Issues facing state and local government pensions

Richard H. Mattoon

Introduction and summary

At the turn of the century, many U.S. public pension funds faced a "perfect storm," brought about by the confluence of unfavorable demographics, low interest rates that increased the present value of liabilities, declining investment returns from the stock market, and swelling ranks of pension benefit claimants. As state and local governments try to address these challenges and plan for the future, some analysts have begun to question whether traditional notions of defined benefit pension plans (where the retiree is guaranteed a monthly income for life) can be sustained. Many private sector firms have abandoned these traditional pensions in favor of defined contribution plans, whereby individuals are responsible for ensuring that their retirement plans are adequate to meet their retirement needs.

Pension strains are coming at a particularly inopportune time for state and local governments. The 2001 recession showed that some state and local finances are on shaky ground; that is, a relatively mild recession had an unexpectedly large impact on some states' and localities' tax revenues. On the spending side of the equation, states and localities are increasingly devoting larger shares of their resources to expenditures, such as health care (Medicaid in particular) and elementary and secondary education. When expenditure growth in these areas is coupled with higher spending for corrections and public safety, little is left over for other government services. Pension obligations compound this problem, since they are usually legally protected by "nonimpairment" clauses that essentially guarantee future payouts regardless of the financial condition of the government. As such, in a fiscal crisis, a state or local government may have no other option than to raise taxes or cut other programs to meet their required pension obligation. Finally, other retirement costs are looming for state and local governments, particularly in the form of retiree health care costs, as reported in costs for other post-employment benefits, or OPEB (see box 1, pp. 8–9).

In this article, I discuss the current condition of state and local pension plans and strategies to improve pension performance. I review the academic literature on optimal pension plan design. Then, I describe strategies used by state and local governments to meet pension obligations. Finally, I offer some thoughts on the possible future directions for state and local pension funds.

The nature of the problem

Estimates for the aggregate unfunded balance—actuarial liabilities in excess of assets—for U.S. state and local pensions range from $200 billion[1] to as high as $700 billion.[2] Estimates of actuarial pension balances are by nature imprecise and often controversial (see box 2, p. 10). Actuarial estimates change as interest rates and investment returns change and as the demographics of future and current pensioners are revised. Further, the appropriate actuarial funded ratio or fund balance is highly related to the economic and fiscal conditions in the state or locality. As currently defined, the funded ratio of a pension plan is the ratio of accumulated assets to the present value of the cost of benefits that have been earned. Lower funding levels can be perfectly acceptable in jurisdictions with high expected revenue growth.

The trend in aggregate pension assets and liabilities through fiscal year 2005 (FY2005) continues to

Richard H. Mattoon is a senior economist and economic advisor in the Economic Research Department at the Federal Reserve Bank of Chicago. *The author thanks William Testa, Leslie McGranahan, Craig Furfine, and participants in the Federal Reserve Bank of Chicago's seminar program for very useful comments on previous drafts. Excellent research assistance was provided by Vanessa Haleco.*

show that funds are still working off the effects of the bursting of the stock market bubble at the turn of the century. As figure 1 demonstrates, actuarial liabilities have grown considerably, while actuarial assets have been recovering more slowly.

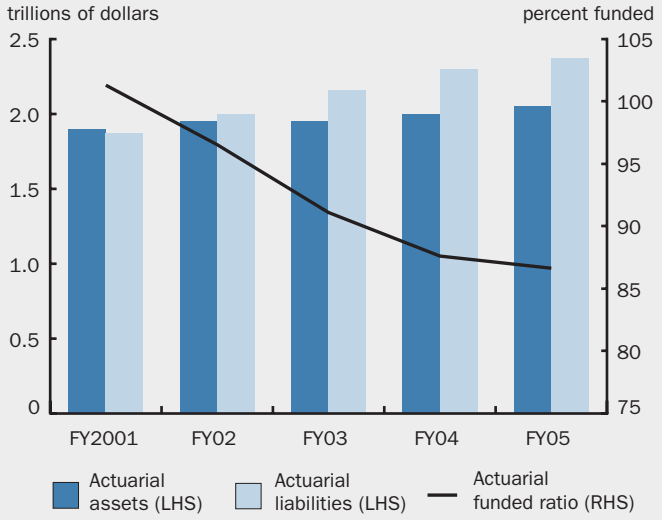
Still, while estimates of billions of dollars in deficits speak to the magnitude of the problem facing the public pension systems, they fail to show that many public pensions are in fact adequately funded and positioned to meet their benefit obligations. A recent survey of 103 public retirement systems—representing roughly 88 percent of public sector employees in pension programs—found public pensions holding $2.1 trillion in assets, with slightly more than 70 percent of public pensions having actuarial funding levels exceeding 80 percent.[3] In aggregate, the funding levels for all plans combined (assets minus liabilities) was 87.8 percent in FY2004. The definition of an "adequate funded ratio" is different for public and private sector funds; for the latter, a 100 percent ratio or overfunding is normal. As a rule of thumb, a government fund does not necessarily need to be 100 percent funded to be considered prudently managed. Since governments have taxing authority and can only declare bankruptcy in extreme cases, public sector funds have a low probability of default. Still, most governments prefer to maintain a funded ratio of at least 90 percent. Figure 2 provides the distribution of funded ratios in 2004. (Table A1 in the appendix provides profiles of all the funds in the 103 public retirement systems covered by the *Public Fund Survey*, FY2004.)

The range for funding levels is quite broad (see table A1). While the Florida Retirement System (RS) has an actuarial funded ratio of 112 percent and is carrying a surplus of assets over liabilities of over $11 billion, the West Virginia Teachers Pension Fund has an actuarial funded ratio of only 22 percent. The latter fund has only $1.4 billion in assets, with actuarial liabilities of over $6 billion.

The good news is that many of the largest state and local pension funds (as measured by the number of active employees and annuitants) are in reasonable fiscal condition (see table 1). Six of the ten largest state funds had funded ratios of more than 90 percent in 2004, and the fund with the largest deficit (California

FIGURE 1

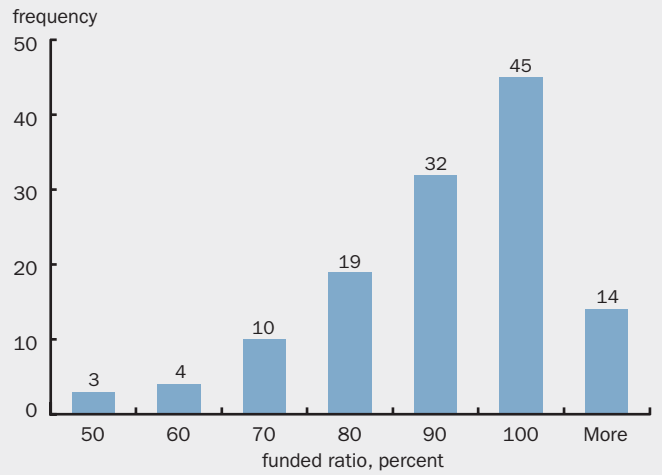
Change in aggregate assets, liabilities, and funded ratios, FY2001–05



Notes: FY means fiscal year. LHS means left-hand scale. RHS means right-hand scale.
Sources: National Association of State Retirement Administrators, *Public Fund Survey*, FY2005; and Brainard (2006).

FIGURE 2

Distribution of pension plans, by funded ratio



Note: The funded ratio of a pension plan is the ratio of accumulated assets to the present value of the cost of benefits that have been earned.
Sources: Author's calculations based on data from the National Association of State Retirement Administrators, *Public Fund Survey*, FY2004; and Brainard (2005).

State Teachers) still had an adequate funded ratio above 80 percent. These ten state funds enroll 36.0 percent of the total population covered by state pension funds. Similarly, the top five local funds have three fully funded plans and two above 80 percent. These plans enroll 73.9 percent of the total population of local fund participants.

However, there is considerable variation in funding status across states and even within states. Table 2 shows the ten state funds with the largest fiscal problems, as reflected by their funded ratios. Five of the ten have more than 100,000 participants, so these are not small funds. In total, however, these funds represent just 6.1 percent of the total population in state pension funds.

In the five states in the Seventh Federal Reserve District,[4] funding levels vary considerably even for plans within the same state (see table A1). In general, Illinois funds are facing the greatest challenge, with three plans having funded ratios below 70 percent. Indiana exhibits the greatest amount of within-state variation. While Indiana's state employees fund is slightly overfunded, its teachers fund is underfunded by $8.4 billion (44.8 percent funded ratio). For the 12 pension funds from Seventh District states in the *Public Fund Survey*, FY2004, the total assets are $232 billion, with an unfunded liability of $56 billion.

Another immediate pressure on public pensions is a declining ratio of active employees to beneficiaries. With fewer new employees, state contribution levels must increase to meet the current payouts. This requires spreading the same liability over a smaller employment base. As table A2 (in the appendix) shows, in some extreme cases—for example, the Michigan State Employees Retirement System (SERS), the West Virginia Teachers Retirement System (TRS), and the Milwaukee City and County systems—annuitants actually outnumber active employees. According to the Wisconsin Legislative Council's 2004 *Comparative Study of Major Public Employee Retirement Systems*, the average ratio is 2.24 active employees to 1 annuitant; however, of the 85 funds reporting in this survey, 30 had a ratio below two. To put this in perspective, for the U.S. as a whole, there are currently five active workers for every one retiree.

Also driving public pension liabilities are cost of living and other payment escalators. Table A3 (in the appendix) also provides data on how post-retirement pension increases are handled, how public pension income is taxed by states, and whether participants in the funds are eligible for Social Security benefits. Again, focusing on the Seventh District states, annuitants in Illinois get a 3 percent annual post-retirement increase and are exempt from state income taxation. In Indiana, annual increases are on an ad hoc basis granted by the legislature, and benefits are taxable. In Iowa, benefits can be increased by excess earnings of the pension fund, but the total increase is capped at 3 percent regardless of the fund's performance. Further, the first $6,000 of benefits is exempt from state income taxation in Iowa. In Michigan, two plans have 3 percent annual increases (although one is capped at $300), while the other funds' increases are dependent on employer agreement. Finally, in Wisconsin, increases in the state pension are based on excess earnings from pension investments; however, pension reductions are possible if investment returns fall. Pension income is exempt from taxation for some in Wisconsin.

Where do pension plans get their money?

Most public pension plans are funded through both employee and employer contributions, with investment income providing the bulk of annual income. As table A4 (in the appendix) illustrates, employee contributions can range from zero to more than 10 percent of salary. The Wisconsin Legislative Council's analysis of 85 pension plans in 2004 found that 35 plans required employee salary contributions of 5 percent or less, while 34 plans required more than 5 percent. Ten plans had no contribution requirement, and six plans had variable rates usually based on an employee classification system. Employer contributions can range from zero to more than 22 percent of payroll. Annual employer contributions are highly variable from year to year, depending on the investment returns of the fund. It is not uncommon for employers to take "pension holidays" and suspend contributions when overall funding levels exceed 100 percent. The level of contribution is in part adjusted for whether the employee is eligible for Social Security benefits. Increasingly, public employees are participating in Social Security; the current participation level for this sector is approximately 70 percent.[5] However, Social Security benefits are often reduced, depending on the benefits that retirees receive from their public pension plan. In addition, systems have different vesting thresholds—that is, the point at which an employee becomes eligible to receive benefits—although none of the vesting periods for the systems in this survey exceeded ten years.

Investment returns constitute the largest source of revenue for most pension funds.[6] Since all state and local pension plans are prefunded, investment performance is often critical in meeting actuarial expectations for solvency. Most funds adopt an assumed rate of return over a particular investment horizon. Currently, 8 percent is a commonly assumed rate.

TABLE 1

Largest state and local pension plans, by number of active employees and annuitants, 2004

Pension plan	Actuarial funded ratio	Assets	Liabilities	Unfunded liability (surplus)	Asset market value	Active employees	Annuitants	Size, active employees plus annuitants
	(percent)	*($ mils.)*	*($ mils.)*	*($ mils.)*	*($ mils.)*	*(000s)*	*(000s)*	*(000s)*
A. Top ten state plans								
California Public Employees Retirement System	87.7	158,596	180,922	22,326	168,436	807	415	1,222
Teacher Retirement System of Texas	91.8	88,784	96,737	7,953	84,441	718	241	959
Florida Retirement System	112.1	106,707	95,185	–11,522	102,409	634	226	860
California State Teachers Retirement System	82.5	114,094	138,254	24,160	116,158	445	193	638
Ohio Public Employees Retirement System	85.3	46,746	54,774	8,028	65,207	354	145	499
Michigan Public School Employees Retirement System	86.5	38,726	44,769	6,043	36,772	321	146	467
Virginia Retirement System	96.4	39,243	40,698	1,455	40,042	317	114	431
Pennsylvania Public School Employees Retirement System	97.2	52,901	54,444	1,543	48,537	247	146	393
Wisconsin Retirement System	99.2	62,685	63,212	526	62,126	265	122	387
New York State Teachers Retirement System	99.4	71,780	72,209	429	80,276	255	121	376
B. Top five local plans								
New York City Employees Retirement System	99.6	42,056	42,244	188	34,177	173	128	301
New York City Teachers Retirement System	100.0	34,178	34,181	3	26,078	98	58	156
Los Angeles County Employees Retirement Association	87.2	26,564	30,474	3,910	29,481	86	49	135
Texas County & District Retirement System	104.9	12,400	11,825	–575	12,436	105	28	133
Texas Municipal Retirement System	82.8	11,619	14,037	2,418	11,935	92	27	119

Note: Rows may not total because of rounding.
Sources: National Association of State Retirement Administrators, *Public Fund Survey,* FY2004; and Brainard (2005).

TABLE 2

Ten lowest state pension plans, by actuarial funded ratio, 2004

Pension plan	Actuarial funded ratio	Assets	Liabilities	Unfunded liability (surplus)	Asset market value	Active employees	Annuitants	Size, active employees plus annuitants
	(percent)	*($ mils.)*	*($ mils.)*	*($ mils.)*	*($ mils.)*	*(000s)*	*(000s)*	*(000s)*
Connecticut Teachers Retirement Board	65.3	9,847	15,071	5,224	10,853	50	24	74
Rhode Island Employees Retirement System	65.1	5,695	8,747	3,051	5,440	37	20	57
Louisiana Teachers Retirement System	63.1	11,409	18,067	6,658	11,893	84	53	137
Illinois Teachers Retirement System	61.9	31,545	50,947	19,403	31,545	158	77	235
Connecticut State Employees Retirement System	61.6	7,894	12,806	4,912	7,093	54	32	87
Louisiana State Employees Retirement System	59.3	6,072	10,238	4,166	6,608	64	35	99
Illinois State Employees Retirement System	54.2	9,990	18,443	8,452	9,990	71	54	125
Missouri Department of Transportation and Highway Patrol Employees Retirement System	53.4	1,332	2,493	1,161	1,353	9	7	16
Oklahoma Teachers Retirement System	47.3	6,661	14,080	7,419	6,952	82	40	121
Indiana State Teachers Retirement Fund	44.8	6,804	15,198	8,394	6,752	74	37	111

Note: Rows may not total because of rounding.
Sources: National Association of State Retirement Administrators, *Public Fund Survey*, FY2004; and Brainard (2005).

During the 1990s, many funds experienced exceptional investment returns—well in excess of 8 percent. As returns softened beginning in 2000, some fund managers were pressured to seek new types of investments that promised higher returns. This led to shifts in the asset allocation and risk profile of pension investments (see table A5 in the appendix).

Over time, public pension plans have become much more heavily weighted toward investments in equities. On average, holdings of U.S. equities make up the largest share of pension portfolios, with a median of 43.5 percent of assets. Meanwhile, a median of 31.1 percent of all pension fund assets are in U.S. bonds. While it is notable that several funds have been willing to accept higher risk in the search for higher returns, the asset allocation of state and local pension plans, on balance, is not as aggressive as that of privately managed defined benefit plans. Coronado and Liang (2005) find that for a sample of firms surveyed in 2003, two-thirds had 60 percent to 75 percent of their assets in equities. In addition, the investment firm PIMCO (Pacific Investment Management Company) reported that the 100 largest defined benefit plans were unhedged (or exposed to risk of loss) on 90 percent of their interest rate exposure.[7]

Generally speaking, when public funds tend to seek higher returns they are more likely to be invested in real estate and private equity. Four Minnesota pension plans with among the highest risk profiles in the sample (14.29 percent) have 14 percent stakes in private equity funds. A recent trend has been increased interest in hedge fund investments, which offer even higher expected investment returns. It is anticipated that the passage of the Pension Reform Act of 2006 will encourage the hedge fund industry to target public pensions, since some of the more stringent reporting requirements of the law are eliminated if pension money makes up more than 25 percent of a hedge fund's assets.

Are public pensions special? Pensions and employee compensation

What is the relationship of pension benefits to total employee compensation in both the public and private sectors? Much has been made about the withdrawal from defined benefit pension programs by private sector employers. In defense of this withdrawal, many private sector employers note that such programs are no longer suitable because they are based on a model where an employee works, more or less, for a single company over an entire lifetime. Benefits that are portable, such as defined contribution programs, better suit the needs of today's mobile work force. Further, some analysts have suggested that workers are in essence lending money to their employers by deferring income until retirement and that artificial barriers to labor mobility are created by backloading compensation in this way.[8]

Private firms have often been eager to shed the responsibility of managing defined benefit pension plans, since making up underfunded plans can directly hurt their profitability. Given this, companies view the switch to defined contribution programs as a mechanism for shifting pension risk directly to their employees.

In the public sector, however, richer pension and benefit plans are often perceived as being necessary to attract and retain workers in public service jobs. A popular notion is that public sector workers in *comparable* jobs are often paid less than private sector workers; this makes benefits and job security more fundamental components of the employment contract. What do we know about public–private wage differentials? Because the pay of most federal government workers is determined through a process using government surveys of "comparable private employees," the data are available for federal government workers and, to a lesser extent, state and local government workers.[9] Ideally, one should compare the total compensation of similarly qualified employees performing comparable work in the public and private sectors. However, government surveys often exclude benefits and nonpecuniary compensation in the analysis. In addition, the classification of comparable jobs across the public and private sectors is somewhat subjective. To overcome some of these shortcomings, most studies focus on the earnings of workers having comparable personal characteristics, using a dummy variable to indicate the level of government at which the individual is employed. This allows the researcher to estimate if a wage differential occurs when a person with similar personal characteristics is employed in the public sector or private sector.

The studies from the 1980s reached fairly consistent conclusions. Excluding postal workers (who were covered under a distinct labor agreement), federal government workers had a positive earnings differential (that is, higher earnings) compared with their private sector counterparts, but this differential tended to diminish in size over the 1970s (generally estimated at between 10 percent and 20 percent).[10] The earnings differentials tended to be larger for women and minorities, and the earnings differentials tended to narrow at lower levels of government, becoming smallest at the local level. Ehrenberg and Schwarz (1986) suggest that this may be because wage increases for local government workers are more transparent to

BOX 1

It's not just pensions—The impact of other post-employment benefits accounting requirements

The Governmental Accounting Standards Board (GASB) has established new guidelines that require governments to account for their "other post-employment benefits" (OPEB) obligations (GASB statements No. 35 and No. 45). Large state and local governments were required to begin accounting for these obligations on December 15, 2006. The OPEB obligations are primarily for retiree health care costs, but they also can include other benefits, such as insurance. Currently, OPEB obligations are normally paid for out of current revenues on a pay-as-you-go method. The annual costs of OPEB are the costs to cover specific retirees in that year without regard to how these obligations might change as the number of retirees changes or as the costs of providing the benefits change in the future.

The new GASB regulations are intended to improve transparency in government accounts. They should make it easier to know what the future liability for OPEB expenses will be for a given government, as well as to assess whether a government has a strategy for meeting these requirements. The GASB regulations are patterned after similar requirements that the Financial Accounting Standards Board (FASB) placed on private firms in 1992, also known as the Statement of Financial Accounting Standard 106, or SFAS 106. As was the case for private firms, this new accounting standard for governments raises many challenges. For example:

- Estimating the total OPEB liability is challenging. Unlike pensions where actuarial estimates can be at least somewhat understood, estimating OPEB requires making guesses about factors such as health care demand/utilization and prescription drug cost inflation. One estimate suggests the unfunded liability is around $700 billion, but this is a rough estimate. Other estimates suggest that OPEB exposure could range from five to ten times current outlays for retiree health care.[1] Several states and localities have begun to report estimates of their health care liabilities. The states of California and Maryland estimate unfunded health care liabilities at $70 billion and $30 billion, respectively. The estimated unfunded liability for the Los Angeles School District is $6.98 billion, and the New York City estimate is $50 billion.[2]
- The management and ultimate resolution of OPEB costs are highly uncertain. In most cases, retiree health care is not a contractual responsibility as pensions are. In most cases, it is a voluntary benefit offered by the employer. Where retiree health insurance can be modified, a concern is that when these liabilities are required to be reported, some governments may choose to abandon or significantly reduce coverage, thereby forcing the federal government to serve as the health care insurer of last resort.

taxpayers than those for workers at higher levels of government.

Further, studies have found that public sector fringe benefits tend to exceed those in the private sector and that private sector employees tend to face more disamenities in their work, refuting the notion that higher earnings and benefits are compensation for less attractive working conditions experienced by public sector workers.[11] Analysts suggest that institutional differences, such as labor laws and union arrangements, may help explain some of the persistent gap.

A more recent study by Lee (2004) considers individual heterogeneity (differences in the characteristics of individuals who make up two or more groups) and self-selection (any situation in which individuals select themselves into a group) in examining public–private wage differentials. Lee's results find an estimated wage differential for male federal workers to be 17 percent above their private sector counterparts, with female federal workers receiving a 6 percent premium.[12] However, for state and local government workers, Lee finds a negative wage differential relative to their private sector counterparts. The public–private wage differential is 9 percent lower for male state workers and 4 percent lower for female state workers. There is virtually no wage differential between male local workers and male private sector workers, while female local workers earn 4 percent less in wages than female private sector workers. When Lee corrected his estimates using fixed effects, test scores, and self-selection controls, he found that the original estimates for federal government workers were significantly biased upward for men and downward for women, suggesting that unobserved heterogeneity and self-selection are very important in estimating wage differentials between public sector and private sector workers.

BOX 1 (CONTINUED)

It's not just pensions—The impact of other post-employment benefits accounting requirements

There are strategies for managing OPEB costs. Efforts to contain health care costs and slow increases in health insurance premium costs can help. In some cases, shifting more costs to retirees can be an option, along with trying to limit future OPEB obligations by changing benefit packages for new employees. One strategy that is popular (and essentially required) for addressing OPEB costs is to set up a trust fund. A trust fund meets the new accounting standard requirement that an irrevocable source is identified for meeting OPEB obligations. It also has the advantage of allowing governments more flexibility in the use of investment options. Investments in equities and other potentially higher-yielding investment vehicles are possible through an OPEB trust. A potentially attractive option available to a trust fund is the ability to issue OPEB bonds, which are much like pension bonds. A government could issue bonds to cover part or even all of its OPEB liability. As with pension bonds, they are essentially an arbitrage strategy where the bond issuer anticipates the investment yield that will be received from the bond assets will exceed the interest that will be paid to bondholders. However, similar to pension bonds, these are not free from federal tax obligations, so they must carry slightly higher interest rates.

The impact of OPEB on credit ratings for governments is another real concern. Once this liability is recognized, some governments' finances might appear more fragile. To date, several of the major rating agencies have indicated that they will judge the creditworthiness of these governments based on the apparent soundness of their plan for meeting the OPEB liability rather than the size of the liability on the balance sheet when it is first recognized. Credit agencies do expect OPEB liabilities to be largest in the Northeast and Midwest where government entities have large unionized work forces and slightly older work force demographics.[3]

Finally, the impact of OPEB is still a major concern for the private sector. It is estimated that for the 337 companies in the Standard & Poor's 500 that have OPEB obligations, the funded ratio was around 27 percent (versus 88 percent for pensions). For the 282 companies with the most complete financial records, the unfunded OPEB liability in 2005 was estimated at $292 billion versus an unfunded pension liability of $149 billion. The OPEB liability is concentrated in Ford and General Motors. Their unfunded liability alone is $94 billion, representing 32 percent of the total for the Standard & Poor's 500. (These two automakers also have 13 percent of the total pension underfunding.) Telecommunications is the other industry for which OPEB liability is a significant issue.[4]

[1]Young and Prunty (2005); and Mason et al. (2005).
[2]Weiss et al. (2006).
[3]Young and Prunty (2005); and Mason et al. (2005).
[4]Young and Prunty (2005); and Mason et al. (2005).

If wage differentials do not seem to be a compelling factor in explaining why public employees need richer benefits, what about job tenure? The assumption that public sector workers stay longer is often used to justify providing deferred benefits. Particularly for jobs in public safety and education, some would argue that the need to maintain a more experienced work force with "institutional knowledge" justifies backloading compensation in this manner. On average, public employees do have longer job tenure than their private sector counterparts; indeed, public sector tenure has been growing longer over time. In 2004, median tenure in the public sector (for all workers over 20 years old) was 80 percent higher than median tenure in the private sector (that is, seven years versus 3.9 years). From 1983 through 2004, the percentage of male workers with 25 years of service or more rose from 8.1 percent of the total public sector work force to 12.7 percent. In contrast, the percentage of male workers with 25 years of service or more declined from 7.7 percent of the total private sector work force to 5.6 percent. A similar public–private gap exists for women. In 2004, women with high tenure (25 years or more) made up 8.3 percent of the total public sector work force versus only 3.7 percent of the total private sector work force.[13]

What about the overall costs to employers in the public sector versus private sector? A report by the Employee Benefit Research Institute found that overall compensation costs were, on average, 46 percent higher for state and local employees ($34.72 per hour) versus private sector employees ($23.76).[14] The report's findings are presented in table 3. Differences in work force composition and occupations drove this wage differential. A large percentage of state and local workers are teachers, university professors, police, and fire fighters or employed in related occupations. These professions either require greater levels of education

BOX 2

Pension data and limitations

A frequent criticism of state and local pensions is the lack of a single accounting standard for reviewing fund performance. In the private sector, the passage of ERISA (Employee Retirement Income Security Act of 1974) was seen as a step toward more uniform pension reporting and transparency. Public pension plan administrators often disagree with the notion that uniform standards would be appropriate, and feel that there are enough safeguards to ensure that proper public disclosure is made. Regardless of the debate over standards and uniform disclosure, the variability in reporting makes it difficult to have both current and consistent data across plans. It is therefore not surprising that a majority of the most current data are drawn from surveys that attempt to cover the largest pension plans and draw inferences about pension conditions from the respondents.

The data in my article are drawn primarily from the following sources, and each source has unique attributes.

- Wilshire Research, 2004 and 2005 *Wilshire Research Report on State Retirement Systems*. This report provides details on the financial structure of state pension funds, including asset allocation and anticipated returns, as well as details on market and actuarial values of funds. Data are collected during the first quarter of each calendar year. The researchers attempt to acquire as many reports as possible with a June 30 valuation date from the previous year. Survey coverage varies. In 2003, 109 retirement systems were in the survey, and in 2004, the number was reduced to 64.
- Wisconsin Legislative Council, 2004 *Comparative Study of Major Public Employee Retirement Systems*. This study covers 85 public employee pension plans representing a mix of plan types from state to teachers to local plans. Most of the data are based on 2004 actuarial values that were gathered from the websites of the plans. The 85 plans cover roughly 11.8 million active employees and 5.2 million retirees. The survey provides comprehensive information on plan structure, ranging from Social Security coverage and employee and employer contribution rates to pension tax status and post-retirement pension adjustments. It also reports investment assumptions and current funded ratios.
- National Association of State Retirement Administrators, *Public Fund Survey*, FY2004. The survey covers 103 public retirement systems, including those with state, teachers, and local plans covering 12.6 million active employees and 5.8 million retirees. This represents roughly 88 percent of the public pension system. The survey provides a wide range of data, including funded ratios, changes in fund status from previous years, multipliers for determining benefit levels, and pension expenses.
- U.S. Census Bureau, 2002 *Census of Governments, Employee-Retirement Systems of State and Local Governments: 2002* (issued in December 2004). The most comprehensive source of data on all public pension programs consists of data collected as part of the *Census of Governments*, which is conducted every five years. It covers all retirement systems that are sponsored by a recognized unit of government and whose membership consists of public employees compensated by public funds. Its primary drawback is the lag in reporting.

or entail physical risk and, therefore, are more highly compensated than private sector positions, which tend to be dominated by sales and office occupations. Sales and office jobs make up 28 percent of private sector employment, and have an average wage of $19 per hour.

Public sector workers are also more likely to be enrolled in benefit plans than private sector workers. Employee benefits as a percentage of total compensation run 60 percent higher in the public sector than in the private sector. This has led some analysts to suggest that more accurate assessments of compensation differentials can be found when comparing public and private workers in the same industry, such as health care. In the case of public and private pay in fields such as management and professionals, the wage differential is much smaller (see table 4).

Finally, how important is a pension to an individual making a career choice? Kimball, Heneman, and Kellor (2005) looked into this question by examining whether pensions can help attract teachers. The authors point out that teacher pensions tend to be generous, with a fully qualified recipient receiving about 60 percent salary replacement at retirement. For a pension to serve as a significant employment incentive, the authors suggest it must meet several tests. First, does an employee or prospective employee have knowledge

TABLE 3

Employer costs for employee compensation: State and local government versus private sector

	State and local government		Private sector	
	Dollars per hour	Percent of total compensation	Dollars per hour	Percent of total compensation
Total compensation	34.72	100.0	23.76	100.0
Wages	23.83	68.6	16.96	71.4
Total benefits	10.89	31.4	6.80	28.6
Paid leave	2.64	7.6	1.52	6.4
Supplemental pay	0.31	0.9	0.65	2.7
Insurance	3.62	10.4	1.68	7.1
Retirement and savings				
Defined benefit	1.97	5.7	0.41	1.7
Defined contribution	0.25	0.7	0.43	1.8
Legally required benefits	2.04	5.9	2.07	8.7
Other benefits	0.05	0.1	0.04	0.2

Notes: Columns may not total because of rounding. Legally required benefits include Social Security and Medicare. Other benefits include severance pay and supplemental unemployment benefits.
Source: U.S. Bureau of Labor Statistics, 2004, "Employer costs for employee compensation—September 2004," report, No. USDL: 04-2490, December 15.

TABLE 4

Employment and total compensation costs in state and local government versus private sector, by occupation

	State and local government		Private sector	
Occupation	Employment, 2003	Total compensation, Sept. 2004	Employment, 2003	Total compensation, Sept. 2004
	(% of total state and local government employment)	*(dollars per hour)*	*(% of total private employment)*	*(dollars per hour)*
Management, professional	13.7	42.30	17.5	41.14
Professional	7.2	42.14	8.8	37.99
Teachers[a]	31.8	47.35	2.3	n.a.
Sales and office	14.8	23.91	28.2	19.06
Service	31.2	26.37	25.6	11.88
Natural resources, construction, and maintenance	5.2	n.a.	18.2	26.74
Production, transportation, and material moving	3.2	n.a.	7.1	20.57
Total number of jobs/ average compensation	17,930,229	34.72	113,652,460	23.76

[a]This includes postsecondary teachers; primary, secondary, and special education teachers; and other teachers and instructors.
Notes: n.a. indicates not available. Sample includes those aged 16 years and older. Columns do not total because some positions are counted in multiple occupation categories.
Sources: Employee Benefit Research Institute, tabulations of data from the March 2004 *Current Population Survey*; U.S. Bureau of Labor Statistics, Current Employment Statistics, Tables from Employment and Earnings, B-12, available at www.bls.gov/ces/; and U.S. Bureau of Labor Statistics, 2004, "Employer costs for employee compensation—September 2004," report, No. USDL: 04-2490, December 15.

of the value of the pension? Data from the University of Michigan's *Health and Retirement Study* finds that half of the survey's respondents who were enrolled in a pension plan did not know if they were covered by a defined benefit or defined contribution plan. The survey also showed that few respondents knew the value of their pension or even their eligibility date for early retirement. Such findings suggest that a pension is not likely to be a primary incentive for taking a job and remaining in one if workers have little understanding of its actual value.

Several studies of teachers suggest that other attributes are more important to career choice than pensions. For example, a New York State study found that job location was extremely important: Between 1997 and 2000, 84 percent of teachers took a job within 40 miles of their hometown and 55 percent took a job within 40 miles of where they attended college.[15] Given that pensions are likely to be similar in the same geographic area, it seems unlikely that pension benefits were a significant factor in these teachers' employment decisions. Other attributes that studies have found to matter to teachers are recognition from school administration, influence over policy, and motivated students. In addition, some studies suggest that teachers may not like the lack of portability of pension benefits across different school systems. This may make a defined benefit plan actually less attractive. Given this, some advocates have suggested that allowing the undiminished transfer of benefits across school systems might enhance the value of pension benefits as an employment incentive.

That said, in one survey of education majors at Florida State University, health benefits and retirement benefits were found to be the two most important job attributes for teaching, followed by salary and career advancement.[16] One caveat to the survey is that it did not ask respondents to trade off across the range of all job attributes (that is, rank the job attributes or indicate a willingness to sacrifice one type of benefit for another), so the pension result may be overstated.

The fiscal health of state and local pension funds

A good starting place in assessing the health of individual pension funds is determining what the optimal level of funding should be for a prudently managed fund. Depending on local factors, it may be prudent for some pension funds to carry balances in excess of 100 percent of liabilities. In other cases, lower balances are appropriate if the local tax base is growing aggressively and outstripping growth in pension liabilities. D'Arcy, Dulebohn, and Oh (1999) modeled an optimal funding level for all 50 states in the U.S. As mentioned earlier, the funded ratio of a pension plan is the ratio of accumulated assets to the present value of the cost of benefits that have been earned. Using this ratio, state and local pension plans demonstrate a large variation in funding. They range from quasi-pay-as-you-go systems, where pension expenses are deferred until benefits are paid, to fully prefunded programs that often cover not only benefits already earned but also benefits that will be earned or future benefit increases. D'Arcy, Dulebohn, and Oh's study found that the optimal funding level was highly related to the relationship between the rate of growth of pension costs and the tax base. The study also found that interest rates, as well as issues of intergenerational equity, play a role in pension funding. Interest rates clearly affect the return on pension assets. The main issue of intergenerational equity is whether pension costs should be borne by current workers or shifted to future workers. The authors argue that pension funding decisions are too often driven by the condition of the current state budget rather than based on fundamental economic and demographic variables.

Governments are allowed to use pension funds in a number of ways to address budget shortfalls. For example, a government can reduce or even skip a pension fund contribution and use these "savings" to fill other budget gaps. An optimal funding model would relate the growth rate of pension costs to the tax base and develop an individual funded ratio that would be appropriate to that state or local government. A funded ratio of less than 100 percent can be appropriate only when the growth in pension costs over time is constrained below the growth in the tax base. If, however, pension liabilities are growing faster than the tax base, overfunding of pensions is required.

Another key determinant of pension fund solvency is the investment performance of fund managers. Yang and Mitchell (2005) examined how investment performance is related to several structural and governance features. A key finding is that the move by government pension plans into holding greater stock/equity positions has been a double-edged sword. While public funds benefited from the run-up in stocks in the 1990s, the authors estimate that the 30 percent drop in the Standard & Poor's 500 stock index, which occurred from 2000 through 2002, cut public pension investment returns by 12 percentage points. Given that the real annual rate of return over the 1990s averaged 8 percent, this drop had a substantial impact. The authors also find a relationship

between investment performance and the stock funding ratio. Better investment performance leads to higher stock funding ratios that, in turn, positively affect cash flow funding ratios. Governance factors that seem to support this positive relationship include more independent and professional fund managers and practices to issue ongoing reports on financial, actuarial, statistical, and investment information. Factors depressing fund performance include having active or retired employees on the pension investment board. In addition, having pension funds flow from a dedicated revenue source does not appear to enhance funding.

Coronado, Engen, and Knight (2003) examined the investment performance of pension plans operated by state and local governments on behalf of their employees. Their study compared these plans with private plans and found that, after controlling for differences in asset allocation, certain kinds of political interference may reduce returns on plan assets. The study also found that, for 1998, public plans earned a significantly lower rate of return than private plans. Some of the political restrictions examined in the paper include requirements to invest in state to spur local economic development, as well as restrictions on investments in certain countries or industries. For example, the well-known CalPERS (California Public Employees' Retirement System) fund held nearly 17 percent of its assets in California in 2002, making it one of the biggest investors in the state. The CalPERS fund has a stated policy of undertaking investments in California to provide jobs, services, and a financial boost to the state. An even more extreme case was in Connecticut where the state employee pension plan invested $25 million in 1990 in Colt Firearms to help prevent the closure of the local firm. Colt went bankrupt in 1992, and the fund lost its investment. The authors also examined governance issues (for example, the percentage of the pension board that is elected) that appeared to reduce investment returns.

Strategies to close the funding gap

Given that public pensions are often legally defined as an accrued benefit earned over the life of an employee's service, cutting benefit levels that have accrued to employees is often legally restricted. Roughly 40 states have some form of nonimpairment clause that makes restructuring existing pension benefits essentially impossible. While pension benefits can be restructured for future employees, it is virtually impossible to reduce them for existing workers. Local governments have more options. If a state allows a local government to declare bankruptcy, chapter 9 of the bankruptcy code allows for the restructuring of pension benefits.

With only limited options for reducing benefits, states are pursuing other strategies for insuring pension solvency. Reducing administrative expenses and investment costs is frequently targeted. Analysts suggest that the opportunities for savings are not large. Most public plans have investment costs that are either better than or equal to those of private funds. Even administrative costs provide limited opportunities for improvement. According to the *Public Fund Survey*, FY2004, which was reported by the National Association of State Retirement Administrators, the combined median total for investment and administration expenses for public pension funds equaled less than one-third of 1 percent of total assets. However, some states are beginning to experience higher management fees as they explore more exotic investment options. For example, the state of Pennsylvania, which makes extensive use of hedge funds to boost investment returns, has seen its advisory fees rise from $80 million in 1998 to $195 million in 2004.[17]

In many ways the most obvious strategy is potentially the most difficult, namely, raising taxes to meet pension obligations. On average, state pension contributions represented only 3.7 percent of state tax revenue and 5.5 percent of local tax revenue in 2004.[18] By historical standards, these levels are not particularly burdensome. However, state tax systems have not snapped back from the 2001 recession, and passing tax increases has proven difficult. From FY2000 to FY2005, real per capita tax revenue has actually fallen 1.0 percent nationwide with even more significant declines in many midwestern states (in Wisconsin, –11.5 percent; Iowa, –11.1 percent; Michigan, –9.1 percent; and Illinois, –1.4 percent). Further, the Rockefeller Institute reports that cumulative state tax increases in the most recent recession were a relatively modest 3.7 percent of tax revenue, compared with increases of 9.8 percent during the 1990–91 recession and 9.9 percent during the 1980–82 recession.[19] Few states were able to increase tax rates associated with their largest and most productive tax bases, such as sales and income. Instead, additional revenues were mostly raised by increases in "sin" taxes and fees, such as those for tobacco and alcohol.

With state expenditures increasingly being consumed by Medicaid and elementary and secondary education, pension plans may find it increasingly difficult to compete with other public functions for funding. For example, between FY2002 and FY2004, in real per capita dollars, all state government expenditures excluding medical vendor payments (largely

Medicaid) fell 2 percent. While medical vendor payments rose 16.5 percent, spending on highways fell 5.3 percent and public welfare by 3.6 percent. Elementary and secondary education had a small 2.4 percent gain, and higher education recorded a gain of 1.4 percent, but these came about only because of the inclusion of tuition-supported spending in the base. State general fund support for higher education also fell.[20]

Given these dynamics on the expense side of the pension equation and the perceived barriers against raising new taxes, it is not surprising that more attention is being paid to higher-yielding investment/revenue options. Pennsylvania now has nearly 23 percent of its state pension funds in hedge funds. Estimates are that roughly 14 percent of public pension plans are invested in hedge funds, and this percentage is anticipated to grow to 40 percent in the next three years. The Blackstone Group, which specializes in investing in hedge funds for clients, anticipates that 40 percent of its asset base will come from public funds, up from 25 percent currently. Pennsylvania has followed other aggressive investment strategies, including putting roughly 7 percent of assets into real estate, 12.3 percent into private equity and venture capital, and 21 percent into international stocks. This more aggressive mix produced a 9 percent return for the state in 2005, significantly better than the 5 percent gain in the Standard & Poor's 500 stock index. Over the past decade, the fund has averaged 10 percent returns. The state's work force is not growing and the ratio of active workers to retirees has almost fallen to 1. Current payments into the state funds are $400 million per year with benefits of nearly $2 billion paid out. The state continues to underfund the plan, contributing only 2 percent of workers' salaries annually.[21] On the one hand, the fact that pension funds are able to build a portfolio of investments that can be managed over a long time frame suggests that they may be well positioned to include riskier investments in search of higher returns. On the other hand, in a state where annuitants and active employees are evenly split, an investment strategy that introduces more risk in search of better returns violates life-cycle investment strategies that assume that pension plans should turn more conservative as the number of pensioners increases. One drawback to the use of less familiar investment vehicles is that the management and administrative expenses of some of these funds are significantly higher than those of traditional investments.

Another strategy for increasing revenue is to issue pension bonds. To do this, a government first determines what the unfunded actuarial accrued liability is in its pension fund. It then decides how much of the liability it will attempt to fund through the proceeds from the bond sale. The proceeds from the sale are deposited in the pension fund and invested. For this strategy to work, the investment returns on the bond proceeds must exceed the interest rate being paid on the bonds. The larger the spread is between the investment returns and the interest rate on the bonds, the better this strategy works. However, if the investment return on the newly invested asset falls, the strategy backfires. Similarly, market volatility can create havoc. Governments with pension bonds outstanding faced a funding crunch in 2001, 2002, and 2003 when the Standard & Poor's index of domestic equities fell 16 percent, 19 percent, and 1.6 percent, respectively. These governments had to make larger contributions to cover the new actuarial losses, and they had higher debt service costs related to the bonds. Several states, including Oregon, New Jersey, Kansas, Wisconsin, West Virginia, and Illinois, have issued pension bonds. In the 1990s, $15 billion in pension bonds were issued, and the current decade has found several counties in California, as well as the states of Oregon ($2 billion) and Illinois ($10 billion), active in the market.[22]

Critics of pension bonds argue that this strategy converts "soft" debt (an obligation to pay pensions) into a "hard" debt (the requirement to pay bondholders). Pension bonds create a structured payment system that limits the government's flexibility and carries distinct penalties in case of default. Another criticism of pension bond issuance is that money can be diverted from the pension bonds to do things other than retire pension debt. When Illinois issued $10 billion in pension bonds in 2003, only $7.3 billion was used to retire pension debt, with the balance being used to help close gaps in the state's general fund. This sort of diversion is particularly questionable for Illinois, given that the infusion of the $7.3 billion in assets only raised the funded ratio to 57 percent.[23]

Pension bonds are often not tax exempt, reducing their attractiveness to some classes of investors. The U.S. Treasury code specifies that if a government wishes to reinvest the proceeds and achieve a higher rate of return than the municipal rate, the bonds have to be taxable. So it is an arbitrage restriction. Finally, since pension bonds are backed by the full credit of the issuing government, they can limit the state's ability to issue other forms of debt. Illinois Comptroller Dan Hynes has reported that the state of Illinois's debt load has nearly tripled (from $7.5 billion to over $20 billion) in the last five years, primarily because of the issuance of pension obligation bonds, and this will make it harder to fund capital projects through debt.

A related strategy for a one-shot infusion of assets into a pension fund is through an asset sale.

The state of Illinois, for example, proposed selling a government building (the Thompson Center) and a casino license; it even investigated selling the naming rights for public facilities in an effort to raise money. The City of Chicago has sold a portion of a controlled access highway (the Chicago Skyway), and Indiana has embarked on a long-term lease for the Indiana Toll Road. Recently, the City of Chicago was given legal authority to investigate selling Midway Airport, and the city's chief financial officer has suggested that the proceeds could be used to help shore up the city's pension plan.

Critics of asset sales suggest that the infusion of cash from the sale is often used to cover a structural failure in the pension plan's design. While it can significantly reduce the current unfunded liability, the plan may still be unbalanced in terms of contributions needed to make it actuarially sound. In the worst case, the asset sale can even encourage a government to take a pension contribution holiday or expand benefits without identifying a new long-term source of funding.

Another fundamental problem with an asset sale is that the government loses the stream of income that the asset produces. In 2007, Illinois Governor Rod Blagojevich proposed leasing the Illinois lottery and investing the estimated $10 billion that the lease would produce in the state pension system. However, the lottery produces $600 million in annual revenue that is used to fund state operations. While the lottery lease would immediately improve the finances of the state pension system, it would create a $600 million hole in annual state revenues.

Structural redesign of pension plans

Some states and localities that have experienced pension funding problems have developed new pension systems. These new systems often create defined contribution plans for new employees or hybrid systems of less generous defined benefit plans that are supplemented with defined contribution plans designed to limit future liability. In some cases, the plans have raised the retirement age and eliminated incentives for early retirement.

Currently, Alaska, Michigan, and the District of Columbia offer a defined contribution program for all new hires; they have closed their defined benefit programs. Colorado, Florida, Montana, New Jersey, North Dakota, Ohio, and South Carolina provide optional defined contribution plans, while Washington, Indiana, and Oregon offer hybrid defined benefit–defined contribution plans. In 20 states, defined contribution plans are offered to specific worker classifications, particularly those comprising positions that are unlikely to have long job tenures, such as appointed and elected officials.

Implementing a defined contribution plan frequently meets with resistance from state or local employees who are concerned that defined contribution plans will offer reduced future benefits relative to their current plans. In addition, converting to a defined contribution plan often costs the government more money in the short run. Defined contribution plans have higher administrative costs, and if the current defined benefit plan is underfunded, converting new employees to the defined contribution plan may make things worse. New employees will no longer make contributions to the defined benefit plan, reducing the revenue flow into the plan. While such a move shifts the risk of investment to the employee and caps the plan's liability in the long run, it will not help repair funding solvency for an existing defined benefit plan that is underfunded.

Funding at the actuarially required contribution

Perhaps the simplest reform would be to require governments to make annual pension payments based on the actuarially required contribution (ARC). Funding at the ARC would ensure that underpayment would not occur, and it would take discretion away from governments in determining their annual contribution. While such a mechanical solution would undoubtedly improve pension fund behavior, it is frequently resisted by state and local governments that prefer having fiscal flexibility in determining funding priorities. A state or locality facing a fiscal crisis may not consider fully funding its annual pension contribution to be the best policy.

Conclusion

The 2001 recession and the bursting of the stock market bubble revealed that some state and local pension plans were not properly designed to meet changing conditions. The relative health of pension plans is a function of many factors, including investment policy, contribution levels, government fiscal health, and governance. Inefficient management often undermines plans that would function effectively if actuarially required contributions were made regularly. Deliberate underfunding and a tendency to grant benefits without identifying revenues are frequent contributors to pension problems.

In the short run, governments facing pension shortfalls have few options other than finding additional sources of revenue or diverting spending from other programs to meet pension obligations. Neither option is likely to be politically popular. In the longer term, some structural redesign of pension plans seems likely. Expanded use of defined contribution plans

and a general move to shift risk to the beneficiaries appear to be trends. Finally, forward-thinking policymakers may explore more structural reforms based on underlying economic growth, such as notional accounts as have been adopted in Sweden, for future pension systems.

NOTES

[1]Brainard (2005).

[2]Byrnes with Palmeri (2005).

[3]This survey by the National Association of State Retirement Administrators (NASRA) is formally known as the *Public Fund Survey*, FY2004.

[4]The Seventh Federal Reserve District comprises all of Iowa and most of Illinois, Indiana, Michigan, and Wisconsin.

[5]State and local government workers were originally exempt from Social Security on the grounds that they already participated in a pension program and over concerns that the imposition of a Social Security tax on state government would be unconstitutional. Over time, state and local government workers were allowed to voluntarily participate, and state and local governments were allowed to opt in and opt out of the Social Security plan. In 1983, Social Security regulations were modified, disallowing state and local governments from withdrawing from Social Security once enrolled. See Fagnoni (1998).

[6]The NASRA's *Public Fund Survey*, FY2004, reported that, in aggregate, 63 percent of pension revenues was produced by investments over the 22-year period ending in 2004. Employee contributions formed 12 percent of revenues, and employer contributions made up 25 percent of revenues.

[7]Reuben (2005).

[8]Glaeser (2007).

[9]For a useful discussion of public sector employee labor market dynamics, see Ehrenberg and Schwarz (1986).

[10]Ehrenberg and Schwarz (1986), p. 1248.

[11]Ibid., p. 1250.

[12]Lee (2004), p. 456.

[13]Copeland (2005).

[14]McDonnell (2005).

[15]Kimball, Heneman, and Kellor (2005), p. 408.

[16]Sapolsky (2000).

[17]Byrnes (2006).

[18]Boyd (2006b).

[19]Boyd (2006a).

[20]Ibid.

[21]Byrnes (2006).

[22]Young and Murphy (2004).

[23]Weiss et al. (2006), p. 22.

TABLE A1

Pension plan summary

Pension plan	Actuarial funded ratio	Actuarial values ($000s)			Actuarial valuation date	For fiscal year end
		Assets	Liabilities	Unfunded liability (surplus)		
	(percent)					
Alabama Teachers	93.6	18,110,470	19,357,735	1,247,265	6/30/2003	9/30/2004
Alabama ERS	95.4	8,100,846	8,493,369	392,523	9/30/2002	9/30/2004
Alaska PERS	72.8	7,687,281	10,561,653	2,874,372	6/30/2003	6/30/2004
Alaska Teachers	64.3	3,752,285	5,835,609	2,083,324	6/30/2003	6/30/2004
Arizona Public Safety Personnel	92.4	4,774,313	5,167,333	393,020	6/30/2004	6/30/2004
Arizona SRS	96.8	22,572,000	22,935,000	363,000	6/30/2003	6/30/2004
Phoenix ERS	84.2	1,417,774	1,684,795	267,021	6/30/2004	6/30/2004
Arkansas Teachers	83.8	8,424,000	10,050,000	1,626,000	6/30/2004	6/30/2004
Arkansas PERS	88.7	4,438,000	5,005,000	567,000	6/30/2004	6/30/2004
California PERF	87.7	158,596,000	180,922,000	22,326,000	6/30/2003	6/30/2004
California Teachers	82.5	114,094,000	138,254,000	24,160,000	6/30/2004	6/30/2004
Contra Costa County	85.5	3,538,722	4,141,390	602,668	12/31/2003	12/31/2004
Los Angeles County ERS	87.2	26,564,328	30,474,025	3,909,697	6/30/2003	6/30/2004
San Diego County	81.1	5,166,759	6,369,490	1,202,731	6/30/2002	6/30/2004
San Francisco City & County	109.0	11,173,636	10,249,896	–923,740	6/30/2003	6/30/2004
Colorado State & School	70.1	28,594,699	40,783,531	12,188,832	12/31/2004	12/31/2004
Colorado Municipal	77.2	1,990,652	2,576,988	586,336	12/31/2004	12/31/2004
Denver Schools	88.2	2,611,524	2,960,990	349,466	1/1/2005	12/31/2004
Connecticut SERS	61.6	7,893,700	12,806,100	4,912,400	6/30/2002	6/30/2002
Connecticut Teachers	65.3	9,846,700	15,070,500	5,223,800	6/30/2004	6/30/2004
Delaware State Employees	103.0	5,387,560	5,229,927	–157,633	6/30/2004	6/30/2004
District of Columbia Teachers[a]	100.0	917,800	917,800	0	10/1/2003	9/30/2004
District of Columbia Police & Fire[a]	100.0	1,427,800	1,427,800	0	10/1/2002	9/30/2004
Florida RS	112.1	106,707,426	95,185,433	–11,521,993	7/1/2004	6/30/2004
Georgia ERS	97.0	12,797,389	13,191,307	393,918	6/30/2004	6/30/2004
Georgia Teachers	101.1	42,372,661	41,905,676	–466,985	6/30/2003	6/30/2004
Hawaii ERS	71.7	8,797,133	12,271,331	3,474,198	6/30/2004	6/30/2004
Idaho PERS	91.7	7,420,200	8,154,800	1,214,600	7/1/2003	6/30/2004
Chicago Teachers	85.9	10,392,193	12,105,680	1,713,487	6/30/2003	6/30/2004
Illinois Municipal	94.3	18,315,988	19,424,667	1,108,679	12/31/2004	12/31/2004
Illinois SERS	54.2	9,990,187	18,442,665	8,452,478	6/30/2004	6/30/2004
Illinois Universities	66.0	12,586,300	19,078,600	6,492,300	6/30/2004	6/30/2004
Illinois Teachers	61.9	31,544,729	50,947,451	19,402,722	7/1/2004	6/30/2004
Indiana PERF	102.9	9,293,952	9,034,573	–259,379	7/1/2003	6/30/2004
Indiana Teachers	44.8	6,804,395	15,197,926	8,393,531	6/30/2004	6/30/2004
Iowa PERS	88.6	16,951,943	19,128,411	2,176,468	6/30/2004	6/30/2004
Kansas PERS	75.2	10,853,462	14,439,546	3,586,084	12/31/2003	6/30/2004

TABLE A1 (CONTINUED)

Pension plan summary

Pension plan	Actuarial funded ratio	Actuarial values ($000s)			Actuarial valuation date	For fiscal year end
		Assets	Liabilities	Unfunded liability (surplus)		
	(percent)					
Wichita Employees	106.8	374,171	350,444	–23,727	12/31/2003	12/31/2003
Wichita Fire & Police	106.2	361,687	340,524	–21,163	12/31/2002	12/31/2003
Kentucky ERS	70.9	7,167,473	10,112,600	2,945,127	6/30/2004	6/30/2004
Kentucky County	75.1	7,541,441	10,041,709	2,500,268	6/30/2004	6/30/2004
Kentucky Teachers	69.4	14,414,000	20,784,200	6,370,200	6/30/2004	6/30/2004
Louisiana SERS	59.3	6,071,631	10,237,574	4,165,943	6/30/2004	6/30/2004
Louisiana Teachers	63.1	11,409,404	18,067,486	6,658,082	6/30/2004	6/30/2004
Maine State and Teacher	67.4	6,041,952	8,963,272	2,921,320	6/30/2002	6/30/2004
Maine Local	110.2	1,551,943	1,407,729	–144,214	6/30/2002	6/30/2004
Maryland PERS	91.2	11,514,655	12,621,578	1,106,923	6/30/2003	6/30/2004
Maryland Teachers	92.8	20,155,415	21,724,178	1,568,763	6/30/2004	6/30/2004
Massachusetts SERS	83.9	15,930,753	18,996,053	3,065,300	12/31/2003	12/31/2003
Massachusetts Teachers	69.6	17,074,000	24,519,000	7,445,000	1/1/2002	12/31/2003
Michigan Public Schools	86.5	38,726,000	44,769,000	6,043,000	9/30/2003	9/30/2004
Michigan SERS	88.8	10,441,000	11,761,000	1,320,000	9/30/2003	9/30/2004
Michigan Municipal	78.7	4,459,500	5,667,700	1,208,200	12/31/2003	12/31/2004
Duluth Teachers	91.8	276,949	301,704	12,642	7/1/2004	6/30/2004
Minneapolis ERF	92.1	1,513,389	1,643,140	129,751	7/1/2004	6/30/2004
Minneapolis Teachers	50.8	877,764	1,729,551	715,069	7/1/2004	6/30/2004
Minnesota PERF	76.7	11,477,961	14,959,465	3,481,504	6/30/2004	6/30/2004
Minnesota State Employees	100.1	7,884,984	7,878,363	–6,621	6/30/2004	6/30/2004
Minnesota Teachers	100.0	17,519,909	17,518,784	–1,125	6/30/2004	6/30/2004
St. Paul Teachers	71.8	898,860	1,251,460	352,600	6/30/2004	6/30/2004
Mississippi PERS	74.9	17,103,285	22,847,260	5,743,975	6/30/2004	6/30/2004
Missouri Local	95.9	2,808,907	2,929,172	120,265	2/29/2004	6/30/2004
Missouri State Employees	84.6	6,118,214	7,230,011	1,111,797	6/30/2004	6/30/2004
Missouri Teachers	82.0	21,501,572	26,225,259	4,723,687	6/30/2004	6/30/2004
Missouri Nonteachers	82.7	1,837,308	2,221,210	383,902	6/30/2004	6/30/2004
Missouri Dept. of Transportation & Hwy. Patrol	53.4	1,331,588	2,492,919	1,161,331	6/30/2004	6/30/2004
St. Louis School Employees	84.0	902,000	1,074,300	172,300	1/1/2004	12/31/2004
Montana PERS	86.7	3,047,287	3,514,085	466,798	6/30/2004	6/30/2004
Montana Teachers	74.0	2,485,700	3,359,200	873,500	7/1/2004	6/30/2004
Nebraska Schools	87.3	5,118,011	5,864,260	746,249	7/1/2004	6/30/2004
Nevada Regular Employees	80.5	13,670,516	16,977,008	3,306,492	6/30/2004	6/30/2004
Nevada Police Officer and Firefighter	71.7	3,159,795	4,408,373	1,248,578	6/30/2004	6/30/2004
New Hampshire Retirement System	71.1	3,901,151	5,355,387	1,454,236	6/30/2003	6/30/2004
New Jersey PERS	91.5	27,377,224	29,924,596	2,547,372	6/30/2004	6/30/2004

TABLE A1 (CONTINUED)

Pension plan summary

Pension plan	Actuarial funded ratio	Actuarial values ($000s)			Actuarial valuation date	For fiscal year end
		Assets	Liabilities	Unfunded liability (surplus)		
	(percent)					
New Jersey Teachers	85.6	34,633,791	40,447,690	5,813,899	6/30/2004	6/30/2004
New Jersey Police & Fire	84.0	18,703,390	22,278,239	3,574,849	6/30/2004	6/30/2004
New Mexico PERF	93.0	9,275,676	9,973,755	698,079	6/30/2004	6/30/2004
New Mexico Teachers	75.4	7,488,000	9,927,100	2,439,100	6/30/2004	6/30/2004
New York City ERS	99.6	42,055,984	42,244,146	188,162	6/30/2003	6/30/2004
New York City Teachers	100.0	34,177,750	34,181,065	3,315	6/30/2002	6/30/2003
New York State & Local ERS[a]	100.0	107,610,000	107,610,000	0	4/1/2002	3/31/2004
New York State & Local Police & Fire[a]	100.0	19,412,000	19,412,000	0	4/1/2002	3/31/2004
New York State Teachers	99.4	71,780,400	72,209,400	429,000	6/30/2003	6/30/2004
Charlotte Firefighters	94.1	274,948	292,341	17,393	7/1/2004	6/30/2004
North Carolina Teachers and State Employees	108.1	45,117,508	41,733,702	–3,383,806	12/31/2003	6/30/2004
North Carolina Local Government	99.3	12,364,380	12,455,504	91,124	12/31/2003	6/30/2004
North Dakota PERS	94.0	1,272,900	1,196,500	–76,400	6/30/2004	6/30/2004
North Dakota Teachers	80.3	1,445,600	1,800,400	354,800	7/1/2004	6/30/2004
Ohio Police & Fire	92.8	9,076,469	9,785,766	709,297	1/1/2002	12/31/2002
Ohio PERS	85.3	46,746,000	54,774,000	8,028,000	12/31/2003	12/31/2004
Ohio School Employees	77.0	8,667,000	11,251,000	2,584,000	6/30/2003	6/30/2004
Ohio Teachers	74.8	52,253,798	69,867,425	17,613,627	6/30/2004	6/30/2004
Oklahoma PERS	76.1	5,412,167	7,114,778	1,702,611	7/1/2004	6/30/2004
Oklahoma Teachers	47.3	6,660,900	14,080,100	7,419,200	6/30/2003	6/30/2004
Oregon PERS	86.1	38,400,000	44,600,000	3,983,400	12/31/2003	6/30/2004
Pennsylvania School Employees	97.2	52,900,500	54,443,800	1,543,300	6/30/2003	6/30/2004
Pennsylvania State ERS	96.1	26,900,000	27,999,000	1,099,000	12/31/2004	12/31/2004
Rhode Island ERS	65.1	5,695,359	8,746,641	3,051,282	6/30/2003	6/30/2003
Rhode Island Municipal	99.7	1,527,847	1,532,471	4,624	6/30/2003	6/30/2003
South Carolina RS	82.8	20,197,936	24,398,931	4,200,995	7/1/2003	6/30/2004
South Carolina Police	91.5	2,511,369	2,744,849	233,480	7/1/2003	6/30/2004
South Dakota PERS	97.7	4,937,500	5,051,700	114,200	6/30/2003	6/30/2004
Tennessee State and Teachers	99.8	22,099,252	22,151,745	52,493	7/1/2003	6/30/2004
Tennessee Political Subdivisions	91.9	3,605,529	3,923,475	317,946	7/1/2003	6/30/2004
City of Austin ERS	80.8	1,356,800	1,678,200	321,400	12/31/2004	12/31/2004
Houston Firefighters	112.9	1,863,100	1,650,800	–212,300	7/1/2001	6/30/2004
Texas Teachers	91.8	88,784,000	96,737,000	7,953,000	8/31/2004	8/31/2004
Texas County & District	104.9	12,400,157	11,825,100	–575,057	12/31/2004	12/31/2004
Texas ERS	97.3	20,036,647	20,591,848	555,201	8/31/2004	8/31/2004
Texas Municipal	82.8	11,619,100	14,036,900	2,417,800	12/31/2004	12/31/2004
Texas LECOS	109.3	679,243	621,457	–57,786	8/31/2004	8/31/2004

TABLE A1 (CONTINUED)

Pension plan summary

Pension plan	Actuarial funded ratio	Actuarial values ($000s)			Actuarial valuation date	For fiscal year end
		Assets	Liabilities	Unfunded liability (surplus)		
	(percent)					
Utah Noncontributory	92.4	12,233,337	13,237,071	1,003,734	12/31/2004	12/31/2004
Vermont State Employees	97.6	1,081,359	1,107,634	26,275	6/30/2004	6/30/2004
Vermont Teachers	90.2	1,284,833	1,424,662	139,829	6/30/2004	6/30/2004
Fairfax County Schools	90.1	1,597,459	1,772,418	174,959	6/30/2003	6/30/2004
Virginia Retirement System	96.4	39,243,000	40,698,000	1,455,000	6/20/2003	6/30/2004
Washington PERS 1	80.6	10,227,000	12,692,000	2,465,000	9/30/2003	6/30/2004
Washington PERS 2/3[a]	100.0	10,842,300	10,842,300	0	9/30/2003	6/30/2004
Washington Teachers Plan 1	88.0	9,086,000	10,325,000	1,239,000	9/30/2003	6/30/2004
Washington Teachers Plan 2/3[a]	100.0	3,949,000	3,949,000	0	9/30/2003	6/30/2004
Washington LEOFF Plan 1	112.4	4,803,000	4,275,000	–528,000	9/30/2003	6/30/2004
Washington LEOFF Plan 2[a]	100.0	2,740,400	2,740,400	0	9/30/2003	6/30/2004
Washington School Employees Plan 2/3[a]	100.0	1,546,000	1,546,000	0	9/30/2002	6/30/2004
West Virginia PERS	80.0	3,095,660	3,870,201	774,541	7/1/2003	6/30/2004
West Virginia Teachers	22.2	1,427,475	6,440,738	5,013,263	6/30/2003	6/30/2004
Wisconsin Retirement System	99.2	62,685,300	63,211,700	526,400	12/31/2003	12/31/2003
Wyoming Public Employees	85.0	4,704,299	5,536,192	831,893	1/1/2005	12/31/2004
Total	87.8	2,106,445,628	2,398,889,695	290,558,636		

[a]These plans use the aggregate cost actuarial method, which does not identify an unfunded liability.

Notes: Governments use a variety of acronyms to name their plans. Some commonly used acronyms are as follows: PERS, Public Employees Retirement System; SERS, State Employees Retirement System; PERA, Public Employees Retirement Association; SRS, State Retirement System; ERF, Employees Retirement Fund; TRS, Teachers Retirement System; LGERS, Local Government Employees Retirement System; CRS, County Retirement System; and MRS, Municipal Retirement System.

Sources: National Association of State Retirement Administrators, *Public Fund Survey*, FY2004; and Brainard (2005).

TABLE A2

Pension plans, by active employees and beneficiaries/annuitants

Pension plan	Employee coverage	Active employees	Beneficiaries and annuitants	Ratio of active employees to beneficiaries and annuitants
Alabama ERS	S, L	82,304	29,874	2.76
Alabama TRS	T	129,617	56,263	2.30
Alaska PERS	S, L	33,612	19,572	1.72
Alaska TRS	T	9,688	8,707	1.11
Arizona SRS	S, L, T	205,573	70,878	2.90
Arkansas PERS	S, L	42,826	19,872	2.16
Arkansas TRS	T	71,462	22,320	3.20
California PERS	S, L	806,644	415,178	1.94
California TRS	T	448,478	181,868	2.47
Colorado PERA	S, L, T	176,840	67,900	2.60
Connecticut SERS	S	46,964	37,051	1.27
Connecticut TRS	T	49,946	24,297	2.06
Delaware SEPP	S, T	32,498	17,612	1.85
Florida FRS	S, L, T	600,000	240,000	2.50
Georgia ERS	S	73,251	28,570	2.56
Georgia TRS	T	208,927	61,590	3.39
Hawaii ERS	S, L, T	62,573	32,297	1.94
Idaho PERS	S, L, T	63,385	26,043	2.43
Illinois SERS	S	70,621	42,307	1.67
Illinois TRS	T	157,990	76,905	2.05
Illinois MRF	L	167,952	75,775	2.22
Indiana PERF	S, L	143,082	52,956	2.70
Indiana TRF	T	73,510	37,068	1.98
Iowa PERS	S, L, T	160,034	76,961	2.08
Kansas PERS	S, L, T	148,145	59,124	2.51
Kentucky ERS	S, L	151,121	64,676	2.34
Kentucky TRS	T	71,950	35,803	2.01
Louisiana SERS	S	64,149	34,700	1.85
Louisiana TRSL	T	84,398	52,900	1.60
Maine SRS	S, L, T	52,029	31,460	1.65
Maryland SRPS	S, L, T	185,861	94,880	1.96
Massachusetts SERS	S	80,122	51,418	1.56
Massachusetts TRS	T	87,934	39,341	2.24
Michigan SERS	S	34,776	45,619	0.76
Michigan MERS	L	37,171	18,442	2.02
Michigan PSERS	T	321,263	145,588	2.21
Minnesota MSRS	S	51,440	22,654	2.27
Minnesota PERA	L	138,164	61,190	2.26
Minnesota TRA	T	72,008	37,649	1.91
Mississippi PERS	S, L, T	156,353	62,407	2.51

TABLE A2 (CONTINUED)

Pension plans, by active employees and beneficiaries/annuitants

Pension plan	Employee coverage	Active employees	Beneficiaries and annuitants	Ratio of active employees to beneficiaries and annuitants
Missouri SERS	S	56,362	25,179	2.24
Missouri LAGERS	L	32,568	10,786	3.02
Missouri PSRS	T	73,797	34,230	2.16
Montana PERS	S, L	28,201	14,834	1.90
Montana TRS	T	18,251	9,741	1.87
Nebraska PERS	S, L	78,900	16,700	4.72
Nebraska SPP	T	36,799	11,837	3.11
Nevada PERS	S, L, T	87,500	27,000	3.24
New Hampshire NHRS	S, L, T	50,420	17,790	2.83
New Jersey PERS	S, L	295,147	116,545	2.53
New Jersey TPAF	T	145,882	60,361	2.42
New Mexico PERA	S, L	42,256	20,858	2.03
New Mexico ERA	T	65,000	24,947	2.61
New York ERS	S, L	552,508	287,341	1.92
New York TRS	T	254,515	121,246	2.10
North Carolina TSERS	S, T	356,535	123,518	2.89
North Carolina LGERS	L	136,419	35,119	3.88
North Dakota PERS	S, L	17,636	5,634	3.13
North Dakota TFR	T	9,826	5,373	1.83
Ohio PERS	S, L	353,584	145,263	2.43
Ohio STRS	T	179,063	111,853	1.60
Oklahoma PERS	S, L	42,998	22,990	1.87
Oklahoma TRS	T	81,863	39,593	2.07
Oregon PERS	S, L, T	160,808	98,686	1.63
Pennsylvania SERS	S	108,405	98,727	1.10
Pennsylvania PSERS	T	247,000	146,000	1.69
Rhode Island ERS	S, T	36,820	20,392	1.81
South Carolina SCRS	S, L, T	185,538	84,420	2.20
South Dakota SRS	S, L, T	35,408	17,029	2.08
Tennessee CRS	S, L, T	198,917	83,121	2.39
Texas ERS	S	172,191	65,231	2.64
Texas TRS	T	815,538	240,627	3.39
Texas MRS	L	90,930	25,287	3.60
Utah SRS	S, L, T	95,461	33,262	2.87
Vermont SRS	S	8,079	3,833	2.11
Vermont TRS	T	10,315	4,386	2.35
Virginia SRS	S, L, T	317,203	113,717	2.79
Washington PERS	S, L	220,415	99,755	2.21
Washington TRS	T	66,075	41,757	1.58
West Virginia PERS	S, L	35,868	18,928	1.89

TABLE A2 (CONTINUED)

Pension plans, by active employees and beneficiaries/annuitants

Pension plan	Employee coverage	Active employees	Beneficiaries and annuitants	Ratio of active employees to beneficiaries and annuitants
West Virginia TRS	T	19,313	26,050	0.74
Milwaukee City	L	12,574	14,150	0.89
Milwaukee County	L	4,980	7,300	0.68
Wisconsin WRS	S, L, T	262,085	126,211	2.08
Wyoming WRS	S, L, T	32,000	15,000	2.13
Totals: 85 funds		11,786,614	5,252,322	2.24

Notes: Governments use a variety of acronyms to name their plans. Some commonly used acronyms are as follows: PERS, Public Employees Retirement System; SERS, State Employees Retirement System; PERA, Public Employees Retirement Association; SRS, State Retirement System; ERF, Employees Retirement Fund; TRS, Teachers Retirement System; LGERS, Local Government Employees Retirement System; CRS, County Retirement System; and MRS, Municipal Retirement System. Coverage: S = state; L = local; T = teachers.

Source: Wisconsin Legislative Council, 2004 *Comparative Study of Major Public Employee Retirement Systems*.

TABLE A3

Post-retirement increases and state tax provisions for pension plans

Pension plan	Social Security	Annual post-retirement increases	State taxation of pension plan benefits
Alabama ERS	Yes	Ad hoc only	Benefits exempt
Alabama TRS	Yes	Ad hoc only	Benefits exempt
Alaska PERS	No	75% of CPI if 65, 9% cap; 50% of CPI if 60 or retired 5 yrs.—6% cap	No income tax law
Alaska TRS	No	75% of CPI if age 65, 9% cap; 50% of CPI if 60 or retired 8 yrs.	No income tax law
Arizona SRS	Yes	Excess earnings—4% cap or CPI cap, whichever is less	Exempt to $2,500
Arkansas PERS	Yes	3%	Exempt to $6,000
Arkansas TRS	Yes	3%	Exempt to $6,000
California PERS	Yes	2%	Benefits taxable
California TRS	No	2%	Benefits taxable
Colorado PERA	No	3.5%	Exempt to $20,000/$24,000
Connecticut SERS	Yes	60% of CPI up to 6%, 75% of CPI over 6%	Benefits taxable
Connecticut TRS	No	Excess earnings: 1.5% or 6% cap	Benefits taxable
Delaware SEPP	Yes	Ad hoc only	Exempt to $12,500
Florida FRS	Yes	3%	No income tax
Georgia ERS	Yes	CPI—1.5% semi-annual cap	Exempt to $15,000
Georgia TRS	Yes	CPI—1.5% semi-annual cap	Exempt to $15,000
Hawaii ERS	Yes	2.50%	Benefits exempt
Idaho PERS	Yes	CPI—1% min. to 6% max. (conditional)	Benefits taxable
Illinois SERS	Yes	3%	Benefits exempt
Illinois TRS	No	3%	Benefits exempt
Illinois MRF	Yes	3%	Benefits exempt
Indiana PERF	Yes	Ad hoc only	Benefits taxable
Indiana TRF	Yes	Ad hoc only	Benefits taxable
Iowa PERS	Yes	Excess earnings—3% cap	Exempt to $6,000/$12,000 married
Kansas PERS	Yes	Ad hoc only	Benefits exempt
Kentucky ERS	Yes	CPI—5% cap	Prorated exemption
Kentucky TRS	No	1.5% + 1.4% ad hoc for 2002	Prorated exemption
Louisiana SERS	No	Ad hoc only	Benefits exempt
Louisiana TRSL	No	CPI—3% cap	Benefits exempt
Maine SRS	No	CPI—4% cap	Exempt to $6,000
Maryland SRS	Yes	CPI—3% cap	Benefits taxable
Massachusetts SERS	No	CPI—on 1st $12,000—conditional, 3% cap	Benefits exempt
Massachusetts TRS	No	CPI—on 1st $12,000—conditional, 3% cap	Benefits exempt
Michigan SERS	Yes	3% ($300 annual cap)	Benefits exempt
Michigan MERS	Yes	3 plans—depending on employer agreement	Benefits exempt
Michigan PSERS	Yes	3%	Benefits exempt
Minnesota MSRS	Yes	CPI—2.5% cap plus investment surplus	Exempt to $14,500/$18,000
Minnesota PERA	Yes	CPI—2.5% cap plus investment surplus	Exempt to $14,500/$18,000
Minnesota TRA	Yes	CPI—2.5% cap plus investment surplus	Exempt to $14,500/$18,000
Mississippi PERS	Yes	3%	Benefits exempt
Missouri SERS	Yes	80% CPI: 5% cap	Benefits taxable
Missouri LAGERS	Yes	CPI—4% cap	Exempt to $6,000/$12,000
Missouri PSRS	No	CPI—80% of original benefits lifetime cap	Exempt to $6,000/$12,000
Montana PERS	Yes	3%	Benefits taxable
Montana TRS	Yes	1.5%	Exempt to $3,600

TABLE A3 (CONTINUED)

Post-retirement increases and state tax provisions for pension plans

Pension plan	Social Security	Annual post-retirement increases	State taxation of pension plan benefits
Nebraska SERS	Yes	Money purchase	Benefits taxable
Nebraska SPP	Yes	CPI—2.5% cap	Benefits taxable
Nevada PERS	No	2% to 5% (varies) with number of years retired	No income tax law
New Hampshire NHRS	Yes	Ad hoc	Benefits exempt
New Jersey PERS	Yes	60% of CPI	Exempt to $15,000/$20,000
New Jersey TPAF	Yes	60% of CPI	Exempt to $15,000/$20,000
New Mexico PERA	Yes	3%	Exempt to $8,000/$16,000
New Mexico ERA	Yes	50% of CPI—4% cap	Exempt to $8,000/$16,000
New York ERS	Yes	If age 62 + retired 5 yrs.: 50% of CPI, max. 3% on 1st $18,000	Benefits exempt
New York TRS	Yes	If age 62 + retired 5 yrs.: 50% of CPI, max. 3% on 1st $18,000	Benefits exempt
North Carolina TSERS	Yes	Ad hoc	Exempt to $4,000/$8,000
North Carolina LGERS	Yes	Ad hoc	Exempt to $4,000/$8,000
North Dakota PERS	Yes	Ad hoc	Benefits taxable
North Dakota TRF	Yes	Ad hoc	Benefits taxable
Ohio PERS	No	CPI—3% cap	Benefits taxable
Ohio STRS	No	CPI—3% cap	Benefits taxable
Oklahoma PERS	Yes	2.5% to 4.5% depending on service and salary level	Exempt to $7,500
Oklahoma TRS	Yes	Ad hoc	Exempt to $7,500
Oregon PERS	Yes	CPI—2% cap	Benefits taxable
Pennsylvania SERS	Yes	Ad hoc	Benefits exempt
Pennsylvania PSERS	Yes	Ad hoc	Benefits exempt
Rhode Island ERS	Yes	3%	Benefits taxable
South Carolina SCRS	Yes	CPI—4% cap	Exempt to $10,000
South Dakota SRS	Yes	3.1%	No income tax law
Tennessee CRS	Yes	CPI—3% cap	Benefits exempt
Texas ERS	Yes	Ad hoc	No income tax law
Texas TRS	No	Ad hoc	No income tax law
Texas MRS	Yes	Up to 70% of CPI (employer option)	No income tax law
Utah SRS	Yes	CPI—4% cap	Exempt to $7,500/$15,000
Vermont SRS	Yes	50% of CPI—5% cap	Benefits taxable
Vermont TRS	Yes	50% of CPI—5% cap	Benefits taxable
Virginia SRS	Yes	CPI—5% cap	Exempt to $12,000
Washington PERS	Yes	CPI—3% cap	No income tax law
Washington TRS	Yes	CPI—3% cap	No income tax law
West Virginia PERS	Yes	Ad hoc	Exempt to $2,000
West Virginia TRS	Yes	Ad hoc	Exempt to $2,000
Milwaukee City	Yes	2% after 5 yrs. retired	Exempt for some
Milwaukee County	Yes	2%	Exempt for some
Wisconsin WRS	Yes	Investment earnings; reductions possible	Exempt for some
Wyoming WRS	Yes	CPI—3% cap	No income tax law

Notes: Governments use a variety of acronyms to name their plans. Some commonly used acronyms are as follows: PERS, Public Employees Retirement System; SERS, State Employees Retirement System; PERA, Public Employees Retirement Association; SRS, State Retirement System; ERF, Employees Retirement Fund; TRS, Teachers Retirement System; LGERS, Local Government Employees Retirement System; CRS, County Retirement System; and MRS, Municipal Retirement System. CPI means Consumer Price Index.
Source: Wisconsin Legislative Council, 2004 *Comparative Study of Major Public Employee Retirement Systems.*

TABLE A4

Contribution and vesting requirements for pension plans

Pension plan	Social Security	Employee contribution	Employer contribution	Vesting period
Alabama ERS	Yes	5%	5.57%	10 years
Alabama TRS	Yes	5%	7.03%	10 years
Alaska PERS	No	6.75%	6.77%	5 years
Alaska TRS	No	8.65%	12%	8 years
Arizona SRS	Yes	5.70%	5.70%	Immediate
Arkansas PERS	Yes	None	10%	5 years
Arkansas TRS	Yes	None	12%	5 years
California PERS	Yes	None	None	5 years
California TRS	No	6%	8.25%	5 years
Colorado PERA	No	8%	10.15%	5 years
Connecticut SERS	Yes	None	2%	5 years
Connecticut TRS	No	6%	3.01%	10 years
Delaware SEPP	Yes	3% above $6,000	4.20%	5 years
Florida FRS	Yes	None	6.28%	6 years
Georgia ERS	Yes	1.25%	10.41%	10 years
Georgia TRS	Yes	5%	9.24%	10 years
Hawaii ERS	Yes	None	13.95%	10 years
Idaho PERS	Yes	6.23%	10.39%	5 years
Illinois SERS	Yes	4%	10.60%	8 years
Illinois TRS	No	9%	13.44%	5 years
Illinois MRF	Yes	4.50%	7.82%	8 years
Indiana PERF	Yes	3%	5.20%	10 years
Indiana TRF	Yes	3%	17.12%	10 years
Iowa PERS	Yes	3.70%	5.75%	4 years
Kansas PERS	Yes	4%	4.38%	10 years
Kentucky ERS	Yes	5%	5.89%	5 years
Kentucky TRS	No	9.86%	10.37%	5 years
Louisiana SERS	No	7.68%	18.60%	10 years
Louisiana TRSL	No	8%	13.80%	5 years
Maine SRS	No	7.65%	19.32%	5 years
Maryland SRS	Yes	2%	8.06%	5 years
Massachusetts SERS	No	5%–9% + 2% above $30,000	10.40%	10 years
Massachusetts TRS	No	5%–9% + 2% above $30,000	15%	10 years
Michigan SERS	Yes	None	4.30%	10 years
Michigan MERS	Yes	Varies by plan	Varies by plan	6, 8, or 10 years
Michigan PSERS	Yes	0%; 3.9%; or 3%–4.3%	6.90%	10 years
Minnesota MSRS	Yes	4%	4%	3 years
Minnesota PERA	Yes	5.10%	5.53%	3 years
Minnesota TRA	Yes	5%	8.37%	3 years
Mississippi PERS	Yes	7.25%	9.75%	4 years
Missouri SERS	Yes	None	9.35%	5 years
Missouri LAGERS	Yes	0%–4%	Varies by plan	5 years
Missouri PSRS	No	10.50%	10.50%	5 years
Montana PERS	Yes	6.90%	6.90%	5 years
Montana TRS	Yes	7.15%	7.58%	5 years

TABLE A4 (CONTINUED)

Contribution and vesting requirements for pension plans

Pension plan	Social Security	Employee contribution	Employer contribution	Vesting period
Nebraska SERS	Yes	4.3% on 1st $19,954; 4.8% on remainder	156% of EE rate	2 years
Nebraska SPP	Yes	7.25%	101% of EE rate + 0.7%	5 years
Nevada PERS	No	10.50%	10.50%	5 years
New Hampshire NHRS	Yes	5%	5.90%	10 years
New Jersey PERS	Yes	3%	None	10 years
New Jersey TPAF	Yes	5%	None	10 years
New Mexico PERA	Yes	7.42%	16.59%	5 years
New Mexico ERA	Yes	7.60%	8.65%	5 years
New York ERS	Yes	3%	5.90%	5 years
New York TRS	Yes	3%	5.63%	5 years
North Carolina TSERS	Yes	6%	5.82%	5 years
North Carolina LGERS	Yes	6%	4.80%	5 years
North Dakota PERS	Yes	4%	4.12%	3 years
North Dakota TRF	Yes	7.75%	7.75%	3 years
Ohio PERS	No	8.50%	9.30%	5 years
Ohio STRS	No	10%	13%	5 years
Oklahoma PERS	Yes	3% to 3.5%	10%	8 years
Oklahoma TRS	Yes	7%	12%	5 years
Oregon PERS	Yes	6%	10.64%	5 years
Pennsylvania SERS	Yes	6.25%	2.03%	5 years
Pennsylvania PSERS	Yes	7.50%	2.98%	5 years
Rhode Island ERS	Yes	8.75% (9.5% teachers)	11.97%	10 years
South Carolina SCRS	Yes	6%	4.31%	5 years
South Dakota SRS	Yes	6%	6%	3 years
Tennessee CRS	Yes	None	7.30%	5 years
Texas ERS	Yes	6%	6%	5 years
Texas TRS	No	6.40%	6%	5 years
Texas MRS	Yes	3%, 5%, 6%, or 7%	3%–14%	5 years
Utah SRS	Yes	None	13.38%	4 years
Vermont SRS	Yes	3.35%	4.49%	5 years
Vermont TRS	Yes	3.40%	7.79%	5 years
Virginia SRS	Yes	5%	3.77%	5 years
Washington PERS	Yes	1.40%	1.18%	5 years
Washington TRS	Yes	1.39%	1.70%	5 years
West Virginia PERS	Yes	4.50%	10.50%	5 years
West Virginia TRS	Yes	6%	22.25%	5 years
Milwaukee City	Yes	5.50%	0.01%	4 years
Milwaukee County	Yes	None	16.75%	5 years
Wisconsin WRS	Yes	5%	5.80%	Immediate
Wyoming WRS	Yes	5.57%	5.68%	4 years

Notes: Governments use a variety of acronyms to name their plans. Some commonly used acronyms are as follows: PERS, Public Employees Retirement System; SERS, State Employees Retirement System; PERA, Public Employees Retirement Association; SRS, State Retirement System; ERF, Employees Retirement Fund; TRS, Teachers Retirement System; LGERS, Local Government Employees Retirement System; CRS, County Retirement System; and MRS, Municipal Retirement System.

Source: Wisconsin Legislative Council, 2004 *Comparative Study of Major Public Employee Retirement Systems*.

TABLE A5

Share of total assets of pension plans

Pension plan	Report date	U.S. equity	Non-U.S. equity	U.S. bonds	Non-U.S. bonds	Real estate	Private equity	Other	Expected return	Risk
		(percent of total assets)							(percent)	(percent)
Alabama ERS	9/30/2002	32.8	7.5	45.2	0.8	13.7	0.0	0.0	6.64	8.77
Alabama Teachers	9/30/2002	32.8	7.4	49.6	0.6	9.6	0.0	0.0	6.48	8.56
Alaska PERS	6/30/2003	42.3	17.5	29.5	3.7	7.0	0.0	0.0	7.06	11.22
Alaska Teachers	6/30/2003	42.2	16.6	29.7	3.7	7.0	0.9	0.0	7.09	11.22
Arizona SRS	6/30/2003	57.1	16.5	26.4	0.0	0.0	0.0	0.0	7.19	12.99
Arkansas Highway ERS	6/30/2003	50.0	0.0	50.0	0.0	0.0	0.0	0.0	6.41	9.55
Arkansas PERS	6/30/2003	42.7	10.5	39.0	0.0	1.7	6.2	0.0	7.11	11.32
Arkansas Teachers	6/30/2002	39.5	12.7	34.6	0.0	7.0	6.2	0.0	7.29	11.38
California PERS	6/30/2003	40.6	19.1	23.7	3.5	8.0	5.1	0.0	7.50	12.29
California Regents	6/30/2003	58.2	7.6	33.0	0.0	0.0	1.2	0.0	7.02	12.04
California Teachers	6/30/2003	40.9	20.1	29.4	0.0	4.6	5.1	0.0	7.40	12.36
Colorado Fire & Police	12/31/2002	37.4	18.2	32.3	0.0	5.7	6.4	0.0	7.38	11.90
Colorado State & School	12/31/2002	47.8	13.2	12.5	3.0	11.2	11.1	1.2	8.04	13.87
Colorado Municipal Division	12/31/2002	47.8	13.2	12.5	3.0	11.2	11.1	1.2	8.04	13.87
Connecticut PERS	6/30/2003	36.1	11.1	40.4	0.0	2.3	10.1	0.0	7.26	11.37
Connecticut Teachers	6/30/2003	36.1	11.1	40.4	0.0	2.3	10.1	0.0	7.26	11.37
Delaware PERS	6/30/2003	51.6	14.3	24.2	0.6	0.0	9.3	0.0	7.66	13.79
District of Columbia PERS	9/30/2002	38.2	14.9	43.0	0.0	0.0	3.9	0.0	6.89	10.83
District of Columbia Teachers	9/30/2002	38.2	14.9	43.0	0.0	0.0	3.9	0.0	6.89	10.83
Florida RS	6/30/2003	48.0	18.0	21.0	0.0	7.0	5.0	1.0	7.60	13.12
Georgia PERS	6/30/2002	54.0	0.0	46.0	0.0	0.0	0.0	0.0	6.54	10.11
Georgia Teachers	6/30/2003	51.5	0.0	46.2	0.0	2.3	0.0	0.0	6.58	9.89
Hawaii ERS	6/30/2003	44.0	15.0	22.0	8.0	8.0	3.0	0.0	7.31	11.68
Idaho PERS	6/30/2003	43.4	25.8	27.0	1.2	0.5	2.1	0.0	7.27	12.92
Illinois PERS	6/30/2003	49.0	15.0	22.0	0.0	8.0	6.0	0.0	7.66	13.08
Illinois SURS	6/30/2003	40.0	18.0	31.0	0.0	2.0	9.0	0.0	7.51	12.67
Illinois Teachers	6/30/2003	38.6	13.9	33.4	1.3	10.0	2.8	0.0	7.15	10.84
Indiana PERS	6/30/2003	47.0	10.9	39.6	0.0	0.0	0.0	2.5	6.67	10.63
Indiana Police & Fire	6/30/2003	47.0	10.9	39.6	0.0	0.0	0.0	2.5	6.67	10.63
Indiana Teachers	6/30/2003	42.0	14.0	43.0	0.0	0.0	1.0	0.0	6.74	10.65
Iowa Fire & Police	6/30/2003	28.1	25.6	32.6	3.5	9.9	0.2	0.0	7.02	10.73
Iowa PERS	6/30/2003	29.7	15.4	41.8	1.0	6.0	6.1	0.0	7.04	10.36
Kansas PERS	6/30/2003	34.5	18.5	34.7	0.0	7.0	5.3	0.0	7.27	11.36
Kentucky PERS	6/30/2003	39.0	12.0	45.0	0.0	0.0	4.0	0.0	6.82	10.53
Kentucky Counties	6/30/2003	37.0	13.0	46.0	0.0	0.0	4.0	0.0	6.79	10.40
Kentucky Teachers	6/30/2003	53.6	0.0	43.5	0.0	2.9	0.0	0.0	6.89	9.63
Louisiana Municipal Police	6/30/2003	51.5	0.0	47.4	0.0	1.1	0.0	0.0	6.50	9.79
Louisiana PERS	6/30/2003	42.9	14.3	31.5	5.4	0.2	5.7	0.0	7.17	11.73
Louisiana Teachers	6/30/2003	43.1	10.0	20.6	4.0	4.4	18.0	0.0	8.07	14.09
Maine PERS	6/30/2002	47.7	13.6	38.7	0.0	0.0	0.0	0.0	6.82	11.19
Maine Teachers	6/30/2002	47.7	13.6	38.7	0.0	0.0	0.0	0.0	6.82	11.19
Maryland PERS	6/30/2003	47.0	15.0	31.1	0.2	6.4	0.3	0.0	7.11	11.56
Maryland State Police	6/30/2003	47.0	15.0	31.1	0.2	6.4	0.3	0.0	7.11	11.56
Maryland Teachers	6/30/2003	47.0	15.0	31.1	0.2	6.4	0.3	0.0	7.11	11.56

TABLE A5 (CONTINUED)

Share of total assets of pension plans

Pension plan	Report date	U.S. equity	Non-U.S. equity	U.S. bonds	Non-U.S. bonds	Real estate	Private equity	Other	Expected return	Risk
		(percent of total assets)							(percent)	(percent)
Massachusetts PERS	1/1/2003	42.1	20.6	24.5	0.0	7.1	5.7	0.0	7.59	12.84
Massachusetts Teachers	1/1/2003	42.1	20.6	24.5	0.0	7.1	5.7	0.0	7.59	12.84
Michigan Municipal	12/31/2002	43.5	13.0	32.0	0.0	5.0	5.0	1.5	7.23	11.62
Michigan SERS	9/30/2003	44.8	9.7	22.6	0.0	9.6	13.3	0.0	7.96	13.42
Michigan Police	9/30/2003	45.1	9.7	23.0	0.0	9.1	13.1	0.0	7.94	13.39
Michigan Teachers	9/30/2003	46.2	9.4	21.5	0.0	8.7	14.2	0.0	8.02	13.75
Minnesota PERA	6/30/2003	47.7	14.4	24.0	0.0	0.0	13.9	0.0	7.89	14.29
Minnesota Police & Fire	6/30/2003	47.7	14.4	24.0	0.0	0.0	13.9	0.0	7.89	14.29
Minnesota SRS	6/30/2003	47.7	14.4	24.0	0.0	0.0	13.9	0.0	7.89	14.29
Minnesota State Patrol	6/30/2002	46.0	16.0	24.0	0.0	0.0	14.0	0.0	7.90	14.30
Minnesota Teachers	6/30/2003	47.7	14.4	24.0	0.0	0.0	13.9	0.0	7.89	14.29
Mississippi PERS	6/30/2003	45.4	15.0	38.4	0.0	1.2	0.0	0.0	6.85	11.11
Missouri Highway ERS	6/30/2001	64.9	0.0	32.3	0.6	2.2	0.0	0.0	6.95	11.74
Missouri PERS	6/30/2003	32.8	21.6	34.0	0.0	4.0	2.9	4.7	6.95	10.91
Missouri Teachers	6/30/2003	38.0	13.3	43.5	0.0	0.0	0.0	5.2	6.42	9.67
Missouri Non-Teachers School	6/30/2003	38.0	13.3	43.5	0.0	0.0	0.0	5.2	6.42	9.67
Montana PERS	6/30/2003	48.8	8.4	37.0	0.0	0.3	5.6	0.0	7.13	11.72
Montana Teachers	6/30/2003	48.4	8.4	37.3	0.0	0.3	5.6	0.0	7.12	11.67
Nebraska RS	7/1/2003	49.0	14.2	36.8	0.0	0.0	0.0	0.0	6.88	11.47
Nevada PERS	6/30/2003	33.4	10.2	39.0	9.3	7.2	0.9	0.0	6.86	8.65
New Hampshire PERS	6/30/2003	46.6	8.4	22.8	4.6	9.2	8.4	0.0	7.61	12.30
New Hampshire Police	6/30/2003	46.6	8.4	22.8	4.6	9.2	8.4	0.0	7.61	12.30
New Hampshire Teachers	6/30/2003	46.6	8.4	22.8	4.6	9.2	8.4	0.0	7.61	12.30
New Jersey PERS	6/30/2002	45.4	15.6	38.0	1.0	0.0	0.0	0.0	6.82	11.17
New Jersey Police & Fire	6/30/2002	45.4	15.6	38.0	1.0	0.0	0.0	0.0	6.82	11.17
New Jersey State Police	6/30/2002	45.4	15.6	38.0	1.0	0.0	0.0	0.0	6.82	11.17
New Jersey Teachers	6/30/2002	45.4	15.6	38.0	1.0	0.0	0.0	0.0	6.82	11.17
New Mexico PERA	6/30/2003	50.0	13.6	36.2	0.0	0.2	0.0	0.0	6.90	11.52
New Mexico Teachers	6/30/2003	53.8	15.4	30.8	0.0	0.0	0.0	0.0	7.06	12.34
New York PERS	3/31/2003	43.0	10.8	36.2	0.0	3.3	6.7	0.0	7.23	11.57
New York Police & Fire	3/31/2003	43.0	10.8	36.2	0.0	3.3	6.7	0.0	7.23	11.57
New York STRS	6/30/2003	56.5	8.0	27.1	0.0	6.9	1.5	0.0	7.27	12.14
North Carolina PERS	6/30/2002	54.7	0.0	43.4	0.0	1.7	0.2	0.0	6.64	10.29
North Carolina Local	6/30/2002	54.0	0.0	43.9	0.0	1.8	0.2	0.1	6.62	10.20
North Dakota PERS	6/30/2003	40.8	15.6	29.2	4.8	5.1	4.5	0.0	7.24	11.53
North Dakota Teachers	6/30/2003	42.0	25.0	15.0	5.0	9.0	4.0	0.0	7.67	13.23
Ohio PERS	12/31/2002	46.5	20.0	23.1	0.0	9.8	0.5	0.0	7.40	12.46
Ohio Police & Fire	12/31/2002	46.5	17.0	28.7	0.0	6.7	1.1	0.0	7.24	11.96
Ohio SERS	6/30/2003	48.4	17.3	22.7	0.0	9.6	1.3	0.7	7.41	12.43
Ohio STRS	6/30/2003	45.4	21.2	20.3	0.1	10.9	2.1	0.0	7.57	12.83
Oklahoma Firefighters	6/30/2003	47.0	7.7	45.4	0.0	0.0	0.0	0.0	6.59	10.21
Oklahoma PERS	6/30/2003	44.1	13.4	42.5	0.0	0.0	0.0	0.0	6.71	10.66
Oklahoma Police	6/30/2003	40.8	12.4	25.8	5.2	0.0	5.6	10.2	6.86	10.89
Oklahoma Teachers	6/30/2003	45.3	12.8	41.1	0.8	0.0	0.0	0.0	6.72	10.73

TABLE A5 (CONTINUED)

Share of total assets of pension plans

Pension plan	Report date	U.S. equity	Non-U.S. equity	U.S. bonds	Non-U.S. bonds	Real estate	Private equity	Other	Expected return	Risk
		(percent of total assets)							(percent)	(percent)
Oregon PERS	6/30/2003	39.5	18.9	21.3	4.5	4.8	11.1	0.0	7.79	13.27
Pennsylvania ERS	12/31/2002	35.4	19.4	20.5	0.0	11.6	11.7	1.4	7.95	13.17
Pennsylvania Teachers	6/30/2003	36.0	17.2	29.2	3.2	5.9	8.5	0.0	7.48	11.99
Rhode Island ERS	6/30/2002	46.7	22.3	25.3	0.0	0.4	5.3	0.0	7.50	13.47
Rhode Island Municipal	6/30/2002	46.7	22.3	25.3	0.0	0.4	5.3	0.0	7.50	13.47
Rhode Island Teachers	6/30/2002	46.7	22.3	25.3	0.0	0.4	5.3	0.0	7.50	13.47
South Carolina RS	6/30/2003	35.2	0.0	64.8	0.0	0.0	0.0	0.0	5.91	7.61
South Carolina Police	6/30/2003	34.2	0.0	65.8	0.0	0.0	0.0	0.0	5.87	7.50
South Dakota RS	6/30/2003	46.7	16.9	26.1	0.0	6.2	4.1	0.0	7.45	12.56
Tennessee SETHEEPP	6/30/2003	27.0	8.8	59.8	2.8	1.6	0.0	0.0	6.03	7.75
Tennessee PSPP	6/30/2003	27.0	8.8	59.8	2.8	1.6	0.0	0.0	6.03	7.75
Texas CDRS	12/31/2002	27.6	8.4	58.7	0.0	5.3	0.0	0.0	6.18	7.89
Texas ERS	8/31/2003	40.9	17.5	41.7	0.0	0.0	0.0	0.0	6.75	10.84
Texas LECOSRF	8/31/2003	40.9	17.5	41.7	0.0	0.0	0.0	0.0	6.75	10.84
Texas Municipal	12/31/2002	0.0	0.0	100.0	0.0	0.0	0.0	0.0	4.50	5.00
Texas Teachers	8/31/2003	68.8	0.0	28.6	0.0	0.0	2.6	0.0	7.17	12.80
Utah Noncontributory	12/31/2002	37.5	16.9	23.8	5.7	9.6	6.5	0.0	7.50	11.86
Utah Contributory	12/31/2002	37.5	16.9	23.8	5.7	9.6	6.5	0.0	7.50	11.86
Utah Public Safety	12/31/2002	37.5	16.9	23.8	5.7	9.6	6.5	0.0	7.50	11.86
Utah Firefighters	12/31/2002	37.5	16.9	23.8	5.7	9.6	6.5	0.0	7.50	11.86
Vermont SRS	6/30/2003	45.0	18.0	20.0	8.0	8.0	0.0	1.0	7.18	11.68
Vermont Teachers	6/30/2003	45.0	17.0	18.0	11.0	8.0	0.0	1.0	7.15	11.52
Virginia RS	6/30/2003	45.4	15.2	30.2	0.0	3.1	6.1	0.0	7.40	12.43
Washington PERS 1	6/30/2003	33.3	14.4	28.5	0.0	9.4	14.4	0.0	7.87	12.70
Washington PERS 2	6/30/2003	33.3	14.4	28.5	0.0	9.4	14.4	0.0	7.87	12.70
Washington LEOFF 1	6/30/2003	33.3	14.4	28.5	0.0	9.4	14.4	0.0	7.87	12.70
Washington LEOFF 2	6/30/2003	33.3	14.4	28.5	0.0	9.4	14.4	0.0	7.87	12.70
Washington WSPRS	6/30/2003	33.3	14.4	28.5	0.0	9.4	14.4	0.0	7.87	12.70
Washington SERS 2 & 3	6/30/2003	33.3	14.4	28.5	0.0	9.4	14.4	0.0	7.87	12.70
Washington TRS 1	6/30/2003	33.3	14.4	28.5	0.0	9.4	14.4	0.0	7.87	12.70
Washington TRS 2 & 3	6/30/2003	33.3	14.4	28.5	0.0	9.4	14.4	0.0	7.87	12.70
West Virginia PERS	6/30/2002	43.0	18.0	39.0	0.0	0.0	0.0	0.0	6.83	11.21
West Virginia Teachers	6/30/2002	42.0	17.0	41.0	0.0	0.0	0.0	0.0	6.76	10.92
Wisconsin RS	12/31/2002	39.0	18.0	24.0	6.0	4.0	9.0	0.0	7.57	12.56
Wyoming RS	12/31/2002	43.6	12.2	44.2	0.0	0.0	0.0	0.0	6.65	10.41
	Average	42.7	13.3	33.6	1.2	4.2	4.7	0.3	7.17	11.58
	High	68.8	25.8	100.0	11.0	13.7	18.0	10.2	8.07	14.30
	Low	0.0	0.0	12.5	0.0	0.0	0.0	0.0	4.50	5.00
	Median	43.5	14.4	31.1	0.0	3.1	3.9	0.0	7.18	11.62

Notes: Governments use a variety of acronyms to name their plans. Some commonly used acronyms are as follows: PERS, Public Employees Retirement System; SERS, State Employees Retirement System; PERA, Public Employees Retirement Association; SRS, State Retirement System; ERF, Employees Retirement Fund; TRS, Teachers Retirement System; LGERS, Local Government Employees Retirement System; CRS, County Retirement System; and MRS, Municipal Retirement System.
Source: Wilshire Research, 2004 *Wilshire Research Report on State Retirement Systems*.

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