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Cost-Sharing Features of State Defined Benefit Pension Plans

Distributing risk can help preserve plans' fiscal health

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Overview

The challenge of balancing pension costs with the need to recruit and retain a strong workforce has prompted policymakers in many states to take a closer look at how they provide retirement benefits. A number of states with defined benefit (DB), or traditional, pension plans have policies that allow them to retain the core elements of the benefit while sharing the risk of cost increases—as well as potential gains—between employees and employers. These mechanisms for sharing costs can help reduce volatility and investment uncertainty while preserving the ability to pay pension benefits.

Because of differing circumstances and demands, there is no one-size-fits-all approach, but a well-designed DB plan with cost sharing includes several key components:

- A state commitment to fully fund retirement promises.
- Benefit levels and savings rates that help put workers on a path to a secure retirement.
- Professionally managed, low-fee, pooled investments with appropriate asset allocations.
- Retiree access to lifetime income in the form of annuities.

For most public sector DB plans, the cost of providing these benefits fluctuates, depending on investment performance, inflation, salary growth, life spans, and workforce demographics. Cost volatility can strain state or local budgets or lead to underfunded pension plans if policymakers have not provided sufficient contributions. As recently as 2000, many state pension plans were fully funded. By 2014, however, investment losses from the dot-com crash and the Great Recession—combined in many cases with years of contribution shortfalls and unfunded benefit increases—resulted in nearly $1 trillion in pension debt nationwide. Between 2003 and 2013, the cost of making minimum required pension payments, according to government accounting standards, had risen by 80 percent. That meant pension costs had grown as a share of state revenue from 4.4 to 7.9 percent.

In response to the budget strains and funding challenges, some states have looked to alternatives to traditional pensions, including defined contribution, cash balance, and hybrid plans. Still, most state and local governments continue to offer DB plans, though many now use cost-sharing mechanisms to reduce budget uncertainty. Employees continue to receive guaranteed lifetime benefits and in some cases see gains from strong investment returns.

A formal cost-sharing, or risk sharing, policy distributes unexpected cost increases—costs that result from short- or long-term deviations from plan expectations—between employers and employees. In some cases these mechanisms also share cost savings. The process is codified in state statute or policy, is transparent, and is set in motion by either investment returns or plan funding levels.[1]

These mechanisms are distinct from ad hoc or one-time changes that shift risk or costs onto employees by increasing their contributions or reducing post-retirement benefits in response to unpredictable events. Typically, plan members cannot prepare for these shifts because they follow an economic downturn, such as the 2008 recession. For example, between 2010 and 2012 the Alabama Legislature increased current state employee and teacher contributions from 5 percent of salary to 7.5 percent, and a measure approved by lawmakers in Colorado in 2010 reduced cost-of-living adjustments (COLAs) for state employees and retirees.[2]

Although these changes can affect new workers, current workers, and retirees, new workers typically feel the greatest impact because negotiated changes are more likely to affect those who have joined the workforce most recently rather than those with existing protections.

Formal cost-sharing policies provide a longer-term approach and allow plans to make adjustments to the employee contribution rate or post-employment benefits based on the rate of investment return or their funding level. Approaches can include:

- **Splitting some or all of the plan costs between the employer and the employees.** For example, members and participating employers in the Arizona State Retirement System each contribute half of the total annual cost.
- **Adjusting the employee contribution in response to investment returns.** For example, the contribution rate for recently hired employees in Pennsylvania's State Employees' and Public School Employees' retirement systems can be raised or lowered by 0.5 percentage points every three years if investment assumptions are not met.

Alternatively, cost-sharing policies can be used to provide benefit increases after retirement, generally referred to as COLAs or post-retirement benefit increases (PBI). Approaches can include:

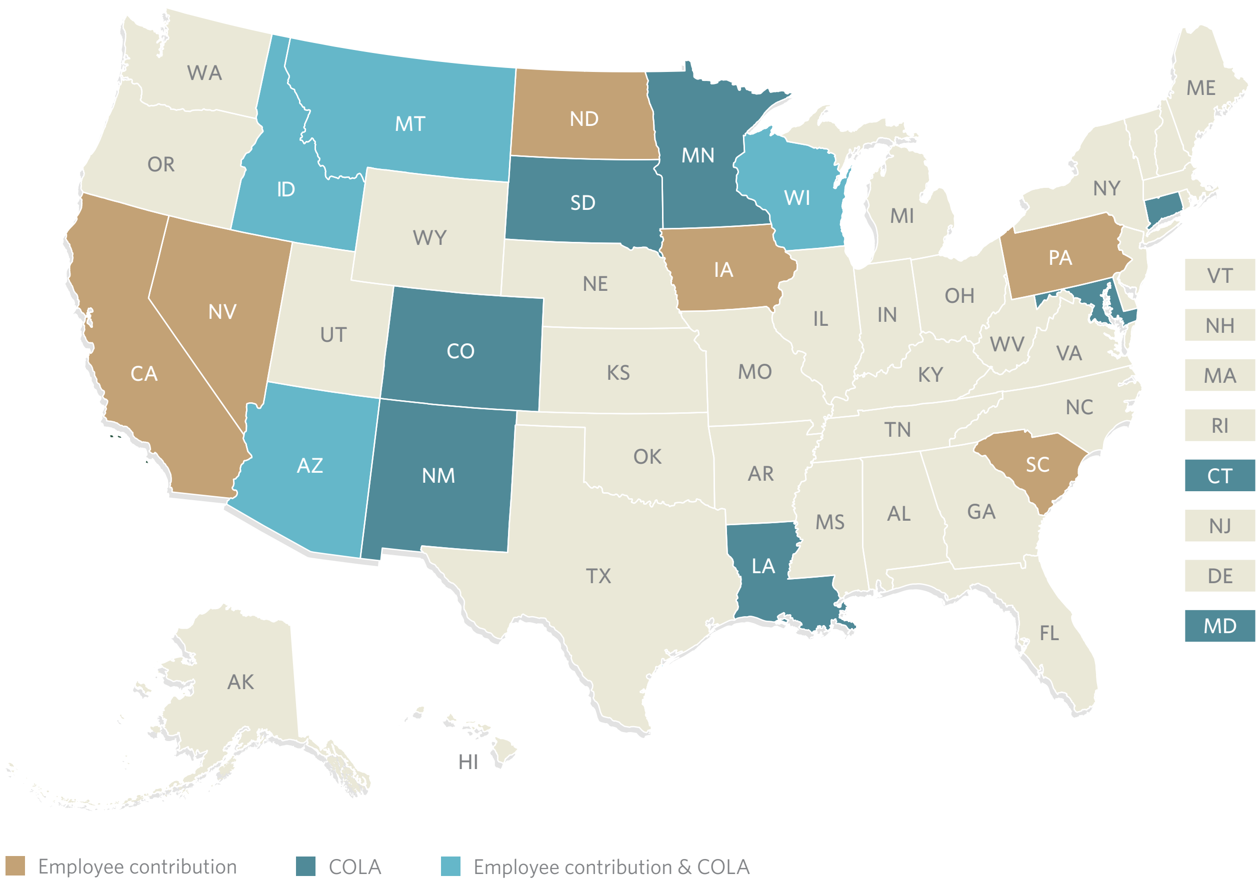
- **Adjusting benefit increases after retirement (COLA or PBI) based on investment returns.** For example, under the Wisconsin Retirement System, retiree annuities are adjusted up or down based on a formula that looks at investment returns and other factors.
- **Adjusting benefit increases after retirement (COLA or PBI) based on plan funding level.** For example, for members of the Minnesota General Employees Retirement Plan, the annual COLA switches from 2.5 to 1 percent and back depending on the plan's funding level.

This analysis examines the most common strategies used by large state DB plans to share cost increases with members.[3] Looking at the benefits offered to new workers in 102 primary state retirement plans (see Appendix A), The Pew Charitable Trusts identified 29 DB plans in 17 states that use formal cost-sharing mechanisms to manage risk. (See Figure 1.) These mechanisms adjust employee contributions or post-retirement benefits in an effort to put the plans in a stronger position to navigate economic cycles. Another 13 states use alternative plan designs, such as hybrid, defined contribution, or cash balance plans, to distribute unexpected costs between states and their employees.[4]

Figure 1

About a Third of States Have Retirement Plans That Share Unexpected Costs With New Employees

COLA cost sharing is most common



Notes: For this analysis, we included the largest plans in each state in order to cover 90 percent of state liabilities, based on 2013 figures, for up to four plans. These criteria resulted in a 102-plan list. Plans with alternative designs (such as cash balance, hybrid, or defined contribution) were not included in the analysis.

Sources: State retirement system documents, including member handbooks, plan comprehensive annual financial reports, and retirement system websites

How Defined Benefit Plans Work

Under a defined benefit (DB) plan, the employer promises a specific amount of monthly retirement income for the member's lifetime (and possibly longer, for a spouse or dependent). In the public sector, DB plans are typically "final average salary" plans. Benefits are based on a formula that factors in years of service, age, average annual salary over a set number of years at the end of an employee's career, and a benefit multiplier.

For example, if the plan has a 2 percent multiplier, an individual who worked for 30 years with a final average salary of $50,000 would have an annual annuity equal to $30,000, or 2 percent x 30 years x $50,000. If the multiplier is 1 percent, the annual benefit would be $15,000.

How state plans share costs

Overall, 29 retirement plans in 17 states deploy mechanisms to formally share unexpected losses and, in some cases, gains. Ten plans share costs using the employee contribution policy, 14 have a mechanism that operates through COLAs or other types of post-retirement benefit changes, and five use both approaches to distribute costs. Below are examples that illustrate the variety of design options that plans can employ to distribute costs.

The form of cost-sharing mechanism can affect plan members' compensation. Policies that change the employee contribution rate could have an impact on take-home pay during working years, while policies that adjust COLAs or PBIs affect income levels after retirement.

Employee contributions

Mechanisms for sharing cost increases through required employee and employer contributions vary. In some cases, the employer and employee each contribute a set percentage of the total cost. In others, the employee contribution can increase or decrease in response to investment returns or the plan's funding level, typically within a limited range.

Retirement systems in Arizona, Iowa, California, and Pennsylvania provide clear examples of how state plans use cost-sharing arrangements as part of their employee contribution policies.

Arizona State Retirement System

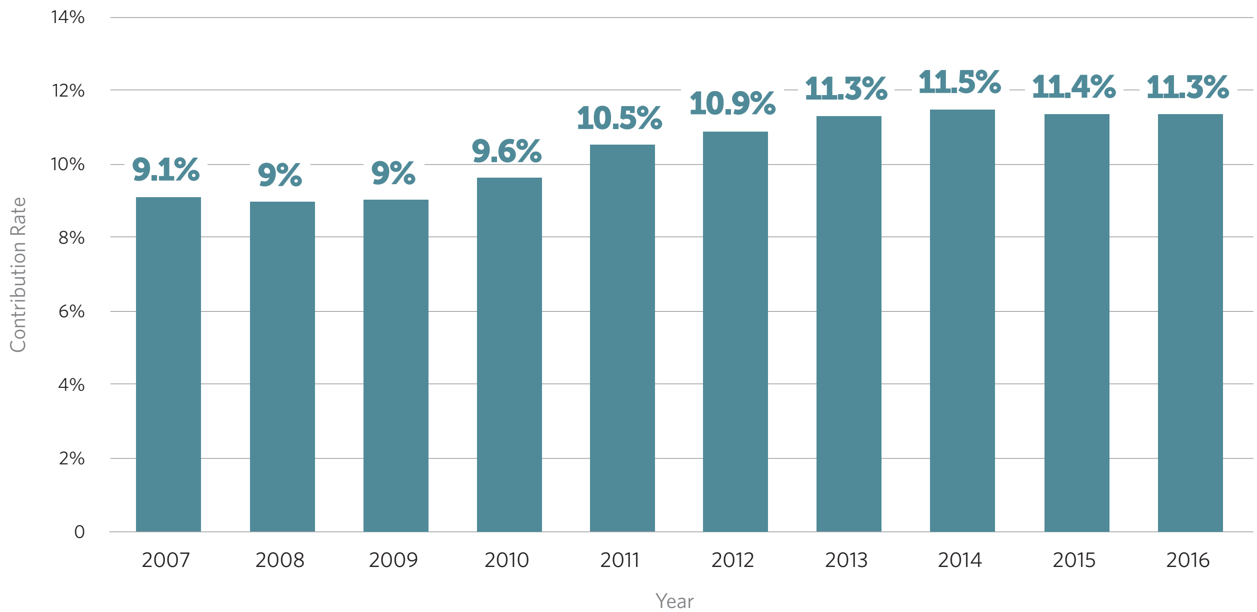
Arizona State Retirement System plan members and employers both contribute half of the total cost. The total contribution rate is calculated by the system's actuaries each year after adding together the cost of new benefits earned by plan members during the year and the cost of amortizing any existing unfunded liability.[5] As a result, the employer and employee contribution rates change annually depending on investment performance and other assumptions that go into calculating pension costs. The employer rate—and the matching employee rate—grew from 9.1 percent of salary in fiscal year 2007 to 11.34 percent in fiscal 2016.[6] (See Figure 2.)

Employees who started before Sept. 13, 2013, are also covered by a cost-sharing PBI policy, though new members are not eligible to receive a PBI.[7]

Figure 2

Employee Contribution Rates Vary in the Arizona System

Rates increased, 2007-16



Notes: Rate was effective on July 1 of each year. Contribution rates apply to both the pension and health benefit supplement.

Sources: 2007-15 Arizona State Retirement System comprehensive annual financial reports

The Iowa Public Employees' Retirement System has a similar policy. Employees contribute 40 percent of the total contribution rate, though the rate cannot vary by more than 1 percentage point annually.[8]

California State Teachers' and Public Employees retirement systems

The California State Teachers' Retirement System and the California Public Employees' Retirement System each split some of the cost between the employer and the employee. Members of both systems hired after the start of 2013 must contribute at least 50 percent of the total normal cost of their benefit.[9] Because that cost does not include paying down unfunded liabilities, the system's employees will bear less of the total costs than those in Arizona or Iowa. Still, though member contributions will not be affected by investment returns, the contribution level could be affected by changes in plan assumptions, such as updated mortality tables or the adoption of a new assumed rate of return.[10]

When the total cost—including the cost of amortization payments for pension debt—is split between employer and worker, the increases in the employee contribution rate can be substantial, particularly for plans with low funded ratios. In South Carolina, where the state plans are 53 percent funded, workers share additional cost increases with employers at an equal rate. Policymakers are considering how to raise state contributions while taking into account the possible effects on current employee contribution rates. Among ways to reduce the impact of cost-sharing provisions on current workers are capping employee contribution rates and basing any changes only on realized investment returns. (See Appendix B.)

Pennsylvania State and Public School employee retirement systems

Pennsylvania's policy, enacted in 2010 as part of legislation known as Act 120, increases or decreases the required employee contribution based on plan investment returns. The policy affects members of the State Employees' Retirement System (SERS) and the Public School Employees' Retirement System (PSERS) hired on or after July 1, 2011.

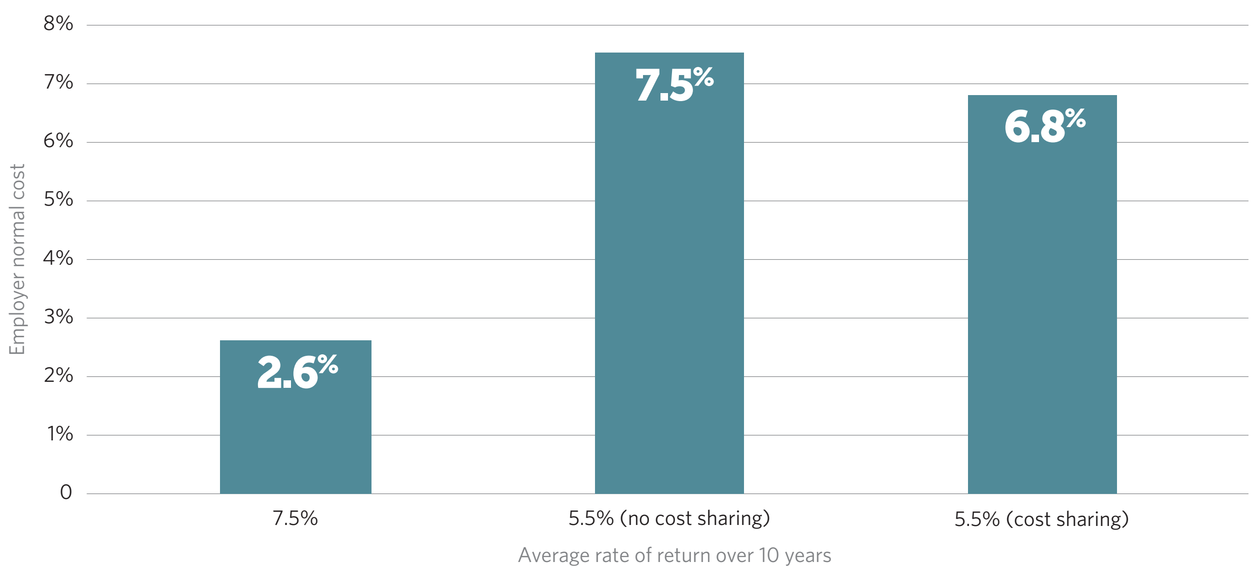
The potential adjustment is limited to 2 percent of annual salary in total. The PSERS employee contribution rate cannot fall below its base rate of 7.5 percent of pay and can rise to 9.5 percent, while the SERS contribution rate ranges from a base of 6.25 percent of pay to 8.25 percent.[11]

Every three years, the plans' actual investment returns are compared with the assumed rate of return.[12] If the investment returns are less than the assumed rate by more than 1 percentage point, the employee contribution increases by 0.5 percentage point if not already at the top of the range. If the investment returns are equal to or more than the assumed rate, the employee contribution rate decreases by 0.5 percentage point if not already at the bottom of the range. However, if the plan is fully funded, the employee contribution rate reverts to the base rate.[13]

Figure 3

In Pennsylvania, Public School Employees' Retirement System Policies Reduce Expected Employer Cost When Returns Fall Short of Expectations

State employers can see significant annual savings



Sources: Analysis by the Terry Group and Pew using the Synopsis of Pension Reform Legislation Act 120 of 2010 and the Public School Employees' Retirement System of Pennsylvania actuarial valuations

At the end of 2013, the plan actuary reviewed SERS investment returns over the past three calendar years. Because the actual return of 9.3 percent between 2011 and 2013 was greater than the expected return of 7.7 percent and the employee contribution rate was already at the bottom of the range, the employee contribution rate did not change. The investment returns will be reviewed again in December 2016.[14]

If future investment returns fell below the assumed rate, the policy would result in employees sharing about 15 percent of the cost. Long-run projections for PSERS suggest that if investment return assumptions are met, the plan needs about 2.6 percent of payroll to pay the normal employer cost or the employer share of the cost of new benefits earned in the previous year. Without the cost--sharing policies, a long-term return 2 percentage points below the plan's assumptions could nearly triple those costs to 7.5 percent of payroll over the long run. But with the employee cost-sharing policies in place, the cost increase drops to 6.8 percent of payroll, a reduction of 0.7 percentage point. If investment returns exceeded expectations, the employee contribution would not fall below the 7.5 or 6.25 percent floors, but the employer cost would decrease. (See Figure 3.)

Detroit's Restructured Retirement Benefits Include Cost-Sharing Mechanisms

To help Detroit exit bankruptcy in 2014, U.S. Bankruptcy Judge Steven Rhodes approved a negotiated agreement that included substantial revisions to the city's two pension systems: the General Retirement System (GRS) and the Police and Fire Retirement System (PFRS).

The settlement froze the city's plans as of July 1, 2014, and created new plans for service earned after that date. In addition to increasing the retirement age, requiring employee contributions, and reducing the benefit multiplier, the new plans include several mechanisms to share costs with employees. Under the new system, low pension funding levels trigger a number of changes to help absorb costs.

In the GRS, certain steps to reduce costs can be taken if the funded ratio falls below 100 percent and additional measures if the ratio falls below 80 percent. Similarly, cost-reduction measures are triggered for the police and fire system if the funding level falls below 90 percent. These measures include suspending COLAs, removing prior COLAs, increasing employee contributions, using a reduced multiplier on future service, transferring funds from a reserve account, and, for PFRS, increasing employer contributions. The cost-sharing processes apply only to new benefit accruals, which means the bulk of Detroit's pension liabilities are excluded.*

* Retirement System City of Detroit, *Combined Plan for the General Retirement System of the City of Detroit, Michigan, Amended and Restatement Effective July 1, 2014*, http://www.rscd.org/Portals/0/Documents/COMBINED%20PLAN%20_%20General%20Retirement%20Systems.pdf; Police & Fire Retirement System City of Detroit, *Combined Plan for the Police and Fire Retirement System of the City of Detroit, Michigan, Amended and Restatement Effective July 1, 2014*, http://www.pfrsdetroit.org/Portals/PFRS2/Documents/EM_Order_PFRS_Combined_Plan.pdf; and U.S. Bankruptcy Court Eastern District of Michigan, *Eighth Amended Plan for the Adjustment of Debts to the City of Detroit* (Oct. 22, 2014), Exhibits II.B.3.q.ii.A and II.B.3.r.ii.A, https://www.michigan.gov/documents/treasury/Detroit_-_Eighth_Amended_Plan_of_Adjustment_476086_7.pdf.

Post-retirement benefit increases

Many public sector pension plans provide benefit increases after retirement, often called COLAs or PBIs, to help maintain the purchasing power of pension income. These adjustments are often set as a fixed annual increase or based on the consumer price index (CPI) or another measure of inflation.[15] In plans with a cost-sharing mechanism that might affect post-retirement benefits, the size and availability of benefit increases may be determined by the investment returns, plan funded levels, or both.

Among the plans that use this method, Wisconsin, Maryland, Minnesota, Connecticut, and Idaho illustrate ways to structure post-retirement benefit policies to share cost increases or gains when they occur.

Wisconsin Retirement System

The Wisconsin Retirement System incorporates two mechanisms for sharing costs: the contribution policy, in which employees are responsible for half of the actuarially required contribution; and the system's policy on post-retirement benefit increases.[16] The contribution policy distributes about 50 percent of the risk. Including the retirement benefit policy, more than half of the cost uncertainty is shared with plan members.

The plan also includes a feature to help put shorter-term workers on a path to a secure retirement. The plan calculates the retirement annuity using two methods: the formula method, which factors in years of service, age, salary, and a benefit multiplier; and a separate money purchase method, which multiplies members' total contributions by actuarial factors based on age. Retirees receive whichever produces the higher amount.

The Wisconsin post-retirement benefit policy manages risk differently from other state plans that adjust COLA benefits. While many plans base COLAs, at least partially, on the CPI, Wisconsin bases its post-retirement annuity benefit increases or decreases on the plan's investment performance. At retirement, funds from a participant's account and the employer reserve account that are sufficient to pay an annuity for the retiree's projected lifetime are transferred to the annuity reserve account. Annual interest is credited to this account; when the funds in the annuity reserve exceed the amount needed to pay for the existing benefit, an annuity increase is granted automatically. When funds are insufficient, the annuity payment is decreased to make up for the shortfall.[17]

In addition, how members distribute their contributions between two funds—the Core and Variable funds—affects their post-retirement benefits. (See Table 1.) To earn stable returns based on a fully diversified, balanced portfolio, the Core Fund takes on less risk. Returns are smoothed over five years to calculate post-retirement benefit increases or decreases.[18] In contrast, the Variable Fund, intended to achieve returns equal to or above that of similar stock portfolios, exposes workers to greater risk in exchange for the possibility of greater returns.[19] Members bear 75 percent of the risk associated with the Core Fund and 100 percent of the risk associated with the Variable Fund.[20]

When new members join the plan, they start in the Core Fund by default but can move half of their contributions into the Variable Fund, either immediately or later in their tenure. After retirement, member benefits are adjusted up or down annually, depending on the two funds' performance.[21] Annuity adjustments are determined separately for each fund and applied to member annuities based on the percentage of their account in each fund. The Core Fund annuity offers smaller potential benefit increases but cannot be reduced below the initial amount, while the Variable Fund annuity can decrease below the base amount received at retirement.[22] About 20 percent of plan members participate in the Variable Fund.[23]

Table 1

Wisconsin Retirement System Manages Retirement Assets in 2 Separate Funds

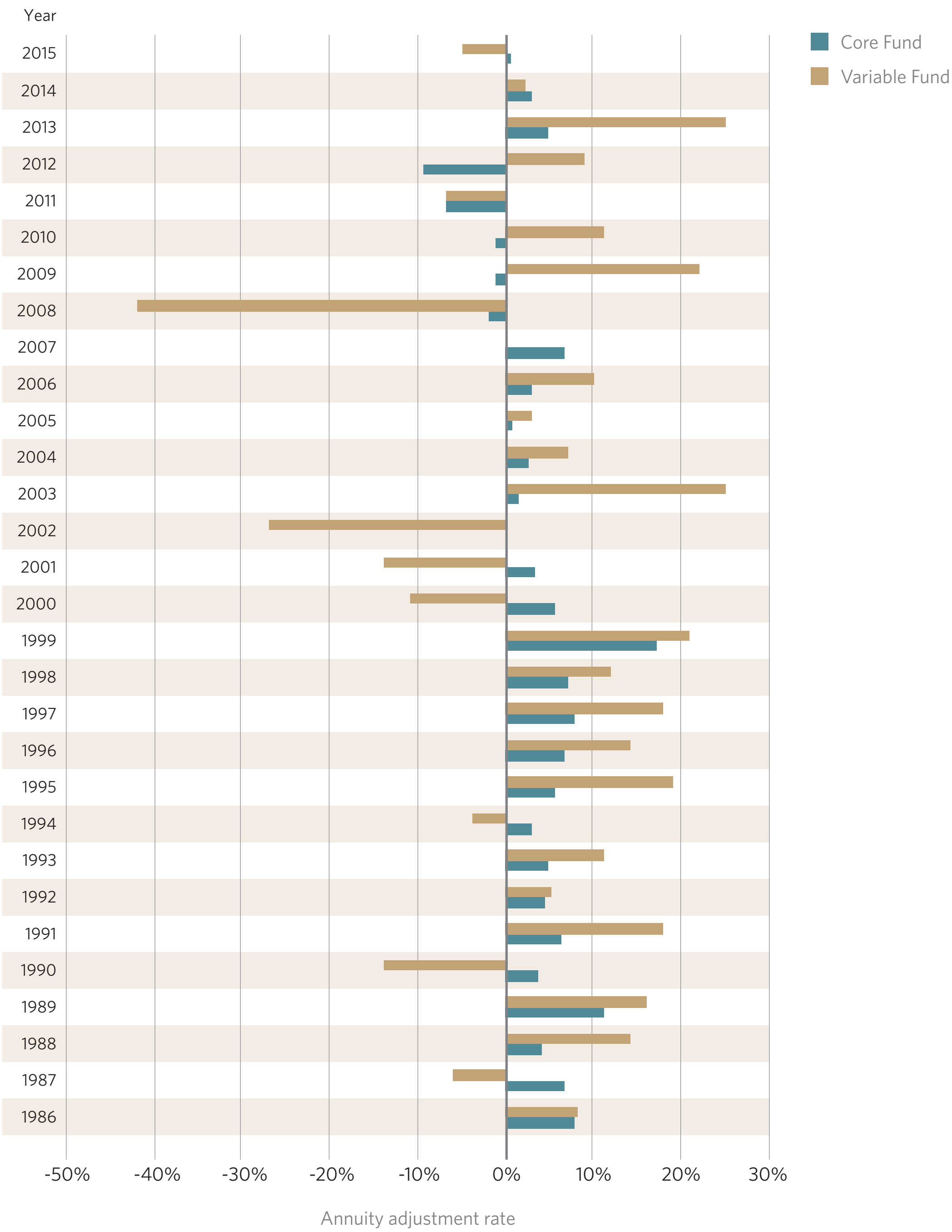
All participants must contribute at least half to Core Fund

Fund	Description
Core Fund	This fund's objective is to "earn an optimum, long-term return while taking acceptable risk." The fund is invested in stocks as well as other assets such as bonds, real estate, and private equity. Returns are smoothed over five-year increments.
Variable Fund	This fund's objective is to "achieve returns equal to or above that of similar stock portfolios over a market cycle." It exposes members to higher risk than the Core Fund. Returns are not smoothed and are applied annually.

Source: Wisconsin Investment Board, http://www.swib.state.wi.us

In 2015, the Core Fund provided an annuity adjustment of 0.5 percent, and the Variable Fund's was negative 5 percent. Over the past three decades, the Variable Fund adjustment rate has varied significantly from an increase of 25 percent in 2003 to a decrease of 42 percent in 2008.[24] Between 1986 and 2015, the average annual adjustment for the Variable and Core funds has been 4.7 and 3.5 percent, respectively. Cost sharing in Wisconsin, unlike in other states, can result in a retiree getting a smaller check one year than the year before. In fact, retiree benefits took a hit in the aftermath of the Great Recession. A study released in 2012 found that Wisconsin retirees saw their pensions reduced by a total of more than $3 billion in the preceding few years. Still, in better times, these retirees receive larger post-retirement increases than typically provided by other state plans.[25] (See Figure 4.)

Figure 4
Annuity Adjustments for Wisconsin Retirement System
Variable Fund adjustments change more than Core Fund's do, 1986-2015



Source: Wisconsin Department of Employee Trust Funds, "Core Fund and Variable Fund: Returns, Rates, and Adjustments," http://etf.wi.gov/retirees/dividends.htm

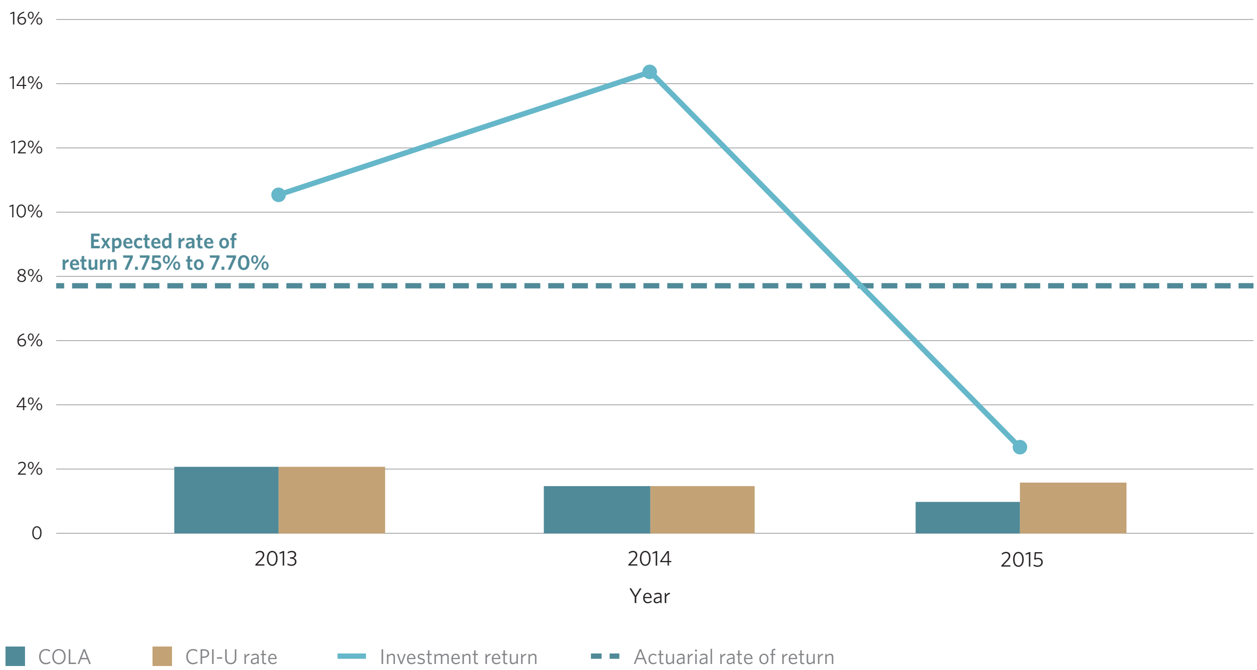
Maryland Employees' and Teachers' retirement and pension systems

In 2011, Maryland instituted a cost-sharing COLA policy along with a larger package of pension reforms for the state employee and teacher retirement systems.[26] The COLA is based on the CPI with limitations linked to investment returns. When the system's market value rate of return earns or exceeds its assumed actuarial rate of return, the COLA is tied to the CPI with a cap of a 2.5 percent increase. When the system falls short of the assumed actuarial rate, as it did in 2015, the COLA is capped at 1 percent.[27] Figure 5 illustrates how lower than expected returns in 2015 resulted in a 1 percent cap on the COLA.

Figure 5

Maryland Limits COLAs Based on Returns and CPI

In 2015, retiree increases capped at 1% while CPI was 1.6%



Notes: The CPI for all urban consumers (CPI-U) is calculated based on the CPI of the preceding calendar year. The cost-sharing COLA provision applies only to service earned after 2011. Members are not eligible for a COLA until one year after retirement, so the earliest that the new policy could apply was 2013. The expected rate of return used to determine the COLA was 7.75% in 2013 and 7.7% in 2014 and 2015.

Sources: Maryland State Retirement and Pension System website, Maryland State Retirement and Pension System comprehensive annual financial reports, U.S. Bureau of Labor Statistics

Minnesota state and general employee, police and fire, and teacher retirement funds

Minnesota offers ranges for COLAs that are similar to Maryland's, but the adjustments are based on different calculations. Maryland calculates COLAs based on investment returns, while Minnesota uses funding level. Comparing the resulting benefit increases under the two policies shows that tying the COLA to investment returns has a more immediate impact, while tying it to funding levels is likely to lead to more significant employer savings over time.

Maryland's cost-sharing mechanism is triggered by short-term investment performance, while retirement plan funding is based on investment performance and the realized cost of the plan over decades. The Minnesota policies do a better job of accounting for overall plan health, but can cause workers to be harmed by policy decisions that have nothing to do with the risk of plan assumptions not being met—such as shortfalls in making annual contributions.

Minnesota implemented the cost-sharing mechanism policy in 2010 as part of a set of pension reforms.[28]

Under the Minnesota General Employees Retirement Fund and Public Employees Police and Fire Retirement Fund, retirees receive a 1 percent COLA annually.[29] If the plan's funding level exceeds 90 percent for two consecutive years, the COLA automatically rises to 2.5 percent and remains there until the funded ratio either falls to 85 percent for two consecutive years or falls to 80 percent in a single year.[30]

The General Employees funded ratio has not reached 90 percent in recent years. And projections indicate the fund is unlikely to meet the requirement for a higher COLA anytime soon. The plan's actuarial valuation projects that, given current contribution levels, the funded ratio will not meet the 90 percent threshold for two consecutive years until 2034.[31] As a result, the COLA will remain at 1 percent for the near future.

The Minnesota State Employees Retirement Fund and the Teachers Retirement Fund follow a similar policy with a more limited range of 2 to 2.5 percent.[32]

Connecticut Teachers' Retirement System

The COLA policy for the Connecticut Teachers' Retirement System (TRS) takes into account plan investment returns as well as Social Security's cost-of-living adjustments. The policy applies to members who retire on or after Sept. 1, 1992, and has been modified slightly for members who joined the system on or after July 1, 2007.

For those who joined before July 1, 2007, the annual COLA is based on the Social Security cost-of-living adjustment to a maximum of 6 percent. However, when investment returns are less than 8.5 percent, the COLA is capped at 1.5 percent.[33]

Figure 6 illustrates COLA payments under this policy between 2002 and 2015. Most years the COLA adjustment tracks the Social Security cost-of-living adjustment, but when the rate of return falls below 8.5 percent, such as in 2004 and 2009, the plan's COLA is limited by the 1.5 percent cap.

For those who joined the system on or after July 1, 2007, COLAs are based on Social Security's cost-of-living adjustment but with a new set of caps. If investment returns are lower than 8.5 percent, the COLA is capped at 1 percent. If investment returns are between 8.5 and 11.5 percent, the COLA is limited to 3 percent. For returns over 11.5 percent, the COLA is capped at 5 percent.[34]

Public Employee Retirement System of Idaho

The Public Employee Retirement System of Idaho (PERSI) Base Plan includes several elements that allow for risk management, including a mechanism to share unexpected gains with employees.

When the plan is less than 100 percent funded, COLAs are tied to changes in the CPI but are limited to 1 percent.[35] If the plan is 100 percent funded, an additional increase of up to 5 percent, also tied to CPI, can be provided. If the CPI is negative, the benefit can be decreased. However, a retiree account cannot be reduced more than 6 percent or below its initial amount.[36]

In 2014, a COLA of 1 percent was granted.[37]

PERSI also has a gain sharing provision. Established in 2000 in response to a very high funding level, the gain sharing program allows the board to allocate assets in excess of a 113 percent funding ratio. The program has been implemented only once, in January 2001, when $155 million of excess earnings was distributed to retirees, active employees, and state and local employers. Retirees received their portion as a "13th check," or extra monthly payment, while current member distributions were deposited in new 401(k) accounts.[38]

Figure 6

Pension COLAs for Retired Connecticut Teachers Vary

Range is from less than 2% to more than 4%, 2002-15

Notes: COLAs for employees who retired on or after September 1992 and started before July 2007. The investment return is the total annual return earned on the market value of the pension assets from the preceding year. The Social Security cost-of-living adjustment is provided by Social Security and is based on the CPI for urban wage earners and clerical workers (CPI-W).

Sources: Connecticut Teachers' Retirement Board, "Cost of Living Adjustments Granted From 1978," [Accessed April 5, 2016], http://www.ct.gov/trb/lib/trb/formsandpubs/colahistory.pdf; Social Security Cost-of-Living Adjustment, [Accessed April 5, 2016], https://www.ssa.gov/news/cola; 2006-14 Connecticut treasury reports; Center for Retirement Research at Boston College, Center for State and Local Government Excellence, and National Association of State Retirement Administrators, Public Plans Data, [Accessed May 16, 2016], http://publicplansdata.org

Conclusion

Managing risk and cost uncertainty is essential for policymakers working to ensure that public sector pensions will be affordable and sustainable. Failing to address the drop in funding caused by investment losses from the dot-com crash and Great Recession led to pension funding crises in states such as New Jersey, South Carolina, and Colorado.

Fiscally responsible contribution policies are a necessity for sustainable pensions, and smart plan design can help employers manage risk and cost. This includes adding cost-sharing provisions as described in this report as well as alternative plan designs, such as hybrid or cash balance plans. For policymakers looking to mitigate the burden of unexpected cost increases on states and employers—while preserving traditional pensions for members—incorporating cost-sharing elements in a DB plan may be an option to consider.

Methodology

This analysis looked at the largest plans from each state, selected in order to cover 90 percent of state liabilities, based on 2013 figures, for up to four plans per state. These criteria result in a 102 plan list. Alternative design plans, such as cash balance or hybrid plans, were excluded from the analysis, narrowing the list to 83 plans. For each, Pew reviewed plan documents, including comprehensive annual financial reports, member handbooks, and plan websites; and state statutes to identify instances of formal cost sharing in the employee contribution and post-retirement benefit increase policies. Pew reached out to officials with each plan to verify these findings.

Appendix A: Cost Sharing in State Retirement Systems

State	Plan name	Does plan have employee contribution cost sharing?	Does plan have post-retirement benefit cost sharing?
Alabama	Employees' Retirement System	No	No
Alabama	Teachers' Retirement System	No	No
Alaska	Public Employees' Retirement System	N/A	N/A
Alaska	Teachers' Retirement and Pension System	N/A	N/A
Arizona	Arizona State Retirement System	Yes	No
Arizona	Public Safety Personnel Retirement System	Yes	Yes
Arkansas	Public Employees Retirement System	No	No
Arkansas	Teachers Retirement System	No	No

Continued on next page

State	Plan name	Does plan have employee contribution cost sharing?	Does plan have post-retirement benefit cost sharing?
California	Public Employees' Retirement System	Yes	No
California	State Teachers' Retirement Fund	Yes	No
Colorado	Local Government Division Trust Fund	No	Yes
Colorado	School Division Trust Fund	No	Yes
Colorado	State Division Trust Fund	No	Yes
Connecticut	State Employees' Retirement System	No	No
Connecticut	Teachers' Retirement System	No	Yes
Delaware	New State Police Pension Plan	No	No
Delaware	State Employees' Pension Plan	No	No
Florida	Florida Retirement System	No	No
Georgia	Employees' Retirement System	N/A	N/A
Georgia	Teachers Retirement System	No	No
Hawaii	Employees' Retirement System	No	No
Idaho	Public Employee Retirement System of Idaho Base Plan	Yes	Yes
Illinois	State Employee Retirement System	No	No
Illinois	State Universities Retirement System	No	No
Illinois	Teachers' Retirement System	No	No
Indiana	1977 Police Officers' and Firefighters' Pension and Disability Fund	No	No
Indiana	Public Employees' Retirement Fund	N/A	N/A
Indiana	State Teachers' Retirement Fund—1996 Account	N/A	N/A

Continued on next page

State	Plan name	Does plan have employee contribution cost sharing?	Does plan have post-retirement benefit cost sharing?
Indiana	State Teachers' Retirement Fund - Pre 1996	N/A	N/A
Iowa	Public Employees' Retirement System	Yes	No
Kansas	Public Employees Retirement System	N/A	N/A
Kentucky	Teachers' Retirement System	No	No
Kentucky	Employees Retirement System - Nonhazardous	N/A	N/A
Louisiana	State Employees' Retirement System	No	Yes
Louisiana	Teachers' Retirement System of Louisiana	No	Yes
Maine	State Employee and Teacher Program	No	No
Maine	Participating Local Districts Program	No	No
Maryland	Employees' Retirement and Pension System	No	Yes
Maryland	Teachers' Retirement and Pension System	No	Yes
Massachusetts	State Employees' Retirement System	No	No
Massachusetts	Teachers' Retirement System	No	No
Michigan	Public School Employees' Retirement System	N/A	N/A
Michigan	State Employees' Retirement System	N/A	N/A
Minnesota	General Employees Retirement Fund	No	Yes
Minnesota	Public Employees Police and Fire Fund	No	Yes
Minnesota	State Employees Retirement Fund	No	Yes
Minnesota	Teachers Retirement Fund	No	Yes
Mississippi	Public Employees' Retirement System	No	No

Continued on next page

State	Plan name	Does plan have employee contribution cost sharing?	Does plan have post-retirement benefit cost sharing?
Missouri	State Employees Plan	No	No
Missouri	Department of Transportation and Highway Patrol Employees' Retirement System	No	No
Missouri	Public Education Employees Retirement System	No	No
Missouri	Public School Retirement System	No	No
Montana	Municipal Police Officers' Retirement System	No	No
Montana	Public Employees' Retirement System—Defined Benefit Retirement Plan	Yes	Yes
Montana	Teachers' Retirement System	Yes	Yes
Nebraska	School Retirement System	No	No
Nebraska	State Employees' Retirement System	N/A	N/A
Nevada	Public Employees' Retirement System	Yes	No
New Hampshire	New Hampshire Retirement System (Employees Group, Teachers Group, Police Officers Group, and Firefighters Group)	No	No
New Jersey	Police and Firemen's Retirement System	No	No
New Jersey	Public Employees' Retirement System	No	No
New Jersey	Teachers' Pension and Annuity Fund	No	No
New Mexico	Education Employees' Retirement System	No	Yes
New Mexico	Public Employees Retirement System	No	No
New York	Employees' Retirement System	No	No
New York	Police and Fire Retirement System	No	No
North Carolina	Local Governmental Employees' Retirement System	No	No
North Carolina	Teachers' and State Employees' Retirement System	No	No

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State	Plan name	Does plan have employee contribution cost sharing?	Does plan have post-retirement benefit cost sharing?
North Dakota	Public Employees' Retirement System	No	No
North Dakota	Teachers' Fund for Retirement	Yes	No
Ohio	Public Employees Retirement System	No	No
Ohio	State Teacher Retirement System	No	No
Oklahoma	Firefighters Pension Retirement System	No	No
Oklahoma	Public Employees Retirement System	No	No
Oklahoma	Teachers' Retirement System	No	No
Oregon	Public Employees Retirement System	N/A	N/A
Pennsylvania	Public School Employees' Retirement System	Yes	No
Pennsylvania	State Employees' Retirement System	Yes	No
Rhode Island	Employees' Retirement System—State Employees	N/A	N/A
Rhode Island	Employees' Retirement System—Teachers	N/A	N/A
South Carolina	Police Officers Retirement System	Yes	No
South Carolina	South Carolina Retirement System	Yes	No
South Dakota	South Dakota Retirement System	No*	Yes
Tennessee	Teacher Legacy Plan	N/A	N/A
Tennessee	Public Employees Retirement Plan (State and Higher Ed Legacy and Local Government Legacy)	N/A	N/A
Texas	Employees Retirement System	No	No
Texas	Teacher Retirement System	No	No
Utah	Public Employees Noncontributory Retirement System (Noncontributory System)	N/A	N/A

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State	Plan name	Does plan have employee contribution cost sharing?	Does plan have post-retirement benefit cost sharing?
Utah	Public Safety Retirement System	N/A	N/A
Vermont	State Teachers' Retirement System	No	No
Vermont	Municipal Employees' Retirement System	No	No
Vermont	State Retirement System	No	No
Virginia	Virginia Retirement Systems	N/A	N/A
Washington	Public Employees' Retirement System - Plans 2 & 3	No	No
Washington	Public Employees' Retirement System - Plan 1	No	No
Washington	Teachers' Retirement System - Plans 2 & 3	No	No
Washington	Teachers' Retirement System - Plan 1	No	No
West Virginia	Teachers' Retirement System	No	No
West Virginia	Public Employees' Retirement System	No	No
Wisconsin	Wisconsin Retirement System	Yes	Yes
Wyoming	Public Employees Pension Plan	No	No
Wyoming	Wyoming Law Enforcement Retirement Plan	No	No

* While the employer and employee contributions for the South Dakota Retirement System are fixed, the plan shares costs through other mechanisms, including a cost-of-living adjustment. In addition, the plan has the option to recommend additional benefit reductions if COLA changes are not sufficient to maintain full funding.

Notes: This list of 102 plans includes the largest plans in each state in order to cover 90 percent of state liabilities, based on 2013 figures, for up to four plans per state. N/A indicates plans that have an alternative plan design, such as cash balance, hybrid, or defined contribution.

Sources: State retirement system documents, including member handbooks, plan comprehensive annual financial reports, and retirement system websites

Appendix B: DB Plans With Formal Mechanisms for Sharing Cost Increases

State	Plan	Employee contribution description	COLA or PBI description
Arizona	Arizona State Retirement System	Employees and employers evenly split the total contribution rate, with each contributing half of the total annual cost.	
Arizona	Public Safety Personnel Retirement System	For new members starting on or after July 1, 2017, employees and employers evenly split the total contribution rate, with each contributing half of the total annual cost.	For employees starting on or after July 1, 2017, employees are provided a COLA between 1 and 2% if the funded level is 70% or more.
California	Public Employees' Retirement Fund	Employees contribute at least half of the total annual normal cost—the cost of new benefits earned over the last year, which does not include the cost of paying down unfunded liabilities.	
California	State Teachers' Retirement Fund	Employees contribute at least half of the total annual normal cost—the cost of new benefits earned over the last year, which does not include the cost of paying down unfunded liabilities.	
Colorado	Local Government Division Trust Fund		Annual increase for benefit recipients is the lesser of 2% or the average of the monthly consumer price index for CPI-W (which focuses on spending of urban wage earners and clerical workers) for the prior calendar year. In no case can the sum of annual increases exceed 10% of the divisional annual increase reserve.
Colorado	School Division Trust Fund		Annual increase for benefit recipients is the lesser of 2% or the average of the monthly CPI-W for the prior calendar year. In no case can the sum of annual increases exceed 10% of the divisional annual increase reserve.
Colorado	State Division Trust Fund		Annual increase for benefit recipients is the lesser of 2% or the average of the monthly CPI-W for the prior calendar year. In no case can the sum of annual increases exceed 10% of the divisional annual increase reserve
Connecticut	Teachers' Retirement System		The plan COLA is based on the Social Security cost-of-living adjustment with caps based on the investment return. If the investment rate is lower than 8.5%, the COLA is capped at 1%. If the investment returns are between 8.5 and 11.5%, the COLA is capped at 3%. For returns over 11.5%, the COLA is capped at 5%

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State	Plan	Employee contribution description	COLA or PBI description
Idaho	Public Employee Retirement System of Idaho Base Plan	Employees contribute 60% of the employer contribution rate.	Post-retirement increases are based on a cost-of-living factor reflecting the changes in the CPI-U (which focuses on urban consumers), subject to a maximum total increase or decrease of 6% in any year. If the CPI-U increases by at least 1%, a 1% annual post-retirement increase is provided. An additional post-retirement increase of up to 5% each year may be authorized by the board if it finds that the value of the system's assets are no less than its actuarial liabilities, including those created by the additional increase. If the CPI-U increases by less than 1% or decreases, the COLA is automatically equal to the change in the CPI-U. A decrease cannot be more than 6%. Member benefits cannot decrease below the amount of the initial benefit at retirement.
Iowa	Public Employees' Retirement System	Employees contribute 40% of the total contribution rate. The total contribution rate cannot be adjusted by more than 1% annually.	
Louisiana	State Employees' Retirement System		COLAs will be granted when the Employee Experience Account contains sufficient monies to fund an increase. COLAs will be granted only every other year until the system is 85% funded and be limited to the first $60,000 of benefit. The COLA amount is determined by the system's funding level and rate of return. The COLA is subject to legislative approval.
Louisiana	Teachers' Retirement System of Louisiana		COLAs will be granted when the Employee Experience Account contains sufficient monies to fund an increase. COLAs will be granted only every other year until the system is 85% funded and be limited to the first $60,000 of benefit. The COLA amount is determined by the system's funding level and rate of return. The COLA is subject to legislative approval.
Maryland	Employees' Retirement and Pension System		COLAs are based on the CPI-U and capped at 2.5% when the system's investment fund earns or exceeds its assumed actuarial rate of return and capped at 1% when the assumed actuarial rate is not met.
Maryland	Teachers' Retirement and Pension System		COLAs are based on the CPI-U and capped at 2.5% when the system's investment fund earns or exceeds its assumed actuarial rate of return and capped at 1% when the assumed actuarial rate is not met.

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State	Plan	Employee contribution description	COLA or PBI description
Minnesota	General Employees Retirement Fund		Plan provides a 1% COLA. If the funding increases to 90% for two consecutive years, the COLA will increase to 2.5%. If the funding level falls below 85% for two years or below 80% for one year, the COLA will decrease to 1%.
Minnesota	Public Employees Police and Fire Fund		Plan provides a 2% COLA. If the funding increases to 90% for two consecutive years, the COLA will increase to 2.5%. If the funding level falls below 85% for two years or below 80% for one year, the COLA will decrease to 2%. Employees who retire after June 1, 2014, will have their first increase delayed by two years.
Minnesota	State Employees Retirement Fund		Plan provides a 2% COLA. If the funding increases to 90% for two consecutive years, the COLA will increase to 2.5%. If the funding level falls below 85% for two years or below 80% for one year, the COLA will decrease to 2%.
Minnesota	Teachers Retirement Fund		Plan provides a 2% COLA. If the funding increases to 90%, the COLA will increase to 2.5%. If the funding level falls below 85% for two years or below 80% for one year, the COLA will decrease to 2%. The COLA was suspended through 2012.
Montana	Public Employees' Retirement System—Defined Benefit Retirement Plan	The employee contribution rate is reduced from 7.9 to 6.9% when the amortization period falls below 25 years.	The guaranteed annual benefit adjustment is capped at 1.5% and is reduced by 0.1% for every 2% the system's liabilities are less than 90% funded. The benefit adjustment will be zero if the plan's amortization period is 40 years or more.
Montana	Teachers' Retirement System	After July 1, 2013, the board can increase the employee contribution to an additional 0.5% if the system is 80% or less funded and the amortization period is 20 or more years.	The guaranteed annual benefit adjustment is capped at 1.5% and is reduced when the system's liabilities are less than 90% funded. The benefit adjustment will be zero if the plan's amortization period is 40 years or more.
Nevada	Public Employees' Retirement System	For members of the Employee/Employer Contribution Plan, the employee and employer split the total contribution rate. For members of the Employer Pay Contribution Plan, the employer pays the total contribution.	
New Mexico	Education Employees' Retirement System		If the funded ratio is 100% or more, the COLA is equal to the CPI up to 2%. If the CPI is more than 2%, the COLA is equal to the greater of half of the CPI or 2%, up to 4%. If the funded ratio is between 90 and 100%, the COLA is reduced by 5 to 10%. If the funded ratio is 90% or less, the COLA is reduced by 10 to 20%.

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State	Plan	Employee contribution description	COLA or PBI description
North Dakota	Teachers' Fund for Retirement	The employee contribution rate will decrease from 11.75% to 7.75% when the funded ratio of the actuarial value of assets reaches 100%.	
Pennsylvania	Public School Employees' Retirement System	Employee contribution base rate of 7.5% or 10.3%, depending on which class members opt in to. Every three years, the plan's actual investment returns for the last 10 years are compared with the assumed rate of return over the same period. If the investment return is less than the assumed rate by more than 1 percentage point, the employee contribution increases by 0.5 percentage points. If the investment return is equal to or more than the assumed rate, the employee contribution rate decreases by 0.5 percentage points. In addition, if the fund is fully funded, the employee contribution rate will revert back to the base employee contribution rate. The potential increase is limited to 2 percentage points in total, so the rate cannot be more than 9.5% or 12.3%.	
Pennsylvania	State Employees' Retirement System	The employee contribution has a base rate of 6.25 or 9.3%, depending on which class members opt in. Every three years, the plan's actual investment returns for the last 10 years are compared with the assumed rate of return over the same period. If the investment return is less than the assumed rate by more than 1 percentage point, the employee contribution will increase by 0.5 percentage points. If the investment return is equal to or more than the assumed rate, the employee contribution rate will decrease by 0.5 percentage points. In addition, if the fund is fully funded, the employee contribution rate will revert back to the base employee contribution rate. The potential increase is limited to 2 percentage points in total, so the rate cannot be more than 8.25 or 11.3%.	
South Carolina	Police Officers' Retirement System	If the current employer and member contribution rates are insufficient to maintain an amortization schedule of 30 years or less, then the board will increase the employer and member contributions by an equal amount (keeping a differential of at least 2.9 percentage points between the employer and member rates) as needed to maintain a 30 year funding period. The employee and employer contribution rates may not decrease until the plan is 90% funded.	

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State	Plan	Employee contribution description	COLA or PBI description
South Carolina	South Carolina Retirement System	If the current employer and member contribution rates are insufficient to maintain an amortization schedule of 30 years or less, then the board will increase the employer and member contributions by an equal amount (keeping a differential of at least 2.9 percentage points between the employer and member rates) as needed to maintain a 30 year funding period. The employee and employer contribution rates may not decrease until the plan is 90% funded.	
South Dakota	South Dakota Retirement System		COLA is based on the CPI-W and plan funding status, ranging from a minimum of 2.1% to a maximum of 3.1%. The maximum amount decreases as the funded level falls. Starting in fiscal year 2018, the COLA will be based on CPI-W with a minimum of 0.5% and a maximum of 3.5% when the funded level is 100% or greater. When the funded level falls below 100%, the COLA maximum will be restricted in order fully fund plan.
Wisconsin	Wisconsin Retirement System	Employees contribute 50% of the total contribution rate.	The annuity benefit is based primarily on the investment returns of the plan's trust funds. Actuarial factors, such as mortality rates, also affect annuity adjustments. Adjustments can be both positive and negative. Plan members can decide whether to participate in a fund that takes on greater risk for potentially higher returns.

Sources: State retirement system documents, including member handbooks, plan comprehensive annual financial reports, and retirement system websites

Endnotes

1 NASRA provides a similar definition of risk sharing. See National Association of State Retirement Administrators, "NASRA Issue Brief: Shared-Risk in Public Retirement Plans" (June 2014), http://www.nasra.org/files/Issue%20Briefs/NASRASharedRiskBrief.pdf.

2 Retirement Systems of Alabama, *Comprehensive Annual Financial Report for the Fiscal Year Ended September 30, 2014* (2015), http://www.rsa-al.gov/uploads/files/2014_RSA_CAFR.pdf; and Colorado Public Employees' Retirement Association, *Comprehensive Annual Financial Report for the Year Ended December 31, 2014* (2015), https://www.copera.org/sites/default/files/documents/5-20-14.pdf.

3 The largest plans from each state were selected in order to cover 90 percent of state liabilities, based on 2013 figures, for up to four plans. These criteria result in a 102 plan list. Alternative design plans, such as cash balance or hybrid plans, were excluded from the analysis, narrowing the list to 83 plans. We looked at the latest tier from each plan.

4 Alaska, Georgia, Indiana, Kansas, Kentucky, Michigan, Nebraska, Oklahoma, Oregon, Rhode Island, Tennessee, Virginia, and Utah have a mandatory alternative plan as the primary benefit for at least some state workers or teachers. This list excludes states that offer alternative plans as an optional selection instead of a defined benefit plan.

5 Arizona State Retirement System, *Comprehensive Annual Financial Report for the Year Ended June 30, 2014* (2014), https://www.azasrs.gov/sites/default/files/pdf/61st%20Comprehensive%20Annual%20Financial%20Report%20%28FY%202014%29.pdf; and Arizona State Retirement System, "Contribution Rates to Decrease Slightly July 1," accessed April 8, 2016, https://www.azasrs.gov/blog/contribution-rates-decrease-slightly-july-1.

6 Arizona State Retirement System, *Comprehensive Annual Financial Report for the Year Ended June 30, 2005* (2005), https://www.azasrs.gov/sites/default/files/pdf/2005_Annual_Comprehensive_Financial_Report.pdf; and Arizona State Retirement System, "Contribution Rates," accessed April 5, 2016, https://www.azasrs.gov/content/contribution-rates. Before fiscal 2008, the contribution rate was determined two years in advance. Starting in fiscal 2008, the rate was determined annually. Arizona State Retirement System, *Comprehensive Annual Financial Report for Fiscal Year Ended June 30, 2008* (2008), https://www.azasrs.gov/sites/default/files/pdf/2008_CAFR.pdf.

7 Before 2013, the Arizona State Retirement System also had a risk sharing COLA policy. Members were eligible to receive a permanent benefit increase with a risk sharing element. The increase was dependent on excess earning by the fund, and when excess funds were available an increase was applied at the beginning of each fiscal year. However, employees who started on or after Sept. 13, 2013, are not eligible to receive retirement benefit increases under any circumstances. Arizona Rev. Stat. § 38-767: Benefit Increases; Applicability (Justia 2013), http://law.justia.com/codes/arizona/2013/title-38/section-38-767; and Arizona State Retirement System, *Road to Retirement Guidebook* (August 2016), https://www.azasrs.gov/sites/default/files/pdf/Road_to_Retirement_2016.pdf.

8 Iowa Public Employees' Retirement System, *Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 2014* (2014), https://www.ipers.org/sites/default/files/cafr_0.pdf.

9 California State Teachers' Retirement System, "Member Handbook: Your Guide to CalSTRS Benefits 2016," http://www.calstrs.com/calstrs-member-handbook; and California State Teachers' Retirement System, *Comprehensive Annual Financial Report for the Fiscal Year Ended June 30, 2013* (2013), http://www.calstrs.com/sites/main/files/file-attachments/cafr2013.pdf.

10 California Public Employees' Retirement System, "Pension Reform Impacts," last modified June 3, 2016, https://www.calpers.ca.gov/page/employers/policies-and-procedures/pension-reform-impacts.

11 For PSERS, the contribution rates assume the employee is a T-E class member. For SERS, the contribution rates assume the employee is an A-3 class member. Members can choose to contribute at a higher rate in exchange for a higher multiplier. PSERS employees also can opt in to the T-F class, which includes higher benefits and higher contribution rates. For T-F class members, the contribution rate must stay between 10.3 and 12.3 percent. Pennsylvania Public School Employees' Retirement System, *Active Member Handbook* (September 2012), http://www.psers.state.pa.us/content/publications/Active%20Handbook.pdf. SERS employees can opt in to the A-4 class, which includes higher benefits and higher contribution rates. For A-4 class members, the contribution rate starts at 9.3 percent and increases to 11.3 percent. Pennsylvania State Employees' Retirement System, *Member Handbook,* http://sers.pa.gov/get_pdf.aspx?path=pdf&file=SERS_Member_Handbook.pdf.

12 If the number of years since implementation of Act 120 is less than 10, the look back period for the actual rate of return will be the number of years since implementation of the act. Pennsylvania General Assembly, "2010 Act 120," http://www.legis.state.pa.us/cfdocs/legis/li/uconsCheck.cfm?yr=2010&sessInd=0&act=120.

13 Pennsylvania Public School Employees' Retirement System, "Overview of the Impact of Act 2010-120 on the Public School Employees' Retirement System (PSERS)," (2010), http://www.psers.state.pa.us/content/pfr/summaryrevised20101203.pdf; Pennsylvania Public School Employees' Retirement System, *Active Member Handbook*; and Pennsylvania State Employees' Retirement System, *Member Handbook.*

14 On Dec. 31, 2016, the investment returns between 2011 and 2016 will be compared against the expected return to see if the employee contribution rate should be adjusted. The next potential adjustment will be Dec. 31, 2019, when the investment returns between 2011 and 2019 will be compared against the expected rate. As of Dec. 31, 2022, and every three years thereafter, the shared rate adjustment will be based on the returns over the preceding 10 calendar years. David Kuntch Jr., Accountant, Pennsylvania State Employee's Retirement System, pers. comm. With Ashali Singham, April 6, 2016.

15 The Consumer Price Indexes (CPI) measure the change in prices paid by urban consumers for a representative basket of goods and services. The CPI for All Urban Consumers (CPI-U) includes expenditures by urban wage earners and clerical workers, professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees, and others not in the labor force. Bureau of Labor Statistics, "Consumer Price Index," last modified June 29, 2016, http://www.bls.gov/cpi/cpiovrvw.htm.

16 Wisconsin Department of Administration, Department of Employee Trust Funds, and Office of State Employment Relations, *Study of the Wisconsin Retirement System* (2013), http://etf.wi.gov/publications/wrs-study.pdf.

17 Wisconsin Department of Employee Trust Funds, "Frequently Asked Questions: Annual Annuity Adjustments for the Core Fund and Variable Fund," http://etf.wi.gov/faq/annuity_adjustments.htm.

18 Wisconsin Investment Board, "Core Fund," http://www.swib.state.wi.us/core-fund.

19 Unlike the Core Fund, the Variable Fund does not smooth returns. Wisconsin Investment Board, "Variable Fund," http://www.swib.state.wi.us/variable-fund.

20 Wisconsin Department of Employee Trust Funds, *Study of the Wisconsin Retirement System.*

21 Wisconsin Department of Employee Trust Funds, "How Participation in the Variable Trust Fund Affects Your WRS Benefits" (October 2014), http://etf.wi.gov/publications/et4930.pdf.

22 Wisconsin Department of Employee Trust Funds, "Frequently Asked Questions"; Wisconsin Department of Employee Trust Funds, *Study of the Wisconsin Retirement System.*

23 Wisconsin Investment Board, "Variable Fund."

24 Wisconsin Department of Employee Trust Funds, "Core Fund and Variable Fund: Returns, Rates, and Adjustments," http://etf.wi.gov/retirees/dividends.htm.

25 Wisconsin Department of Employee Trust Funds, *Study of the Wisconsin Retirement System.*

26 Maryland State Retirement and Pension System, *Comprehensive Annual Financial Report for the Years Ended June 30, 2014 and 2013* (2014), http://www.sra.state.md.us/agency/downloads/cafr/CAFR-2014.pdf.

27 Ibid.

28 Minnesota Teachers Retirement Association, "Governor Pawlenty Signs 2010 Pension Bill" (summer 2010), https://www.minnesotatra.org/formspub/tribnews/10summeractive.html.

29 Public Employees Retirement Association of Minnesota, "History of Increases: 1990-2016," last modified Aug. 3, 2016, http://www.mnpera.org/index.asp?Type=B_BASIC&SEC={F5010981-70E9-471F-B1EA-85230CC25351}.

30 Public Employees Retirement Association of Minnesota, *Your PERA Coordinated Plan Benefits* (July 2015), http://www.mnpera.org/vertical/Sites/%7BCB6D4845-437C-4F52-969E-51305385F40B%7D/uploads/Coordinated_7-15-3.pdf. For members of the Public Employees Police and Fire Plan who retire after May 31, 2014, the first post-retirement benefit increase will be delayed two years. Public Employees Retirement System Association of Minnesota, *Public Employees Police & Fire Plan: Actuarial Valuation Report as of July 1, 2013* (2013), http://www.mnpera.org/vertical/Sites/%7BCB6D4845-437C-4F52-969E-51305385F40B%7D/uploads/2013valuation.pera.policefire.pdf.

31 The General fund is not expected to meet the two years of 90 percent benchmark until 2027. Minnesota State Retirement System, *General Employees Retirement Plan: Actuarial Valuation Report as of July 1, 2014* (2014), https://www.leg.state.mn.us/docs/2014/mandated/141278.pdf.

32 Minnesota State Retirement System, "Legislative Updates—2016," https://www.msrs.state.mn.us/legislative-updates; and Minnesota Teachers Retirement Association, *Handbook of Benefits & Services* (2015), https://www.minnesotatra.org/images/pdf/Member%20Handbook.pdf.

33 Connecticut Teachers' Retirement Board, "Cost of Living Adjustments—January 2016," last modified Jan. 27, 2016, http://www.ct.gov/trb/cwp/view.asp?A=1598&Q=272510; and Connecticut Teachers' Retirement Board, "Cost of Living Adjustments," last modified June 28, 2016, http://www.ct.gov/trb/lib/trb/formsandpubs/cola.pdf.

34 Connecticut Teachers Retirement Board, "Cost of Living Adjustments," last modified June 28, 2016.

35 Public Employee Retirement System of Idaho, *Comprehensive Annual Financial Report of as of and for Fiscal Year Ended June 30, 2014* (2014), http://www.persi.idaho.gov/documents/investments/FY14/AR-FY2014.pdf.

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