members, including 14.5 million active members accruing benefits and 4.9 million inactive members. Another 8.6 million retirees received periodic benefit payments worth \$216 billion (U.S. Census Bureau 2012b), an average annual benefit in 2011 of about \$25,000.

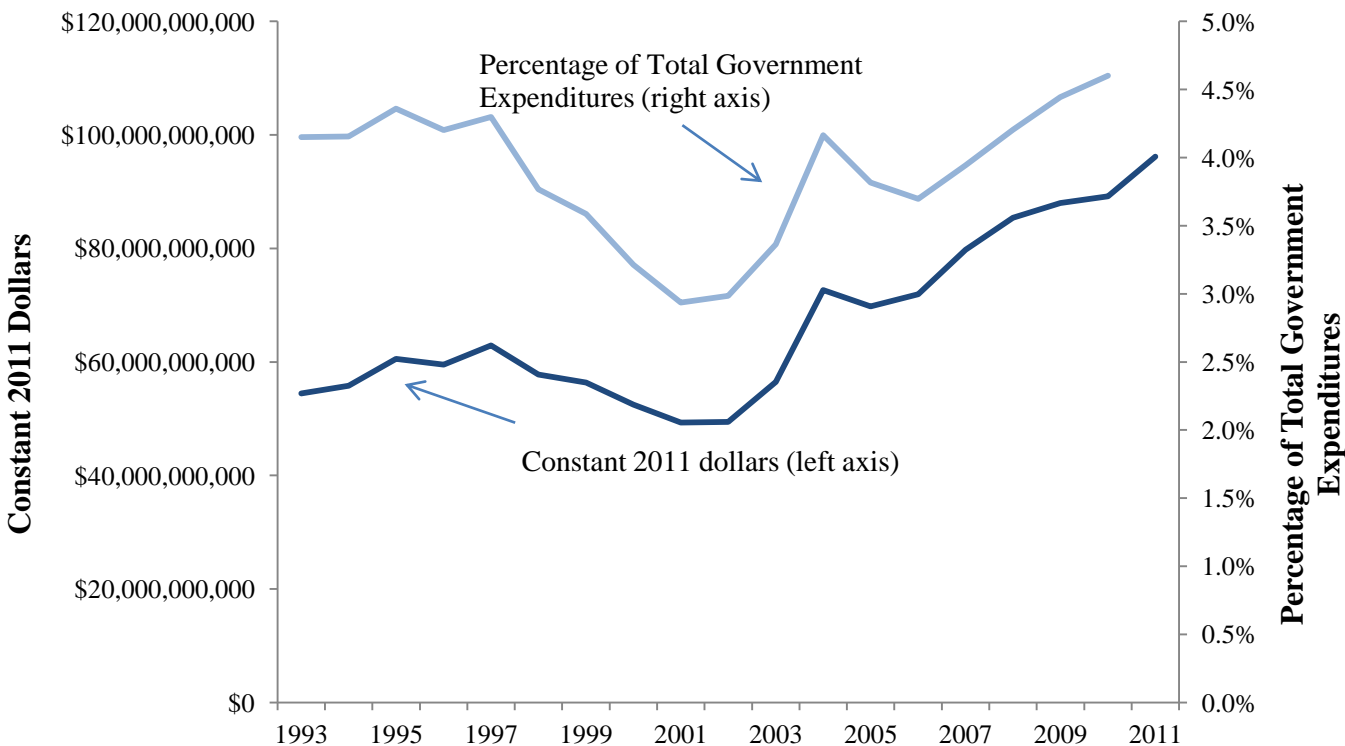
The cost of state and local retirement systems has increased rapidly over the past decade. In 2011, state and local governments contributed \$96.2 billion to public employee retirement plans, 95 percent more in inflation-adjusted dollars than they did a decade earlier (Figure 1). Even though local plans hold fewer assets and pay fewer benefits than state plans, local governments contributed 59 percent of the 2011 total (U.S. Census Bureau 2012b). Localities play such a large role in the financing of public employee retirement systems because many local government employees are covered by state-administered plans that receive contributions from local governments. Localities accounted for 46 percent of government contributions to state plans, as well as nearly all government contributions to locally-administered plans (U.S. Census Bureau 2012b).

Figure 1 also shows that public employee retirement systems are consuming an increasing share of government budgets. In 2010 (the most recent year for which data on total government expenditures are available), they accounted for 4.6 percent of all state and local expenditures, up from 2.9 percent in 2001. As a share of total expenditures, spending on public employee retirement fell from 1997 to 2001 as the stock market boomed, increased from 2001 to 2004 in the wake of the dotcom stock market crash, fell again from 2004 to 2006, and has been growing rapidly since 2006 in the wake of the Great Recession and financial turmoil in the second half of the 2000s.

The full cost to taxpayers of public sector pensions has grown even more rapidly than government contributions reported in Figure 1 because many states and localities have not been contributing enough to cover the growing future obligations that are being incurred. As we discuss later in this report, virtually no jurisdiction fully funds the retirement it has



**Figure 1: State and Local Government Contributions to Public Employee Retirement Systems, 1993-2011**



Source: Authors' computations from U.S. Census Bureau (various years) and Urban-Brookings Tax Policy Center (2013).

promised to its employees, and most have fallen further behind over the past decade. Changes in government contributions sometimes reflect efforts to shore up the system's finances (e.g., by making up for past underfunding) or changes in the underlying cost of providing retirement benefits to employees (e.g., due to shifts in the generosity of plan benefits or changes in the characteristics of the workforce).

The growth in retirement spending is not uniform across the country, but instead varies widely from state to state. Table 1 shows the percentage change in inflation-adjusted state and local government contributions to retirement plans for the 10 states with the fastest growth in retirement spending and the 10 states with the slowest growth. Costs surged most in New York State, where inflation-adjusted government contributions to public employee retirement systems increased 504

percent over the period.<sup>1</sup> Real costs also more than doubled in Arizona, Pennsylvania, the District of Columbia, and California. In Oregon, by contrast, inflation-adjusted contributions fell 58 percent between 2002 and 2011. They also fell in Maine and Ohio, and grew less than 25 percent in Wisconsin, Idaho, Minnesota, Oklahoma, and Indiana.

**Table 1: Percent Change in Inflation-Adjusted State and Local Government Contributions to Retirement Plans for States with the Largest and Smallest Changes, 2002-2011**

States with the Largest Increases	Percent Change	States with the Smallest Increases	Percent Change
New York	504	Oregon	-58
Arizona	319	Maine	-34
Pennsylvania	288	Ohio	-26
District of Columbia	232	Wisconsin	1
California	202	Idaho	3
Kentucky	195	Minnesota	13
New Jersey	195	Oklahoma	22
New Hampshire	173	Indiana	24
Hawaii	155	Georgia	25
Alaska	145	South Carolina	25

*Source:* Authors' calculations from U.S. Census Bureau (2012b).

*Note:* In addition to the 50 states, these tabulations include data on the District of Columbia.

### How State and Local Pension Plans Work

Nearly all state and local governments enroll their employees in traditional defined benefit pension plans that provide lifetime retirement benefits. Although details vary widely across jurisdictions, plans typically pay retirees a specified percentage of their final salary for each year of completed service. That percentage sometimes varies with years of service, often increasing with seniority (although some plans reward earlier years of service more than later ones). Some plans also cap pension

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benefits so that they cannot exceed a certain share of salary, such as 75 or 80 percent. The salary measure that enters the formula is generally the average of the last three or five years (called the “final average salary”), or the average of the three or five years when earnings were highest. According to our analysis of the 126 state and local plans included in Boston College’s Center for Retirement Research Pension Plan Database (PPD), the median pension benefit for employees with 25 years of service replaces 50 percent of final average salary, an average multiplier of 2 percent over the employee’s career.

These formulas assume that retirees elect to receive their pensions as single life annuities, which pay benefits until retirees die, at which time benefits cease. However, plans also offer various options that continue to pay benefits to surviving spouses. Participants who elect survivor options receive lower payments while they are alive so that expected payouts under the single life and survivor options are equal. Most married employees enrolled in defined benefit plans choose these joint and survivor annuities when they retire instead of single life annuities (Johnson, Uccello, and Goldwyn 2005).

Virtually all state and local pension plan participants must contribute a portion of their salaries to their plans. The median mandatory employee contribution rate across the PPD plans was 6 percent in 2010. About a quarter of plans required employees to contribute more than 8 percent of their salaries.<sup>2</sup> Employee contributions totaled \$40.3 billion in 2011, accounting for 30 percent of all contributions to public employee retirement systems (U.S. Census Bureau 2012b).

Pension payments begin when employees leave the payroll and meet the benefit eligibility criteria, usually some combination of age and years of service. Most plans allow employees to qualify for benefits several different ways, such as by reaching age 60 with 10 years of service or completing 25 years of service at any age. Sometimes eligibility depends on the sum of the employee’s age and years of service. About two-thirds of the plans in the PPD allow employees hired at age 25 to collect pension benefits by age 55, according to our calculations. Nearly a

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third allow such employees to collect before age 55, and fewer than 10 percent require them to wait past age 60.

Workers who leave the government payroll before they can begin receiving their retirement benefits may usually begin collecting their pensions once they are old enough, as long as they have worked enough years to “vest” in their benefits. About three-fifths of the PPD plans vest employees after five years of service; about a quarter of plans require employees to have completed 10 years of service. Only a handful of plans allow fewer than five years of service or require more than 10 years. Workers who separate before vesting usually have their retirement plan contributions refunded to them, with interest.

Most plans offer reduced benefits to employees who separate before the normal retirement age, as long as they meet certain age and years of service requirements. Sometimes the payment reductions are roughly actuarially fair, with the monthly benefit cut almost exactly offsetting the increased number of payments received by early retirees. In that case, the expected value of lifetime payments would be about the same if an employee who separated at the early retirement age immediately began collecting benefits or waited until reaching the normal retirement age to collect. Many plans, however, subsidize early retirement, enabling employees to maximize their lifetime payments by retiring early.

Once state and local government employees begin collecting their pensions, they are usually entitled to cost-of-living adjustments (COLAs) that maintain (or nearly maintain) their benefits’ purchasing power, even in the face of inflation. About a fifth of PPD plans increase retirees’ payments by a fixed percentage each year. A more common approach followed by about half of the PPD plans is to tie adjustments to the change in the consumer price index (CPI) up to a maximum percentage increase each year, or to increase benefits by a fraction of the change in the CPI. COLAs sometimes depend upon the plan’s funding status.

## The Contrast with the Private Sector

Retirement plans are generally quite different in the private sector. In 2012, 86 percent of full-time state and local government employees participated in defined benefit pension plans (Bureau of Labor Statistics 2012).<sup>3</sup> In the private sector, however, only 20 percent of full-time employees participated in such plans. Moreover, 26 percent of full-time private-sector workers with defined benefit pension coverage in 2012 belonged to frozen plans, which did not accrue additional benefits for existing participants or were closed to new hires (Bureau of Labor Statistics 2012). Thus, only 15 percent of full-time private-sector workers participated in open defined benefit pension plans that year.

Although defined benefit pension plans once dominated in both the private and public sectors, they have now been surpassed in the private sector by defined contribution retirement plans, which covered 51 percent of full-time private-sector workers in 2012.<sup>4</sup> These plans specify the contributions that employers make to retirement payments instead of promising lifetime retirement payments based on salary and years of service. Employers that provide 401(k)-type plans—the most common type of defined contribution plan—contribute to a retirement account in the participant’s name, usually as a percentage of salary. Employees can also contribute to their retirement accounts and defer taxes on their contributions until they withdraw funds from their accounts. Employer contributions sometimes depend on how much the participant contributes. Some employers, for example, match worker contributions up to a specified amount, providing little to employees who do not contribute much to their retirement plans. Account balances grow over time with contributions and investment returns.

Traditional defined benefit retirement plans and defined contribution plans differ in important ways that affect their suitability for public employment. For example, the manner in which future retirement benefits are funded differ in the two types of plans. Participants in defined benefit plans accumulate rights to future benefits as their earnings and years of service increase over the course of their careers, but they do not

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receive any payments until they terminate their employment. Sound accounting practices and most economists stipulate that employers should set funds aside each year to cover the growth in the value of expected future benefits.<sup>5</sup> Valuing those amounts is complicated and often involves controversial assumptions, as we discuss later in the report. More importantly, many defined benefit pension sponsors in both the private and public sectors have not always fully funded their plans. Underfunding retirement systems shifts compensation costs to future years (and potentially to other actors) and increases the risk that participants will not receive their full retirement benefits or that any third-party guarantors will have to assume responsibility for benefit payments to retirees. By contrast, defined contribution plans are always fully funded because the plan specifies how much employers (and sometimes employees) must contribute each period.

Traditional defined benefit and defined contribution retirement plans also differ in how risks are shared between employers and employees. Because traditional defined benefit plans guarantee participants lifetime retirement payments, employers must make up the difference if investment returns fall short of expectations and the plan holds insufficient funds to cover promised payouts. Similarly, defined benefit pension providers will have to contribute more if beneficiaries live (and collect payments) longer than expected. In defined contribution plans, participants bear the entire investment risk—they receive smaller retirement distributions if their accounts earn less than expected, while employers are unaffected. Most employers distribute defined contribution benefits to retirees in a lump sum or fixed number of payments instead of annuitizing their account balances. The proceeds may be used to purchase annuities from insurance companies, but most of those who purchase annuities expect to survive to relatively old ages, meaning that insurance companies cannot typically offer rates that are attractive to the general population with average life expectancies (Mitchell et al. 1999). As a result, relatively few defined contribution plan participants annuitize their balances. Instead, most bear the longevity risks typically borne by

employers that offer defined benefit plans—the longer retirees live the greater the chances that they will deplete their accounts before they die.

Another key difference between the two plan types is the pattern by which benefits accumulate over the career. In most defined contribution plans, benefits accumulate steadily over time. With each additional year of service the employer contributes another predetermined percentage of the employee’s salary to the retirement plan. Sometimes that percentage increases with years of service, but any shifts are typically gradual. Unpredictable fluctuations in investment returns can cause account balances to surge or plunge, but such variation tends to even out over time. Consequently, the *expected* growth is generally smooth.

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Future benefits usually grow much more erratically in traditional defined benefit plans, creating perverse work incentives and distorting decisions to work for the employer or remain on the payroll. As described in more detail below, the traditional final-salary benefit formula increasingly rewards work as years of service grow, back loading benefits late in the career. As a result, such plans do not reward relatively mobile young employees who do not remain in government employment for 20 or more years. This accrual pattern also penalizes workers who change jobs. Employees in defined benefit plans forced to leave their jobs because of layoff or bankruptcy generally end up with much lower retirement benefits than they expected, as do those who separate before retirement for other reasons. Employer bankruptcy is a much greater concern in the private sector than the public sector, but government layoffs have become much more common in the aftermath of the Great Recession (Mitchell 2013). Moreover, the value of future benefits often spikes at particular ages, locking in workers until they have reached those ages even if the job is not a good fit and they could be more productive elsewhere. Finally, the value of future retirement benefits often falls if employees remain on the job after they can begin collecting benefits, encouraging older workers to retire. These incentives limit firm productivity and impair the nation’s economic growth by pushing productive workers out of the labor force, a

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particularly troublesome feature of defined benefit plans as the workforce ages and the pool of younger workers stagnates.

Lastly, defined benefit and defined contribution plans operate in different legal environments. Both types of plans are subject to rules laid out in the Internal Revenue Code, which sets the tax preferences enjoyed by employer-sponsored retirement plans. Among other things, the code includes anti-discrimination provisions designed to ensure that employees at all compensation levels benefit from employers' retirement plans, not just highly-compensated workers. These rules apply to both public and private employers. Additionally, the Employee Retirement Income Security Act of 1974 (ERISA) and its many amendments require employer-sponsored retirement plans in the private sector, but not the public sector, to meet minimum standards for participation, vesting, funding, reporting, and disclosure. ERISA also established the Pension Benefit Guaranty Corporation (PBGC), a federal agency that collects premiums from plan sponsors and makes payments to beneficiaries if plans are terminated. Because state and local governments are not subject to ERISA, their pension plans are not federally insured and they do not have to pay premiums to the PBGC. Financial accounting and reporting standards for retirement plans, including the assumptions used to estimate funding levels, are set by the Governmental Accounting Standards Board (GASB) in the public sector and the Financial Accounting Standards Board (FASB) in the private sector. Although neither board is a governmental entity and both lack legal authority to enforce their standards, organizations that do not comply can suffer serious consequences. For example, some states require that governmental entities within their jurisdictions adhere to GASB standards, and most auditors will not certify a state's or locality's financial statements if they deviate significantly from the standards (Government Accountability Office 2008). Failure to comply with the standards may also damage the jurisdiction's credit rating.

The remaining sections of this report explore what the differences between defined benefit and defined contribution plans mean for the future of retirement in the public sector. We begin by considering what



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the erosion in defined benefit pension coverage for private-sector workers portends for state and local government workers. If such plans are not sustainable in the private sector, can and should they survive in the public sector? We then discuss whether the political dynamics of state and local government doom the chances that public plans can be consistently well funded. The remaining sections assess whether state and local plans are too generous, whether they satisfy the staffing needs of government, and whether state and local government employees really value traditional pension plans.

### **What Does the Decline of Private-Sector Defined Benefit Pensions Mean for the Public Sector?**

The private-sector shift from traditional defined benefit plans to defined contribution plans has led some observers to urge the public sector to follow suit. They argue that profit-maximizing private-sector employers concluded that defined contribution plans should be part of employee compensation packages that attract, retain, and motivate productive workers at the lowest possible cost. State and local governments that strive to provide public services in the most efficient way possible should adopt the best compensation practices developed in the private sector.

This argument hinges partly on why private-sector employers largely abandoned defined benefit plans. Relatively few firms terminated their defined benefits plans and switched to defined contribution plans. Instead, private-sector defined benefit pension coverage has fallen since the 1980s because some large employers with defined benefit plans (particularly in manufacturing) went out of business and nearly all new firms opted for defined contribution plans instead of defined benefit plans (Kruse 1995; Ippolito and Thompson 2000; Papke, Petersen, and Poterba 1996). Employment growth over the past few decades has been concentrated in services and information technology, in smaller firms, and nonunionized establishments, segments of the economy in which defined benefit plans have always been relatively uncommon. These changes in

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industry composition, unionization, and firm size account for as much as one half of the private-sector drop in defined benefit coverage (Andrews 1992; Clark, McDermed, and Trawick 1993; Gustman and Steinmeier 1992; Ippolito 1995, 2000). Because governments are ongoing concerns that do not generally cease operations, it is perhaps not surprising that defined benefit pensions did not decline much in the public sector. Nonetheless, understanding why private firms seem reluctant to establish new defined benefit plans may offer insights into their sustainability in the public sector.

There is evidence that government regulation deterred many private-sector firms from enrolling their employees in defined benefit plans and made defined contribution plans more attractive (Clark and McDermed 1990; Clark and Schieber 2000; Gebhardtshauer 2004; Kruse 1995; Rajnes 2002; Warshawsky 1995). As noted earlier, ERISA created participation, vesting, funding, and other standards that did not exist before the law went into effect in 1976. The Omnibus Budget Reconciliation Act of 1987 restricted the amount of assets that employers could accumulate in defined benefit plans, limiting the funding flexibility of the plans that was an important part of their appeal (Warshawsky 1995). Beginning in the mid-1980s, firms that terminated their defined benefit plans were taxed on the plan's excess assets, further limiting funding flexibility and creating another deterrent to defined benefit plan sponsorship (Ippolito 2002). Funding rules were tightened again by the Pension Protection Act of 2006, which also raised plan reporting and disclosure standards. These regulations increased the administrative costs of sponsoring defined benefit plans, especially for smaller firms that lack the scale to spread these fixed costs over thousands of plan participants. The complexity of adhering to rapidly changing regulations may also have discouraged employers from sponsoring defined benefit plans (VanDerhei and Copeland 2001).

Additionally, soaring PBGC premiums raised the cost of defined benefit plans in the private sector and may have discouraged sponsorship (VanDerhei and Copeland 2001). Premiums for single-employer plans

were only \$1 per participant when the program began in 1974, but then increased to \$8.50 in 1986, \$16 in 1988 and \$30 in 2006 (PBGC 2012). Today they stand at \$42 per participant. Since 1998, firms have been charged additional variable-rate premiums based on their plans' funding status. That supplemental rate is now \$9 per \$1,000 of unfunded vested benefits.

Although changes in industry composition, firm size, federal funding requirements, and PBGC premiums may have contributed to the decline in defined benefit retirement plans in the private sector, they would not have affected plan sponsorship in the public sector. The type of functions performed by state and local government has not changed much and their payrolls have not shrunk. Moreover, state and local governments are not subject to federal funding requirements and do not pay PBGC premiums.

Another potential reason for the growth in private-sector defined contribution plans is that these plans are better suited to a mobile workforce, an explanation that may be more relevant to the public sector. Most workers change jobs frequently over the course of their lives, especially at younger ages. The typical male worker born between 1939 and 1944 held seven jobs during his first 10 years in the labor market, about two-thirds of the jobs in his total career (Topel and Ward 1992). The Bureau of Labor Statistics (2008) reports that the average person born in the later years of the baby boom (1957 to 1964) held 10.8 jobs from ages 18 to 42. Although job tenure generally increases with age, short-duration jobs are now common for workers approaching middle age. About 3 in 10 jobs started by workers ages 38 to 42 now end in less than a year, and nearly two-thirds end within five years (Bureau of Labor Statistics 2008). Workers in the private sector seem to be changing jobs more frequently over the past quarter century. Farber (2007, 2010) reports, that job tenure and the incidence of long-term employment have declined sharply in the private sector between 1970s and 2008.<sup>6</sup>

Workers who remain with an employer for less than a full career would generally fare better under defined contribution plans—which typically accumulate future retirement benefits gradually over the

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career—than traditional defined benefit plans, which tend to backload benefits late in the career. Aaronson and Coronado (2005) find evidence that workers likely to change jobs relatively frequently seek employers that offer defined contribution retirement plans rather than defined benefit plans. A more mobile government workforce might also prefer defined contribution pensions. However, average job tenure is higher in the public sector than private sector, and there is not much evidence that government workers are becoming more mobile. Between the 1970s and 2008, job tenure and the incidence of long-term employment increased for workers in the public sector (Farber 2010). Of course, state and local government workers might change jobs more frequently if their defined benefit pension coverage did not penalize early separations.

### **Do State and Local Pension Plans Promote Underfunding?**

Perhaps the most publicized critique of state and local pension plans in recent years has been that they have not set aside enough funds to finance future benefit obligations. Although participants in defined benefit retirement plans do not receive any benefits until they terminate employment and meet the plan’s age or service requirements, they accumulate rights to future benefits throughout most of their careers. Most economists believe that employers should set aside funds each year to cover the growth in the value of expected future benefits. Fully funding pension plans ensures that each generation of taxpayers pays the full cost of the government services it receives, and allows taxpayers to evaluate the total compensation paid to state and local government workers. Underfunding plans—setting aside less than the full amount to cover future obligations—shifts compensation costs to future years and potentially different taxpayers. Of course, state and local officials and their workforce may face strong incentives to underfund state and local pensions so as to keep tax rates on current taxpayers low and increase their reelection chances. State and local workers may be willing to go along, perhaps in exchange for relatively generous retirement benefits, if they are confident that they will eventually receive their benefits in full.

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This dynamic could lead to compensation packages that are tilted too much toward retirement benefits and retirement systems that are poorly funded.

Funding levels are typically summarized by the plan's funding ratio, defined as plan assets divided by plan liabilities. Plan liabilities include the expected present value of the benefits owed to plan participants. The present value is the amount of money that must be set aside today to cover a stream of future payments. Because funds set aside today will earn interest and grow over time, the present value is less than the simple sum of those future payments. In other words, future liabilities are discounted because they are not paid until many years in the future. Although the concept is straightforward, numerous assumptions go into those calculations, and plan trustees have much latitude over what they assume. For example, estimated liabilities depend on such factors as how long employees are expected to remain with the employer, how much their salaries will increase, how long they live after they retire, how many retirees take single life annuities or joint and survivor annuities, and how inflation unfolds over time.

The funding assumption that has attracted by far the most scrutiny is the interest rate used to discount future liabilities. A liability that will not be paid for many years costs less than the same amount due today, but how much less? The interest rate that is used substantially affects estimated liabilities. Consider a \$25,000 payment due in 25 years. If we discount that obligation using a 3 percent annual interest rate, we need to set aside \$11,940 today. If we instead use an 8 percent rate, we need to set aside only \$3,650, or less than a third as much. Standard financial theory stipulates that future payment streams should be discounted at a rate that reflects the likelihood that they will have to be paid. Because state law generally protects both accrued benefits and future accruals (Monahan 2010), there is relatively little risk that these obligations will not be honored.<sup>7</sup> Thus, many economists argue that state and local pension plans should use a riskless rate, such as the U.S. Treasury yield curve, to discount their liabilities (Gold 2000; Brown and Wilcox 2009; Novy-Marx

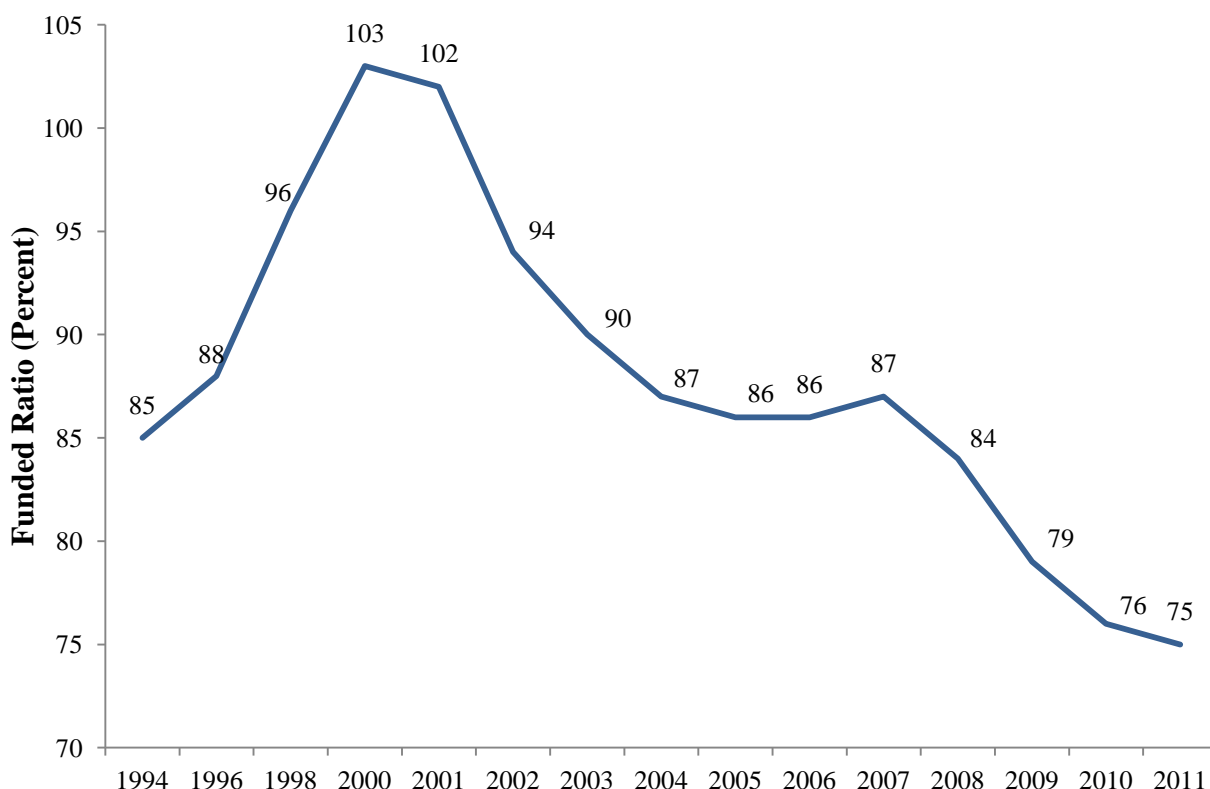
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and Rauh 2011a, 2011b). Private-sector plan sponsors, which may reduce future benefit accruals and are more likely to default on their obligations, use the higher 20-year corporate bond rate to discount their liabilities. However, GASB allows state and local governments to use an interest rate that reflects the expected return on plan assets. As a result, most state and local plans discount future liabilities at much higher rates than the current 30-year Treasury yield of about 3 percent that many economists recommend or the 20-year corporate bond rate, now about 4 percent (Novy-Marx and Rauh 2011b). Our analysis of the most recent actuarial valuations indicates that more than 80 percent of state-administered retirement plans discounted liabilities at between 7.5 and 8.0 percent in 2012. As we will see, the choice of discount rate substantially affects estimated funding levels.

Another issue is whether to value plan assets at their current market value or use actuarial values that smooth market fluctuations over time. State and local plans have historically used actuarial values because their liabilities are very long term. However, new GASB standards adopted in 2012 now require plans to mark their assets to market (GASB 2011a, 2011b), which will likely increase the volatility of reported funded ratios but better reflect current market conditions.

Figure 2 shows funded ratios from 1994 to 2011 for the 126 plans in the Center for Retirement Research's database, based on actuarial asset values and the plans' own funding assumptions. These plans were fully funded (based on the plans' own calculations) only for a short period, in 2000 and 2001 after the stock market soared in the late 1990s. Following the bursting of the dotcom stock market bubble, funded ratios hovered around 85 percent in the middle of the last decade, before falling sharply in the wake of the 2008 financial crisis. By 2011, the funded ratio was only 75 percent. Of course, because these estimates are based on the plans' own assumptions that include what most economists consider to be overstated interest rates, they tend to understate liabilities and overstate funded ratios.

**Figure 2: State and Local Pension Funded Ratios, 1994-2011**



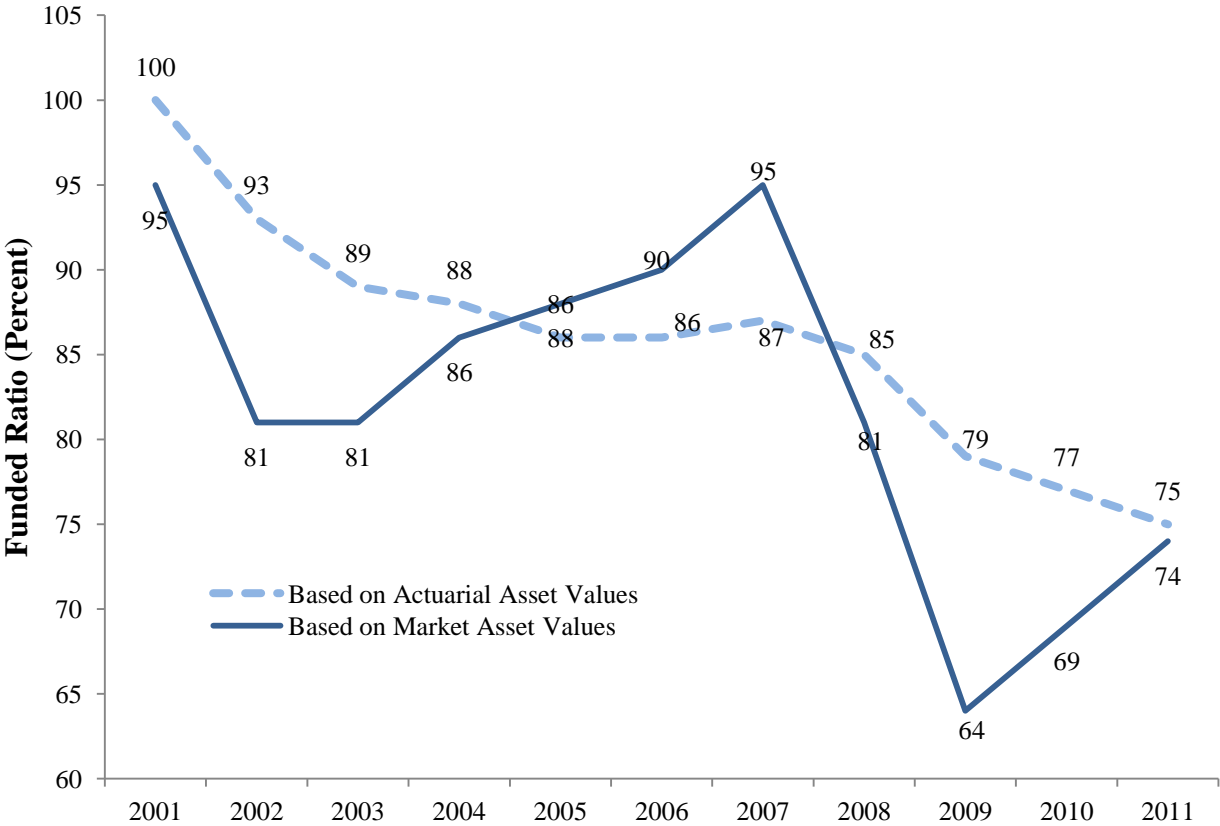
Source: Munnell et al. (2012).

Note: Estimates are based on actuarial asset values and use the plans' own assumptions.

Funded ratios vary much more when they are based on market asset values instead of actuarial values. Figure 3 compares funded ratios using the two different measures for the 126 state retirement plans that Wilshire Consulting (2012) followed from 2001 to 2011. The ratios based on actuarial values changed gradually over time and follow the same pattern as we saw in Figure 2 for the PPD plans. The ratios based on market values, by contrast, increased sharply — to 95 percent — in 2007 as the stock market soared, and then plunged — to 64 percent — in 2009 following the 2008 stock market crash. Funded ratios based on market asset values improved significantly in 2010 and 2011, reaching 74 percent in 2011. As with the estimates reported in Figure 2, these estimates are

based on the plans' optimistic interest rate assumptions that consistently overstate funding ratios.

**Figure 3: Funded Ratio for State Retirement Systems, Actuarial Versus Market Asset Values, 2001-2011**



Source: Wilshire Consulting (2012).

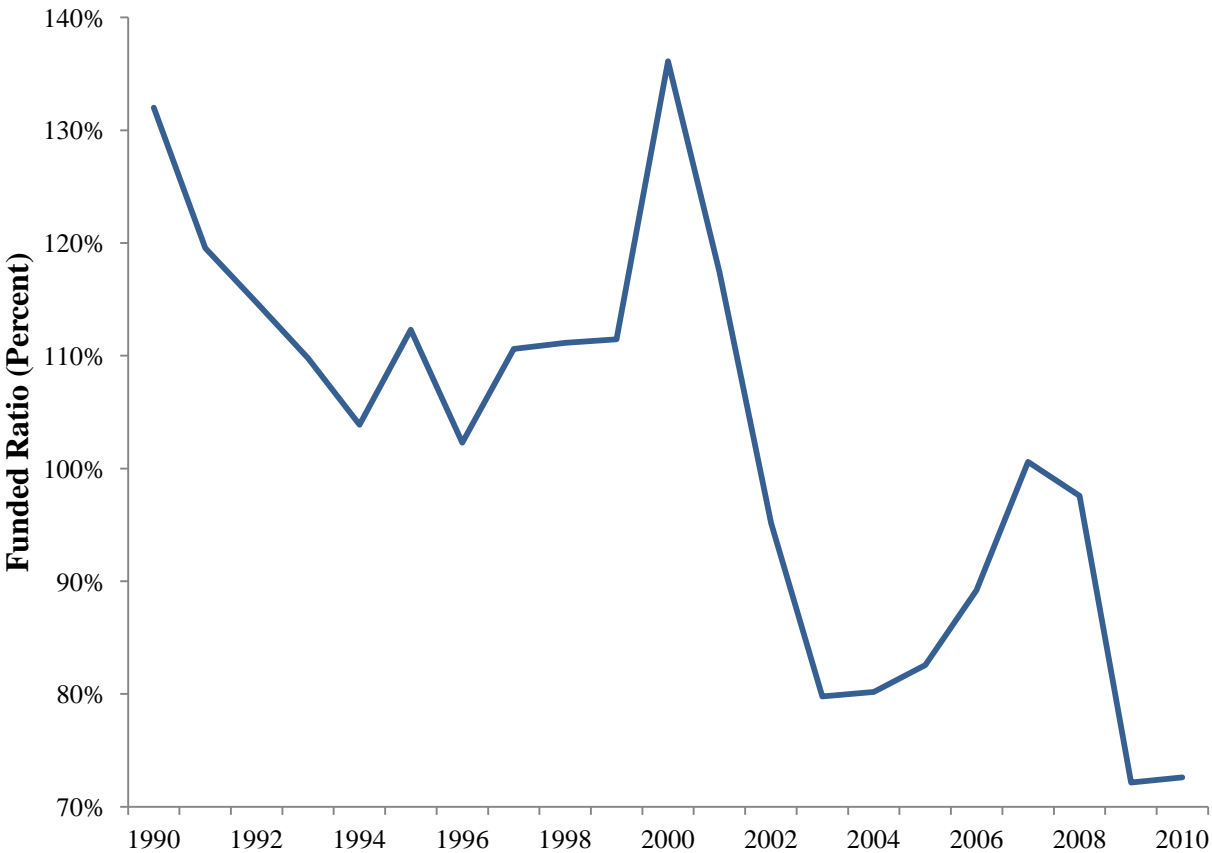
Note: Estimates are for 126 state retirement systems, and use the states' own assumptions.

By comparison, Figure 4 shows funded ratios for private-sector defined benefit plans insured by the PBGC. Throughout the 1990s and in 2000 and 2001, private-sector plans were fully funded on average. However, funded ratios began falling after 2000, and declined to 80 percent in 2003 and 2004. They increased again as the stock market soared, reaching an average funded ratio of 101 percent in 2007. Then ratios plunged again, falling to 72 percent in 2009 and rebounding only slightly



to 73 percent, in 2010. Funded ratios in the private and public sectors generally followed the same patterns over the past decade, although private-sector plans were generally somewhat better funded overall.<sup>8</sup> Of course, the private and public sectors use different discount rate assumptions. If compared using the same interest rate, private-sector plans would be much better funded.

**Figure 4: Funded Ratio for Private-Sector Defined Benefit Plans, 1990-2010**



Source: Authors' calculations from PBGC (2012).

Note: Includes PBGC-insured plans in both the single-employer and multiemployer programs.

Aggregate funded ratios for state and local retirement systems hide an enormous amount of variation across states. The Pew Center on the States (2012) aggregates funded ratios for all state-administered plans

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within each of the 50 states, again based on actuarial asset values and the state's own funding assumptions.<sup>9</sup> In fiscal year 2010, the overall funded ratio was 78 percent, as reported in Table 2. Eight states, however, had funded ratios below 60 percent: Illinois, Rhode Island, Connecticut, Kentucky, Louisiana, Oklahoma, West Virginia, and New Hampshire. At the very bottom, Illinois and Rhode Island had funded ratios below 50 percent. At the other end of the spectrum, seven states had funded ratios of 90 percent or more: Wisconsin, South Dakota, North Carolina, Washington, New York, Delaware, and Tennessee. In Wisconsin, at the very top, plan assets fully covered liabilities.

**Table 2: Funded Status of State Pension Plans, FY2010**

	Actuarial Liability (billions)	Percent Funded	Required Contribution (millions)	Percent Paid
Alabama	42.9	70	1,165	100
Alaska	16.6	60	397	83
Arizona	46.5	75	1,108	101
Arkansas	23.8	75	568	106
California	516.3	78	13,321	75
Colorado	59.3	66	1,347	66
Connecticut	44.8	53	1,472	87
Delaware	7.9	92	149	97
Florida	148.1	82	2,857	107
Georgia	81.1	85	1,330	100
Hawaii	18.5	61	536	102
Idaho	12.6	79	266	113
Illinois	138.8	45	4,762	87
Indiana	39.0	65	1,476	94
Iowa	27.1	81	525	89
Kansas	21.9	62	682	72
Kentucky	37.0	54	1,024	58
Louisiana	41.4	56	1,600	84
Maine	14.8	70	330	103

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Maryland	54.5	64	1,545	87
Massachusetts	63.9	71	1,869	65
Michigan	77.8	72	1,647	86
Minnesota	57.6	80	1,326	65
Mississippi	32.2	64	762	100
Missouri	57.2	77	1,284	89
Montana	11.0	70	244	81
Nebraska	10.0	84	202	100
Nevada	35.2	70	1,395	92
New Hampshire	9.0	59	272	100
New Jersey	123.2	71	4,506	32
New Mexico	30.2	72	693	88
New York	156.6	94	2,344	100
North Carolina	79.6	96	772	100
North Dakota	5.0	72	108	66
Ohio	175.4	67	3,771	67
Oklahoma	36.4	56	1,514	70
Oregon	59.3	87	472	100
Pennsylvania	118.2	75	2,795	29
Rhode Island	13.4	49	306	100
South Carolina	44.0	66	957	100
South Dakota	7.5	96	99	98
Tennessee	35.2	90	837	100
Texas	163.4	83	3,364	82
Utah	25.7	82	695	100
Vermont	4.1	75	90	94
Virginia	75.9	72	1,594	67
Washington	61.7	95	1,880	53
West Virginia	15.0	58	602	93
Wisconsin	80.8	100	687	108
Wyoming	7.7	86	153	82
<b>Total</b>	<b>3,065.1</b>	<b>75</b>	<b>73,700</b>	<b>78</b>

Source: Pew Center on the States (2012).

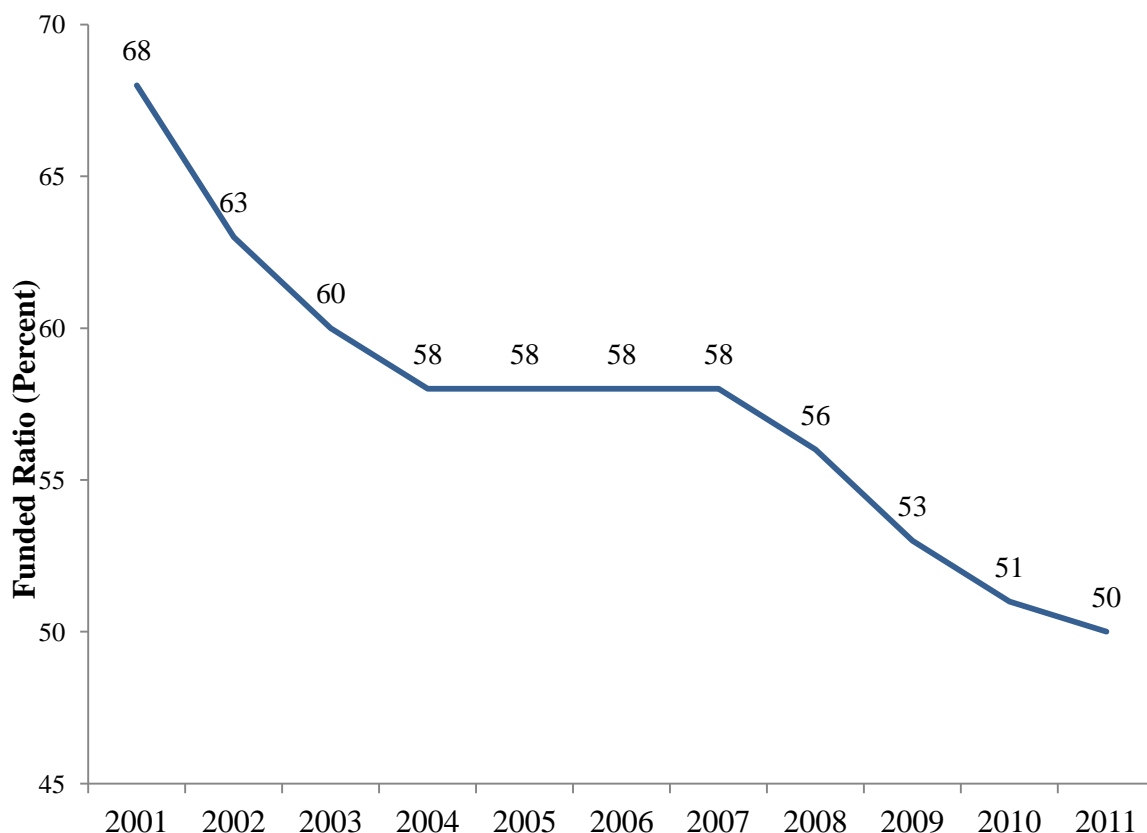
Note: Estimates are based on the states' own actuarial assumptions.

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In most state and local plans, unfunded liabilities have accumulated over many years. Actuaries compute each year an annual required contribution (ARC) for each plan, set to pay off past unfunded obligations over the next 30 years and cover the cost of benefits accruing in the current period.<sup>10</sup> In addition to funded ratios, another measure of how well the state is funding its pension obligations is the percentage of the ARC that it pays each year. Table 2 reports that overall states paid 78 percent of ARC in 2010 (although these calculations are based on the states' overly optimistic actuarial assumptions). As with funded ratios, the percent of ARC paid varied widely. Nineteen states paid at least 100 percent of the ARC, and another six states paid more than 90 percent but less than the full amount. At the bottom of the scale, four states paid less than two-thirds of ARC, including two states—Pennsylvania and New Jersey—that paid less than one-third. Although Rhode Island's plans are less than 50 percent funded, the state did manage to make its full required contribution in 2010, indicating that Rhode Island is on a path to a better funded pension system if it maintains these contribution levels.

All of the state and local plan funding estimates discussed so far have been based on the plan sponsor's own assumptions. As noted earlier, most economists believe the discount rates used by state and local plans are too high, making the plans appear better funded than they actually are. Munnell et al (2012) re-estimated funded ratios for plans in the PPD using an interest rate of 5 percent, closer to the rate that most economists recommend than the one now used by most state plans. The results are reported in Figure 5. In 2011, the overall funded ratio falls from 75 percent when using an 8 percent discount rate to 50 percent when using a 5 percent rate. Aggregate 2011 pension liabilities grow from \$3.6 trillion with an 8 percent rate, to \$5.4 trillion with a 5 percent rate, to \$6.4 trillion with a 4 percent rate.

**Figure 5: State and Local Funded Ratios with Liabilities Discounted at 5 percent, 2001-2011**



Source: Munnell et al. (2012), based on the 126 plans in the PPD.

One challenge for full funding is that the political economy of state and local governments may lead to persistent underfunding of state and local retirement plans. By underfunding retirement benefits, government officials reduce the current labor cost of public services while raising future tax liabilities. Taxpayers can avoid a portion of the labor bill by subsequently moving out of the jurisdiction before the underfunded benefits are paid out, as long as underfunded pension obligations are not fully capitalized into land values. Public-sector employees and their labor unions may be willing to go along, perhaps in exchange for more generous retirement benefits, if they are confident that they will eventually receive their underfunded benefits. The capacity to underfund, and thus pass on a larger share of the current labor bill to future

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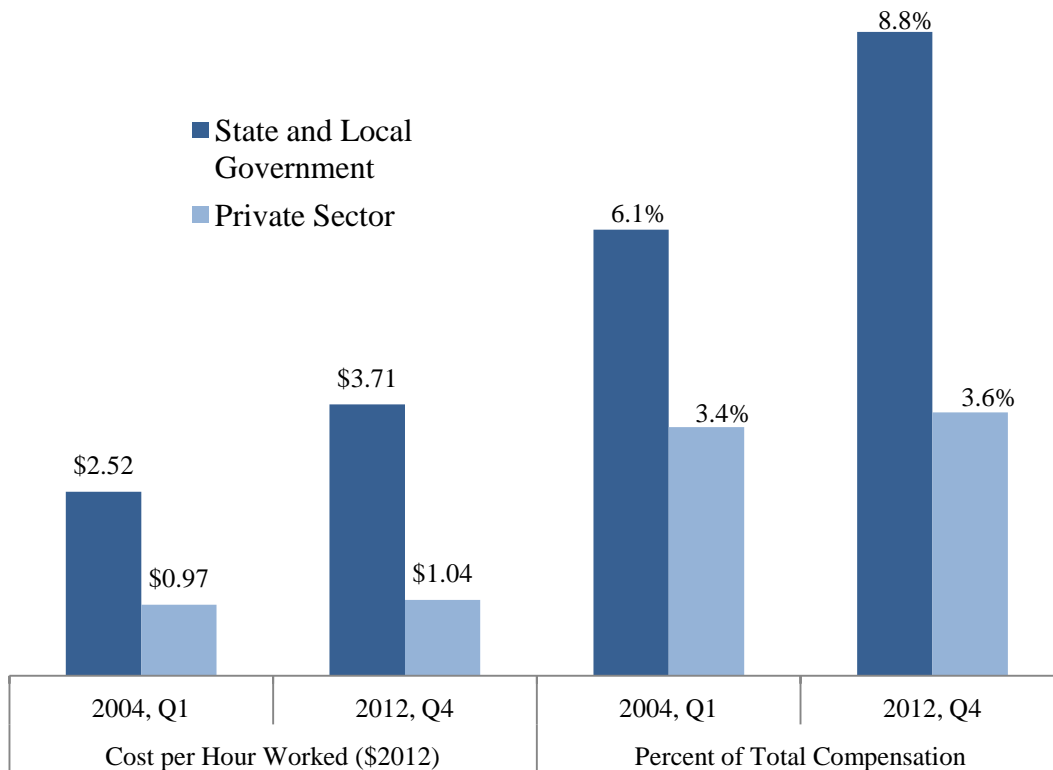
taxpayers, rises as pensions comprise a larger portion of public servants' total compensation. There is some evidence in support of this argument, in that state and local retirement benefits tend to be more poorly funded and more generous in states with more mobile populations (Johnson 1997). This argument implies that the mix between current and future retirement received by state and local government employees is socially inefficient. By underfunding pensions, current taxpayers force future residents to subsidize government workers' retirement income, and government workers receive too much compensation in the form of future retirement income. The next section considers whether the retirement benefits received by state and local government workers are too generous.

### **Are State and Local Pension Plans Too Generous?**

Underlying most of the public debate about state and local retirement plans is concern that they cost too much. Indeed, state and local governments spend more per employee on retirement plans than employers in the private sector. Data from the Bureau of Labor Statistics' National Compensation Survey (NCS) show that in the fourth quarter of 2012, the cost of providing retirement and savings plans to employees averaged \$3.71 per hour worked for state and local governments, nearly four times the average hourly cost of \$1.04 for private-sector employers (Figure 6). This gap has been growing. While inflation-adjusted retirement costs for private-sector employers remained virtually flat between 2004 and 2012, they increased 47 percent for state and local governments. Retirement plans account for only 3.6 percent of total compensation costs paid in the private sector, but 8.8 percent of total compensation costs paid by states and localities.<sup>11</sup>

However, when comparing state and local workers' employer-sponsored retirement benefits to those for private-sector workers, it is important to bear in mind that many workers in the state and local government are not covered by Social Security. According to one recent study, nearly 30 percent of state and local government employees are

**Figure 6: Employer Costs for Employee Retirement and Savings Plans, by Sector, 2004 and 2012**



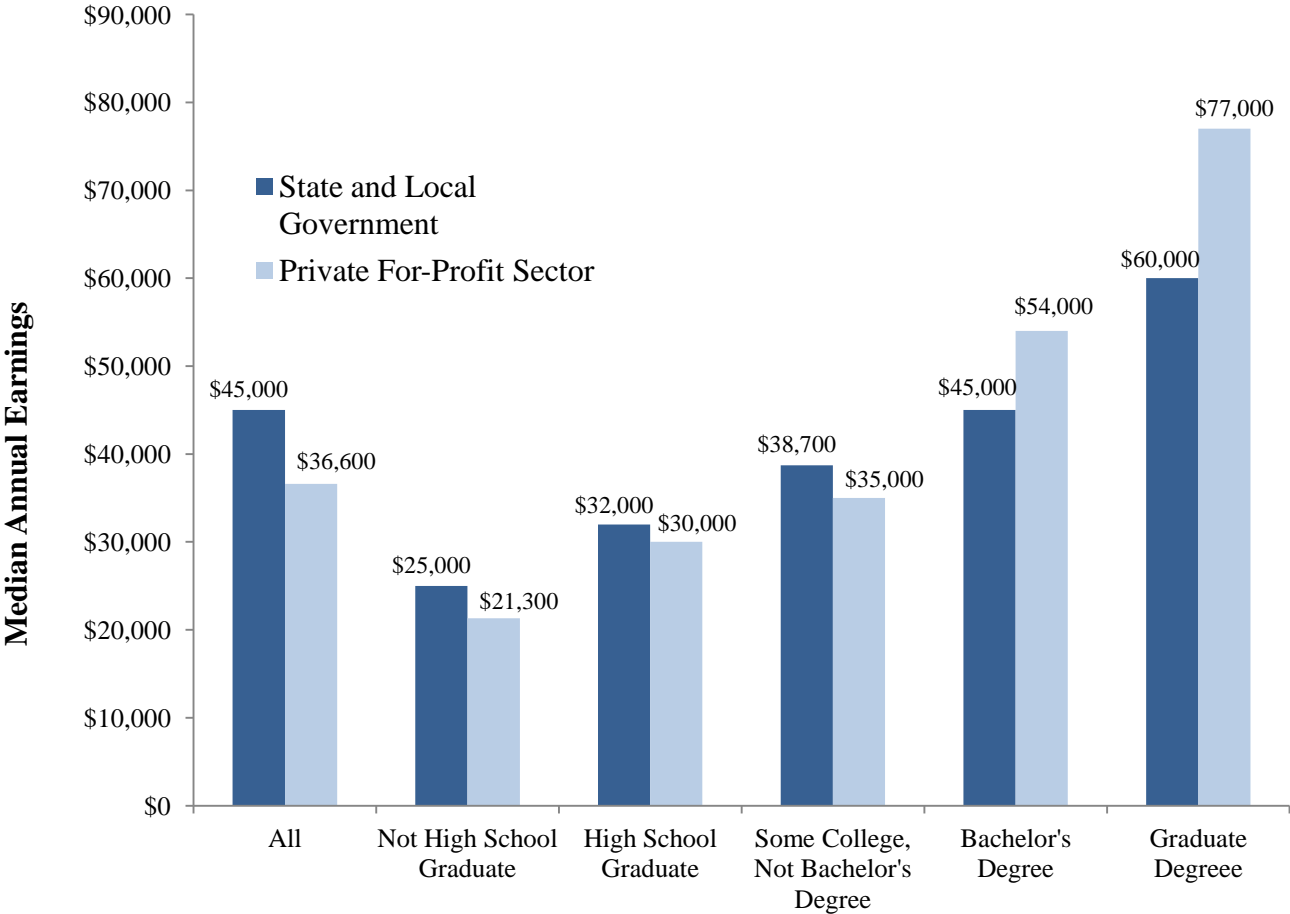
Source: Authors' calculations from Bureau of Labor Statistics (2013).  
 Note: Hourly costs are reported in constant 2012 dollars

outside the system (Nuschler, Shelton, and Topoleski 2011). Employers whose workers are covered by Social Security are subject to a payroll tax of 6.4 percent, a levy that employers do not pay if their workers are not covered.<sup>12</sup> Coverage rates vary widely by state, and often vary within state, depending on the particular retirement system. In some states, including Ohio, Massachusetts, and Nevada, virtually no state or local government workers are covered.

Retirement benefits are just one part of employee compensation packages, and generous benefits may offset deficiencies in other aspects of compensation. Considering retirement benefits in isolation, then, is not particularly informative. Figure 7 reports how median annual earnings in

2010 vary by education and sector of employment. Median annual earnings were \$45,000 for full-time state and local government employees but only \$36,600 for full-time private sector workers, suggesting a substantial salary advantage for government workers.

**Figure 7: Median Annual Earnings by Education and Employment Sector, Full-Time Workers, 2010**



Source: Authors' calculations from the 2010 American Community Survey.

Note: Self-employed workers are excluded.

However, employees in the public and private sectors generally work in different occupations and exhibit different demographic characteristics. As reported in Table 3, 31 percent of state and local government employees work as teachers or professors (compared with 3 percent of workers in the private sector) and 10 percent work in protective services. Private-sector employees are more likely than their state and



local government counterparts to work in sales and production, construction, and transportation. Women and African Americans make up a larger share of the workforce in the state and local sector than the private sector. State and local government workers are also older and much better educated than their private-sector counterparts. Fully half of state and local employees hold Bachelor's degrees, and half of those workers (a quarter overall) hold advanced degrees. By comparison, only 28 percent of private-sector workers completed four or more year of college, and only 9 percent earned advanced degrees. Relative pay between the sectors varies with education. Among full-time workers without a Bachelor's degree, state and local government employees earn higher salaries than those in the private sector; among full-time workers with at least a Bachelor's degree, private-sector employees earn more (Figure 7).

**Table 3: Worker Characteristics by Sector of Employment, 2010**

	State and Local	Private Sector
<b>Sex</b>		
Male	40	52
Female	60	48
<b>Race and ethnicity</b>		
Non-Hispanic white	69	66
African American	14	10
Hispanic	11	16
Other	6	7
<b>Age</b>		
Less than 25	7	15
25 – 49	54	57
50 and older	38	28

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## Education

Did not complete high school	4	12
High school graduate	17	27
Some college, not Bachelor's degree	29	34
Bachelor's degree	25	19
Advanced degree	25	9

## Occupation

Teaching	31	3
Management, scientific, business, arts	17	22
Office, administrative support	13	15
Protective services	10	1
Other services	9	14
Production, construction, transportation	9	23
Health care	6	9
Community and social services	4	1
Sales	1	13

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*Source:* Authors' tabulations from the 2010 American Community Survey.

*Note:* Categories do not always sum to 100 percent because of rounding.

Because government and private-sector workers differ on so many dimensions, it is important when comparing their salaries and total compensation to use statistical techniques that control for these differences. Many such studies have been conducted over the years (e.g., Allegretto and Keefe 2010; Bender and Heywood 2010; Gyourko and Tracy 1988; Katz and Krueger 1991; Krueger 1988; Munnell et al. 2011; Richwine and Biggs 2011; Smith 1976). The general consensus is that state and local workers earn somewhat lower salaries than similar private-sector workers, but that their total compensation is somewhat higher

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because they receive more fringe benefits, especially retirement and health benefits. Comparisons vary with skill levels. Public employees in low-skill jobs are generally better compensated than their private-sector counterparts, whereas well-educated employees tend to fare much better in the private sector.

To explore this research in more detail, we describe the results of Gittleman and Pierce (2012), a recent study by economists at the Bureau of Labor Statistics. Using 2009 household survey data from the Current Population Survey, they find that weekly wages are 10 percent higher for local government workers than private-sector workers, but that local government workers earn 8 percent less when they control for basic demographic characteristics, including education. When they compare total weekly compensation (including the value of fringe benefits) using data from the NCS and hold basic demographic characteristics constant, they find that local government workers receive about 10 percent more. The compensation advantage increases to 18 percent when they also control for detailed occupation, in effect comparing employees doing very similar work. Compensation premia are smaller for state government workers. Their total compensation is about 3 percent higher than in the private sector when the researchers hold basic demographics constant, and 9 percent higher when they also control for detailed occupation. Thus, government workers earn less in base salary than comparable private sector employees, but more than workers in the private sector when fringe benefits are included. This means that the fringe benefits, of which pensions are a sizable part, are substantially larger for public- than for private-sector workers. These absolute differences would be greater if adjusted for the relative underfunding of public employee pensions, because unfunded future obligations are not captured by the NCS data on the cost of retirement benefits.

## Do State and Local Pension Plans Meet the Public Sector’s Staffing Needs?

In addition to their salaries, employees participating in employer-sponsored retirement plans typically earn retirement benefits each year they work. For workers in traditional defined benefit plans, however, these benefits do not generally accumulate evenly throughout an employee’s career, creating perverse work incentives and distorting decisions to join the employer’s payroll or remain on the job. As the workforce ages, the pool of younger adults stagnates, and workers become less likely to commit long-term employment relationships, there is growing concern that the traditional pension system is unable to meet the staffing needs of state and local governments (Costrell and McGee 2010; Costrell and Podgursky 2009; Friedberg 2011; Johnson, Steuerle, and Quakenbush 2012).

*There is growing concern that the traditional pensions system is unable to meet the staffing needs of state and local governments.*

One issue is that the traditional benefit formula, which bases benefits on final average salary, increasingly rewards work as years of service grow. With each additional year, the percentage of salary to be paid out rises along with that measure of final salary, because salaries generally grow with experience. Conversely, most employees earn few retirement benefits early in their careers. Participants are not entitled to any future benefits until they have vested by working a minimum number of years. Even after vesting, employees will not generally receive very large pensions if they quit early in their careers. They would not have worked many years, and their future payouts are based on their early-career salaries, which are generally low. Additionally, they have to wait to reach the plan’s retirement age to collect. They do not earn interest on their future benefits while waiting, and inflation erodes the benefits’ value. Making matters worse, nearly all state and local government employees must contribute a certain percentage of their salaries to their pension plans each year, reducing the net benefit of their future payments.

The value of lifetime benefits sometimes spikes at certain ages. For example, most plans allow workers to retire early, before the normal retirement age. Although plans usually reduce benefits for those who

work only until the early retirement age, such reductions are often less than actuarially fair. In such cases, employees can often maximize lifetime retirement benefits by retiring early, because the additional number of payments they receive more than offsets the reduction in each monthly payment. Those who quit before reaching the early retirement age must sometimes wait until they reach the normal retirement age—often 10 years later—to begin collecting benefits. As a result, employees can sometimes accumulate much more lifetime benefits simply by working that last year that qualifies them for early retirement. Such spikes create large financial losses for employees who quit before lifetime benefits surge, and can lock employees into their jobs, even if they are not well-suited to their positions and could be more productive elsewhere.

*Spikes in pension benefits create large financial losses for employees who quit before lifetime benefits surge, and can lock employees into their jobs.*

Many plans discourage work by employees eligible to retire. Those who remain on the job past the retirement age forfeit a month's worth of benefits for every month they continue working. The value of lifetime benefits often falls when older workers remain on the job past the plan's retirement age, because the benefits lost while working exceed the gain in monthly benefits earned from an additional month of service.

Compounding these losses, some plans cap the share of earnings that employees can receive in retirement, so even monthly benefits do not increase from additional work for some long-tenured employees.

There is substantial evidence that employees respond to the work incentives created by traditional pension plans. For example, multiple studies have found that retirement rates for workers in defined benefit pension plans spike at the age when the value of future pensions benefits peak, typically at the plan's early or normal retirement age, and that relatively few employees remain on the job beyond the plan's normal retirement age. This pattern has been documented in both the private sector (Chan and Stevens 2004; Coile and Gruber 2007; Lumsdaine, Stock, and Wise 1992; Samwick 1998; Stock and Wise 1990a, 1990b) and the public sector (Asch, Haider, and Zissimopoulos 2005; Brown 2012; Costrell and McGee 2010; Costrell and Podgursky 2009; Ferguson, Strauss, and Vogt 2006). The value of future pension benefits grows more evenly in

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defined contribution plans, so they do not generally create strong retirement incentives. In fact, one study found that defined contribution plan participants retire two years later, on average, than their defined benefit plan counterparts (Friedberg and Webb 2005).

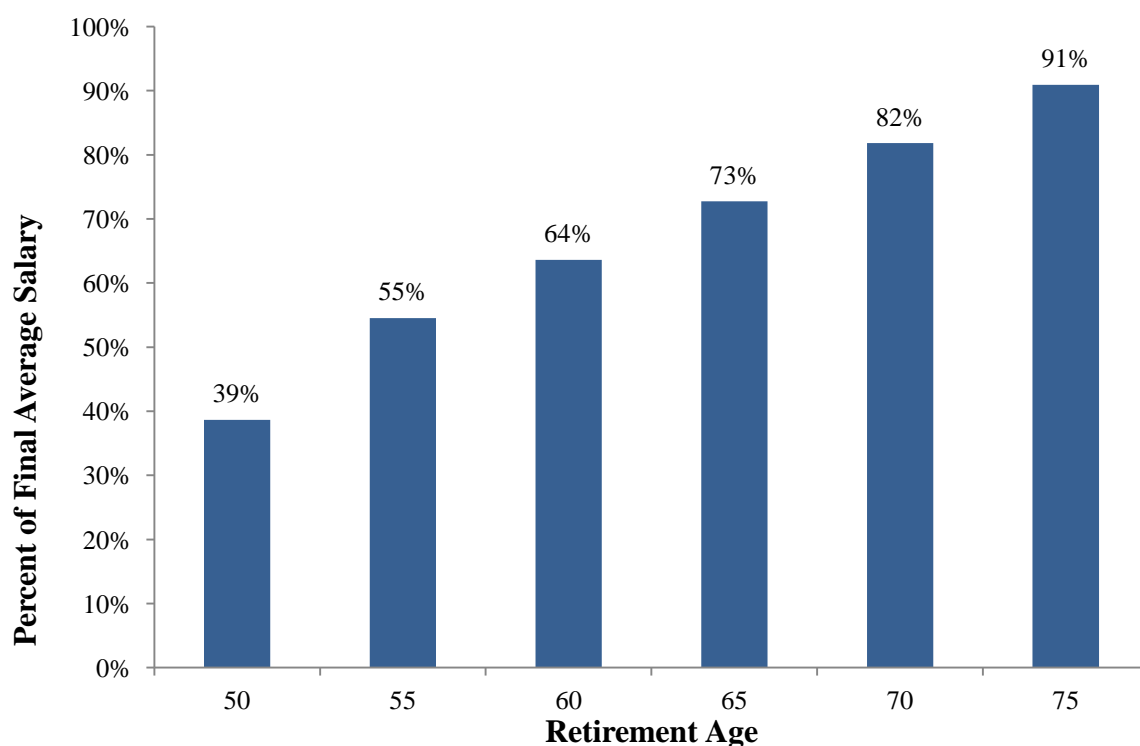
Some states have tried to eliminate the incentive to retire early by adding deferred retirement option programs (DROPs) to their traditional pension plans. These schemes allow workers near retirement to freeze their pension wealth while they continue to work. The state deposits their pension benefits into special interest-bearing accounts and continues to pay their full salaries. Once they stop working, they collect their account balances as a lump sum and begin receiving the same monthly pension they would have collected if they had stopped working when they began participating in the DROP. These programs substantially reduce early retirement incentives because workers do not lose pension wealth by remaining on the job, and DROPs appear to increase retirement ages significantly (Alva, Coe, and Webb 2010). However, they also raise pension costs because they allow more state workers to maximize their pension benefits.

### ***A Case Study of How Traditional Pensions Affect Work Incentives***

New Jersey's Public Employees Retirement System (PERS) illustrates how unevenly pension benefits grow over an employee's career and tend to distort recruitment and retention. Like nearly all states, New Jersey has separate plans for teachers, police officers and firefighters, and members of the judiciary. PERS covers nearly all other state employees. General state employees hired before July 1, 2007 belong to the plan's first tier, which promises a pension equal to 1.82 percent of final average salary (based on the top three years of earnings) for each year of service. For these first-tier employees, benefits may begin at age 60 after at least 10 years on the job. Employees with 25 years of service may opt to retire early, but their benefits will be reduced by 3 percent for each year the worker retires before age 55. Until contribution rates rose in 2011, employees also had to contribute 5.5 percent of their salaries to the plan.

Figure 8 shows pension benefits as a share of final average salary for plan members hired at age 25. If tier-1 employees begin collecting benefits at age 50 after working for 25 years, their pensions would replace 39 percent of their final average salaries (1.82 percent times 25 years of service, discounted by 15 percent, because payments would begin 5 years before age 55). Annual benefits increase sharply if workers delay retirement. Those who wait until age 55 would collect 55 percent (0.0182 times 30) of their final average salary until they die. Those who wait until 65 would collect 73 percent of their final average salaries, but they receive fewer years of benefits than those who retired earlier.<sup>13</sup>

**Figure 8: Annual Pension Benefits as Percentage of Final Average Salary for Employee Hired at Age 25, New Jersey PERS Tier 1, by Retirement Age**



Source: Johnson, Steuerle, and Quakenbush (2012).

Note: PERS tier 1 covers general employees of the State of New Jersey hired before July 1, 2007. Final average salary is based on the top three years of earnings in tier 1 and the top 5 years in tier 5.

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Although annual pension benefits (financed by both employer and employee contributions) increase the longer employees wait to retire, *lifetime* benefits do not rise indefinitely because delaying retirement reduces the number of payments workers will eventually receive. The lifetime value of the annual benefit stream available at each age can be expressed by summing the payments a worker would receive each year at a particular retirement age. It can be regarded as the amount workers would have to pay an insurance company for an actuarially fair bond that provided annual payments (equal to the pension benefit) for the rest of their lives. It depends, among other factors, on life expectancy (living longer raises pension wealth by increasing the number of expected payments) and the interest rate (higher interest rates reduce pension wealth by raising the discount on future pension payments).

Figure 9 shows how the present discounted value of future pension benefits varies by age for tier-1 workers hired at age 25, assuming a nominal discount rate of 5 percent (2 percent real plus 3 percent inflation).<sup>14</sup> Participants who leave the plan within 10 years, when benefits vest, get back only their own contributions plus interest. Because these calculations assume that the state pays a market interest rate on contributions, their employer-provided pension wealth is zero. At age 35, the employee's 10th anniversary, pension wealth jumps up but amounts to only about a quarter of the previous year's salary. Employees who quit at age 35 would have to wait 25 years (until age 60) to begin collecting a pension and each year would receive only about 18 percent of the salary earned from age 32 to 34. After age 35, pension wealth rises at an increasing rate each year the employee remains on the job through age 50, as the earnings base grows and years of service increase. Even at age 49, though, total employer-provided pension wealth amounts to only 2.5 times the current year's salary, mostly because workers still have to wait 11 years to begin collecting. Pension wealth more than doubles at age 50, to about six times annual salary, as workers qualify for early retirement and are eligible to collect benefits immediately instead of waiting until



they turn 60 years old. Working that one additional year entitles employees to 10 additional years of retirement benefits.

**Figure 9: Employer Pension Wealth as Multiple of Annual Salary for Employee Hired at Age 25, New Jersey PERS Tier 1, by Age**



Source: Johnson, Steuerle, and Quakenbush (2012).

Note: The employee contribution rate is set at 5.5%, the rate for Tier 1 from 2007 to 2011.

Once employees are eligible to collect benefits (at age 50 for employees hired at age 25), they forgo a month of benefits every month they remain on the job. However, as we saw in Figure 8, annual pension payments increase as long as workers defer retirement, especially through age 55 as the penalty for early retirement shrinks. The gain in annual pension levels initially exceeds the cost of forfeited payments, so pension wealth continues to grow with additional tenure. However, the gains

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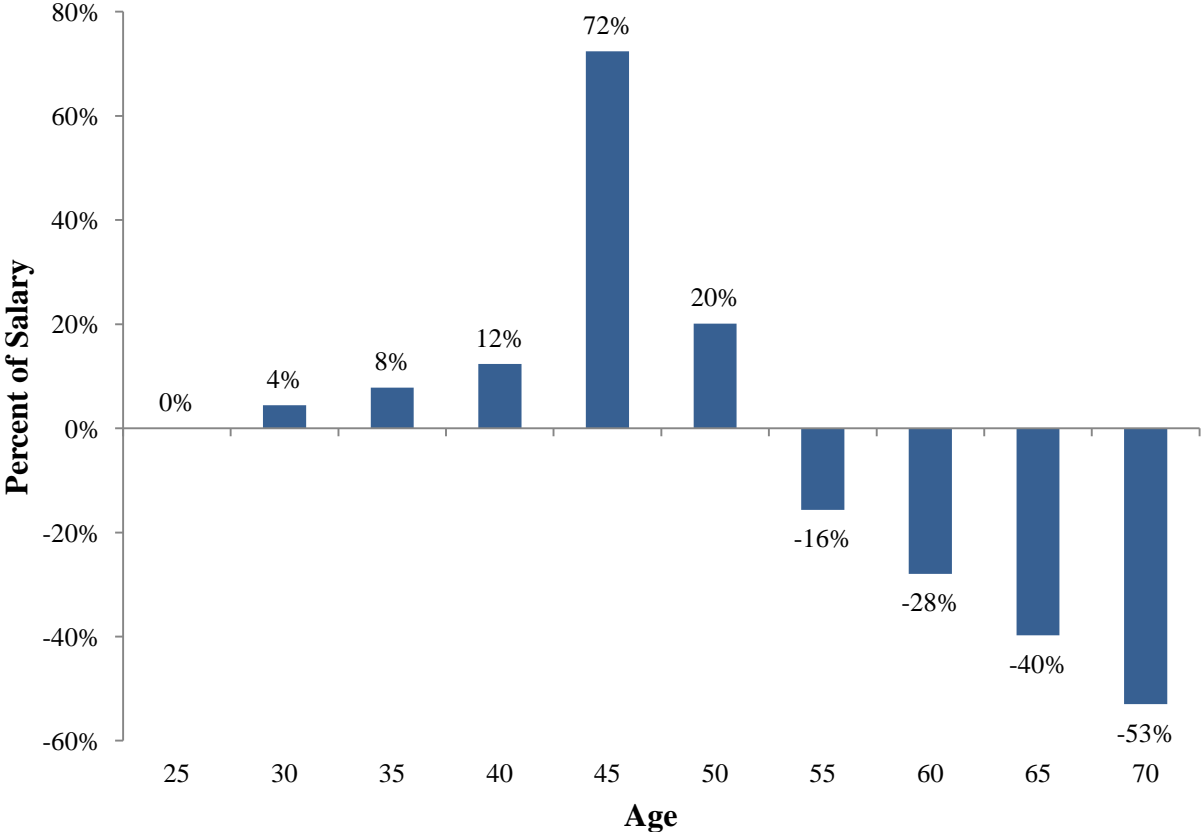
diminish after age 55, as the wage base grows more slowly and the retirement period shortens. Eventually the loss of forfeited payments from delaying retirement exceeds the later gains in annual benefit levels, and pension wealth actually begins to decline. For age-25 hires in tier 1, pension wealth peaks at age 59, when it slightly exceeds eight times the salary earned the previous year. By age 69, it falls back to seven times the previous year's salary. These pension wealth losses substantially reduce effective compensation at older ages.

To better appreciate how pension wealth changes from additional working years, Figure 10 shows annual pension wealth increments averaged over five years for typical employees hired at age 25. The growth in the value of future pension benefits is a trivial piece of compensation in early career, adding nothing at ages 25 to 30 (before vesting) and just 4 percent of salary on average between ages 30 and 35 (at vesting). Pension accruals grow over the next 10 years as workers approach the early retirement age but remain a minor element of compensation throughout their forties. Once they can begin collecting early benefits at age 50, however, pension wealth soars. Pension accruals average 72 percent of salary between ages 45 and 50, nearly doubling cash compensation over those five years. Through workers' mid-fifties, pension accrual continues boosting compensation much more. Beginning in the late fifties, however, pension accruals turn negative as pension wealth falls and forgone retirement payments exceed the value of additional benefits earned in later years. The loss in pension wealth reduces effective compensation by about a quarter in workers' early sixties, two-fifths in their late sixties, and a half in her early seventies.

This pattern of benefit growth substantially limits the state's ability to attract and retain the best workers. Young workers have little incentive to join the state's workforce unless they plan to remain on the payroll for at least 25 years. Those who leave their jobs earlier forgo nearly all retirement benefits from the employer. The more mobile the workforce and the stronger the desire to maintain the option of changing careers or

moving to another state, the more this benefit structure discourages workers from entering state employment.

**Figure 10: Average Annual Addition to Employer Pension Wealth from Working an Additional Five Years as Percentage of Salary, New Jersey PERS Tier 1, Employee Hired at Age 25**



Source: Johnson, Steuerle, and Quakenbush (2012).

Note: Estimates are net of employee contributions. The analysis assumes a nominal interest rate of 5% and employee contribution rate of 5.5%, the rate in effect from 2007 to 2011. PERS tier 1 covers general employees of the State of New Jersey hired before July 1, 2007.

The traditional plan does not help state human resource managers deal with many middle-aged employees either because it locks these employees into their jobs. Workers in their forties stand to reap enormous pension windfalls by remaining on the payroll at least until they qualify for early retirement, so very few quit, even if the job is not a particularly

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good fit. This inefficiency makes workers and taxpayers worse off. The state may have temporarily locked in some above-average workers, but it is done the same for below-average workers as well. Unlike salaries, which employers can adjust to reflect performance, pensions provide the same incentives for everyone.<sup>15</sup>

This pension plan design also makes it difficult for the state to retain experienced older workers, many of whom have specialized skills and deep institutional knowledge that are difficult to replace. Workers hired at age 25 essentially forfeit a quarter of their pay each year if they remain on the job in their early sixties. These pay cuts induce many state employees to retire. Although it seems difficult to ever justify a benefit system that encourages productive workers to retire early, such a system might have made more sense a generation ago, as many highly educated women and young baby boomers entered the labor force. But inducing still-productive older workers to retire early makes little sense today as the workforce ages. With the supply of younger adults likely to stagnate over the next decade, employers will increasingly need older workers.

Finally, like nearly all state retirement plans, the first tier of New Jersey's PERS violates the principal of equal justice by providing unequal pay to workers of different ages performing equal work. Employees in their early fifties generally receive much higher total compensation each year than those in their early sixties or older because the pension plan effectively boosts total pay for the younger group while cutting total pay for the older group.

As another piece of evidence on unequal pay for equal work, pension wealth and accruals vary widely at each age depending on when the employee was hired. Those hired at later ages earn more each year in retirement benefits than those hired at younger ages with the same salaries. Additionally, those hired earlier generally face stronger incentives to retire early. As noted, tier-1 employees hired at age 25 effectively forfeit 28 percent of their salary on average each year on the job from age 60 to 65, because they lose pension wealth by delaying retirement. However, employees hired at age 35 only forfeit 15 percent of

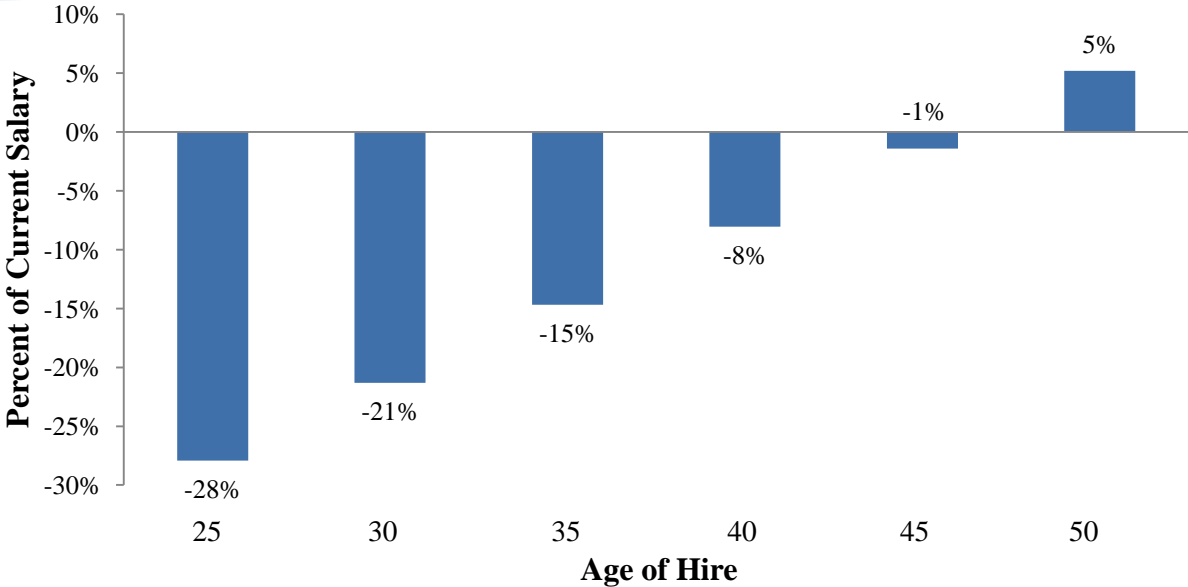
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*Are Public Pensions Keeping Up with the Times?*

their salaries on average by working in their early sixties, while employees hired at age 50 actually increase their total compensation (Figure 11).

Because pension accruals swing widely over the career and vary with age at hire, it is difficult for the state to tie total compensation to productivity. A fair compensation scheme tied to productivity would treat workers of equal productivity equally, but it is difficult to offset swings in pension compensation by swings in cash compensation. A state might try to raise new hires' cash wages to offset their lack of pension benefit accruals and then lower cash raises for more senior employees as pension accruals rise, but it would have to determine the effect of this type of policy on employee morale and union negotiation. In any case, it would not solve the problem of benefits varying widely simply by the age at first hire.

**Figure 11: Average Annual Addition to Employer Pension Wealth from Working From Ages 60 to 65, New Jersey PERS Tier 1, by Age of Hire**



Source: Johnson, Steuerle, and Quakenbush (2012).

Note: Estimates are net of employee contributions. The analysis assumes a nominal interest rate of 5% and employee contribution rate of 5.5%, the rate in effect from 2007 to 2011. PERS tier 1 covers general employees of the State of New Jersey hired before July 1, 2007.

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## Do State and Local Government Employees Prefer Defined Benefit Plans?

Advocates of the traditional state and local retirement system sometimes claim that government workers especially value the financial security that defined benefit plans provide. These plans insulate them from investment risk, which are instead borne by employers, and guaranteed annuitization protects plan beneficiaries from the risk of depleting their retirement assets before they die. Indeed, public-sector workers do appear to be more risk averse than private sector workers (Bellante and Link 1981; Munnell 2012), suggesting that these protections might be highly valued by the public workforce.

Government employee preference for traditional defined benefit plan coverage can be examined more closely in the few states that have allowed workers to choose among different plan types over the past 15 years. A handful of studies have now been conducted. Results from North Carolina, Illinois, Michigan, Washington State, and Florida reveal that preferences for defined contribution coverage over defined benefit coverage vary by certain worker characteristics. How the default option is set plays a crucial role, because many employees fail to make active choices. How well the stock market has performed in recent years also seems to influence government employees' willingness to move into defined contribution plans.

In 1997, Michigan was one of the first states to close its defined benefit plan to new state and local hires, who were instead enrolled in a defined contribution plan. Existing employees could switch to the defined contribution plan, and the actuarial present value of the benefits they had accumulated in the traditional plan would be transferred into new retirement accounts. Fewer than 6 percent of participants switched to the new plans (Papke 2004). This low take-up rate might reflect the high cost of leaving defined benefit plans at mid-career, in the years just before pension wealth is scheduled to grow rapidly. Participants nearing retirement who had accumulated substantial benefits in the traditional plan were among those most likely to move to the defined contribution

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plan, perhaps because their defined benefit pension wealth had already begun to decline.

Clark, Ghent, and McDermed (2006) analyzed pension choices for new faculty members in the North Carolina University System from 1983 to 2001. Most selected the defined contribution plan instead of the defined benefit plan. Between 1983 and 2001, when the stock market experienced tremendous growth and defined contribution plans were becoming increasingly common in the private sector, the share choosing defined benefit coverage declined from 23 to 12 percent. However, women and nonwhites were more likely than others to select the traditional pension plans, perhaps because of differences in life expectancy, risk aversion, or turnover expectations.

Beginning in 1998, employees of the State Universities Retirement System of Illinois were allowed to choose among three different retirement plans during their first six months of employment: a traditional formula-based plan; a portable defined benefit plan that is less generous than the traditional plan for those who remain in the plan until retirement but more generous for those who take an early lump-sum distribution; and a fully self-directed defined contribution plan. The default option is the traditional plan. Many never made an active choice, and were defaulted into the traditional option (Brown and Weisbrenner 2009). In 1999, amid much publicity about the new options, 43 percent failed to make an affirmative decision. Between 2001 and 2004, that share rose to three-fifths. About 19 percent of new employees chose the portable defined benefit plan, 15 percent chose the self-managed plan (even though it was less generous than the portable plan under most reasonable assumptions), and 10 percent chose the traditional plan. Unlike the Clark et al. study which was restricted to university faculty members, the data for this study covered a diverse set of employees, including administrators, faculty, clerical staff, and safety workers. Participants were more likely to choose the defined contribution plan if they had more education and higher earnings, if they were married, or if they worked at an institution where many others choose the defined contribution plan.

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Importantly, state and local workers in Illinois are not covered by Social Security.

Two recent studies examined plan choice among public school teachers. Teachers hired in Washington State since 2007 can choose between a traditional defined benefit plan and a hybrid plan that includes a defined contribution component and a less generous defined benefit plan. In 2008, 55 percent of those who made an active choice selected the hybrid plan (Goldhaber and Grout 2013). In 2009, after the financial crisis became apparent, only 48 percent of active decision makers chose the hybrid plan. The hybrid plan was less popular among older teachers than their younger counterparts. In Florida, where newly hired teachers have been able to choose between a traditional defined benefit plan and defined contribution plan since 2002, about 30 percent of new teachers chose the defined contribution plan through 2008, although the share choosing that option dropped in the wake of the financial crisis (Chingos and West 2013). Those who seemed to expect relatively short teaching careers were especially likely to choose the defined contribution plan. The authors found only a slight relationship between plan preference and classroom effectiveness.

*Only those employees who remain on the payroll for decades receive generous benefits, leaving others with little financial security in retirement.*

Some new evidence suggests that Illinois public school teachers do not value their retirement benefits much. In 1998 they were given the opportunity to purchase extra retirement benefits. Fitzpatrick (2012) found that they were willing to trade just 19 cents of current compensation for each expected dollar of future compensation. It is not clear whether these findings extend to teachers in other states or other groups of state and local government employees. Nonetheless, these results suggest that state and local governments could cut average staffing costs without reducing employee well-being or harming recruitment or retention by restructuring compensation packages to increase current salaries and reduce deferred retirement benefits.



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## Conclusion

State and local retirement plans face serious challenges. Costs are growing steadily as the public workforce ages, and many plans are seriously underfunded. The funding problem is worse than it appears because the actuarial calculations made by most states assume that they will earn 8 percent a year on their assets, an unlikely outcome in the current environment. There is also some evidence that state and local government employees receive too much of their compensation as future retirement benefits—which are much more generous in the public sector than private sector—instead of current salary, perhaps because retirement costs can be shifted to future generations by underfunding those obligations.

Another problem with state and local retirement plans is that as currently structured, they are not well suited to the modern workforce, which is increasingly dominated by those who change jobs frequently. Only those employees who remain on the payroll for decades receive generous benefits, leaving others with little financial security in retirement. In many state and local plans, workers who spend up to 10 years in public service get nothing back except interest on their plan contributions. Moreover, these plans generally encourage older workers to retire as soon as they qualify for benefits, pushing productive workers out of the labor force. These incentives are particularly problematic as the pool of younger adults who could take their place is stagnating.

Reforms are necessary and probably inevitable, but what should be done? Funding levels could be tightened, but is that enough? Should states modify benefit formulas or plan designs to reduce perverse work incentives? Some states, including Nebraska, Kansas, Kentucky, and Louisiana, have shifted or will soon shift to cash balance plans, which combine features of defined contribution plans with traditional defined benefit plans. Cash balance plans do not promote early retirement and provide more retirement security to employees who spend less than a full career with a single employer (Johnson and Uccello 2004). Other states have shifted from a pure defined benefit retirement system to a hybrid

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system that shrinks the defined benefit and adds a defined contribution component. Such reforms could cut costs and improve plan funding, since the smaller defined benefit plan would require less funding. Should more states follow suit? Or should they abandon the defined benefit retirement system altogether? In a future report, we will examine various reform options that are available and discuss their advantages and disadvantages. Regardless of which option is preferable, it is obvious that the current situation is unsustainable financially in most states and undesirable in terms of recruiting and retaining the best public employees. Reform will have to come, and it will be far preferable to tackle it creatively before the problem worsens rather than be forced to act hastily down the road.

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## Endnotes

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<sup>1</sup> Contributions have grown even more rapidly for New York City. New York State law requires plans to contribute enough each year to cover currently accruing obligations.

<sup>2</sup> Some employers cover their employees' required contributions.

<sup>3</sup> Another 6 percent were offered such plans but declined to participate.

<sup>4</sup> Between 1990 and 2011, the share of all private-sector employees (regardless of hours worked) covered by defined plans fell from 35 to 18 percent (Wiatrowski 2012).

<sup>5</sup> However, Social Security, like most national public pension systems in other countries, is not prefunded, but instead operates on a pay-as-you-go basis, in which current benefits are paid out of current system revenues, not reserves. The system did build up a reserve beginning in the mid-1980s, which is now being drawn down.

<sup>6</sup> Not all studies have found sharp drops in average job tenure, however. See, for example, Neumark (2000).

<sup>7</sup> However, many states have recently reduced the COLAs paid to their retirees, so there is some risk that the full benefits some retirees expected will not be paid.

<sup>8</sup> These estimates combine single-employer plans and multiemployer plans. Single-employer plans are much better funded. In 2010, the funded ratio for PGBC-insured single-employer plans was 81 percent, compared with 48 percent for multiemployer plans (PBGC 2012).

<sup>9</sup> These estimates do not include locally administered retirement plans.

<sup>10</sup> Before 2006, GASB standards permitted 40-year amortization periods.

<sup>11</sup> One caveat is that the NCS uses employer contributions to retirement plans to estimate employer costs. As we saw in the previous section, some states do not always contribute the required amount, so the NEC data may underestimate the value of employees' retirement benefits. On the other hand, those contributions often cover both the cost of currently accruing benefits as well as a portion of past underfunded liabilities, so they may sometimes overstate the future benefits that current workers are accumulating. Nonetheless, other evidence corroborates the conclusion that public sector workers receive relatively large retirement benefits. The share of full-time employees covered by employer-sponsored retirement benefits is much higher for state and local government employers than private-sector employers (94 vs. 59 percent) (Bureau of Labor Statistics 2012). Household surveys also show that government workers have more pension wealth than their private sector counterparts (e.g., Quinn 1982).

<sup>12</sup> Employees in Social Security-covered positions are also subject to a 6.4 percent payroll tax.

<sup>13</sup> New Jersey state employees also receive Social Security retirement benefits, which replace about 45 percent of lifetime earnings for the median worker (Favreault et al. 2012).

<sup>14</sup> Costrell and Podgursky (2009) conducted similar analyses for teacher pension plans.

<sup>15</sup> Collective bargaining agreements, which are more common in the public than private sector, and civil service rules often limit salary flexibility for state and local governments, however.

## About the Brown Center on Education Policy

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