CENTER for RETIREMENT RESEARCH at BOSTON COLLEGE

# THE IMPACT OF MANDATORY COVERAGE ON STATE AND LOCAL BUDGETS

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**Abstract**

The policy option of extending mandatory Social Security coverage to newly hired uncovered state and local workers is often included in packages to eliminate the program's financing shortfall. The arguments for mandatory coverage go beyond financial considerations, though, as extending coverage would bring benefit protections that state and local workers currently lack and would improve equity by more broadly sharing the burden of Social Security's legacy costs. The main argument against mandatory coverage is that it would raise costs to public employers and workers. The actual cost increase depends on the extent to which employers reduce their existing pensions when adopting Social Security. This paper estimates the costs under four different integration strategies: 1) no adjustment to existing pensions; 2) match the level of the first-year benefit; 3) match the lifetime benefit; and 4) match the benefit to levels in neighboring states with Social Security coverage. This analysis is conducted for 22 state-administered plans in 13 states that were identified as lacking coverage. The results show that the cost of adding Social Security varies significantly, with the smallest increase for the "match lifetime benefit" option and the largest increase for the "no adjustment" option. Presenting the additional costs as a percent of payroll may exaggerate their burden on the employer as the increases will likely be split between employer and employee. Perhaps a better way to gauge the size of the cost increase is as a share of a state's budget; this measure shows only a very modest impact.

## Introduction

Social Security's trust fund is scheduled for exhaustion in 2033, so Congress will soon be pressed to take action to restore solvency. One proposal in virtually every package to eliminate Social Security's shortfall has been the extension of mandatory coverage to newly-hired workers in state and local plans that currently do not provide Social Security.

The arguments for mandatory coverage go beyond the effect on Social Security's deficit. Social Security coverage would bring excluded workers three types of benefit protection that they do not have currently. First, they would enjoy full portability as they move from job to job, even if they leave government employment. Second, they would have full inflation protection for their retirement and disability benefits. Third, they would be eligible for dependent and survivor benefits not offered by public plans. On the equity front, mandatory coverage would also ensure that excluded state and local workers pay their share of financing the unfunded liability associated with the startup of the Social Security program.

State and local employers of uncovered workers strongly oppose mandatory coverage, even if restricted to newly hired workers.[1] They argue that mandatory coverage will impose burdens on states and localities for which they will receive little or nothing in return. Government workers are also concerned that a change in the structure of their pension systems could result in a move away from defined benefit plans to more risky defined contribution plans. They also fear that plans designed for specific categories of workers, such as firefighters and police, could be lost. But the key issue on the opposition side is cost.

To determine whether the magnitude of the likely effects is consistent with the level of opposition, this study estimates the impact on public plans and public sector budgets of extending Social Security coverage to newly hired uncovered workers. The focus here is retirement benefits, since disability insurance raises its own host of complex issues. The first section presents background on Social Security coverage. The second section confirms that the financial impact of mandatory coverage on Social Security solvency is modest, eliminating only a fraction of Social Security's deficit. The third section presents the more compelling reasons for extending coverage – namely, equity concerns and eliminating insurance and benefits gaps for public sector workers. The fourth section presents the evidence on the costs of extending

[1] National Conference of State Social Security Administrators (2013)

coverage under four alternative ways of integrating Social Security and defined benefit pensions. The calculations are based on the discount rates – the expected return on plan assets – currently used by states and localities. These rates are viewed as too high by economists and therefore understate state and local pension costs and overstate the budgetary impact of introducing Social Security coverage. Nevertheless, the calculations are based on these optimistic assumptions because plan sponsors will use their own assumptions when making decisions about the impact of Social Security.

The final section concludes that plan sponsors would most likely try to preserve first-year benefits, which actually increases benefits due to Social Security's superior benefit protection and dependents benefits. On average, this approach would raise plan costs as a percent of payroll by 6 percentage points – roughly half due to benefit enhancement and half due to Social Security's legacy costs. The increment in costs would likely be split between employee and employer. As a result, the increase in pension costs as a percent of projected public sector revenues is likely to amount to only 1 percent.

**A Brief History**

When Congress enacted Social Security in 1935, it excluded many categories of workers from the program, among them public employees. The legislation omitted federal employees because most of them were already protected under the federal Civil Service Retirement System. Although most state and local employees were not similarly situated, Congress excluded them because it was assumed that the Constitution prevented the federal government from taxing states and municipalities. However, as Congress expanded Social Security coverage to include virtually all private-sector employees, it also opened coverage to many public sector workers. Specifically, Amendments to the Social Security Act in 1950, 1954, and 1956 allowed states, with the consent of employees in the pension plan, to elect Social Security coverage through agreements with the Social Security Administration (making their taxation voluntary). The amendments also allowed states to withdraw from the program after meeting certain conditions.

Policymakers have addressed the question of mandatory, as opposed to voluntary, coverage of state and local workers on several occasions, but the major initiative came in response to the financial problems faced by the Social Security system in the 1970s. The 1977 Social Security Amendments directed the Secretary of Health, Education, and Welfare (now

Health and Human Services) to undertake a thorough study of the extent of Social Security coverage and of the desirability and feasibility of covering all government workers, including state and local government employees. Although the Universal Social Security Coverage Study Group ( "1980 Study Group"), which was established by the Secretary, did not draw conclusions about the desirability of the various options, Joseph Bartlett, the Chair of the Study Group, stated in the covering letter to the group's report that, in his judgment, "state and local workers should…be brought into Social Security."[2]

Although Congress has not extended mandatory coverage to state and local workers, it has taken steps to eliminate some of the inequities that can arise from so-called "double dipping." The 1977 and the 1983 Amendments both introduced windfall provisions so that spouses and surviving spouses who had worked in uncovered employment could not claim full Social Security spouse or survivor benefits ("Government Pension Offset") or state and local workers who gained minimum coverage under Social Security through second jobs could not profit from the progressive benefit formula ("Windfall Elimination Provision").[3]
The 1983 Amendments also eliminated the option for states and localities that had voluntarily elected Social Security coverage to withdraw from the program. And, in 1990, Congress mandated coverage for state and local workers not covered by a pension plan with benefits comparable to those provided by Social Security. The following is a brief summary of the major legislative changes:

[2] U.S. House of Representatives (1980), p. XIII.

[3] The GPO and WEP were introduced to address an equity problem created by the exclusion of some state and local workers from Social Security. These workers can easily gain Social Security coverage from a second career or moonlighting. Since a worker's monthly earnings for purposes of benefit calculation are averaged over a typical working lifetime rather than over the years actually spent in covered employment, a high earner with a short period of time in covered employment cannot be distinguished from an individual who worked a lifetime in covered employment at an exceptionally low wage. Thus, a worker who was entitled to a state and local pension and to Social Security could qualify for the subsidized benefits associated with the progressive benefit formula. Similarly, a spouse who had a full career in uncovered employment – and worked in covered employment for only a short time or not at all – would be eligible for the spouse's and survivor's benefits. The WEP instituted a modified benefit formula for people who qualify for Social Security based on a brief work history and who have earned a pension in uncovered employment. The GPO reduces spouses' benefits for those who have a government pension in uncovered employment. Although these provisions may not produce perfect adjustments for each individual, in the aggregate they have substantially solved the problem. See Shelton (2010a; 2010b).

Key Dates in Social Security Coverage for State and Local Workers

1935: Social Security Act is passed prohibiting participation by states and localities.

1950: Social Security Act is amended to permit coverage on an optional basis for state and local employees not already covered by a public employee retirement system. Legislation also permits state and local government groups to withdraw from Social Security two years after submitting notice of intent.[4]

1954: Social Security becomes available to state and local employees already covered by a pension system when the majority of the group elects coverage and the state agrees.

1956: Congress creates a divided option. If all new employees are to be covered by Social Security, current workers can choose to be covered by Social Security and the public plan or only by the public plan. Legislation also allows five states to cover police and fire fighters, two groups that had been excluded from Social Security.

1977: Social Security Act Amendments introduce a "Government Pension Offset" to reduce benefits to spouses and surviving spouses who worked in employment not covered by Social Security.[5]

1983: Social Security Act is amended to eliminate the ability for states and localities to withdraw from the system and to enact the "Windfall Elimination Provision."

1985: Consolidated Omnibus Budget Reconciliation Act requires all state and local government new hires after March 1986 to participate in Medicare.

1990: Omnibus Budget Reconciliation Act requires coverage of all state and local government employees not covered by a state/local plan that provides benefits comparable to Social Security.

**The Impact of Mandatory Coverage on Social Security**

Social Security provides retirement, disability, and survivor protection to insured workers and their families. Insured workers are eligible for full retirement benefits at age 66 (rising to 67 for those turning 65 in 2025) and reduced benefits at age 62. Benefits are based on career

[4] State and local organizations were required to participate for at least 5 years before submitting a notice of intent to withdraw. Any withdrawal was permanent.

[5] By 1979, 674 jurisdictions had terminated coverage for 112,000 employees. An additional 222 notices were pending, affecting an additional 98,100 employees. See Munnell (2012).

earnings, indexed to reflect the growth in average wages over time. The benefit structure is progressive in the sense that it replaces a higher percentage of the pre-retirement earnings of a low-wage earner than of a high earner. In 2013, the replacement rate – benefits as a percent of pre-retirement earnings – for a single individual retiring at age 66 with a history of average earnings was 44 percent, for the low earner (45 percent of the average national wage) 60 percent, and for the person earning at the taxable maximum ($110,100) 30 percent. Benefits are adjusted fully for changes in the cost-of-living after age 62.

Social Security provides additional benefits for spouses and for survivors, who traditionally have been women. For spouses that spend their career taking care of their family, Social Security provides a spousal benefit equal to 50 percent of the worker's primary insurance amount, which is reduced if claimed early. For homemakers who become divorced after at least 10 years of marriage, Social Security provides a retirement benefit based on the former spouse's benefits. For older homemakers who outlive their spouse, Social Security provides widow's benefits equal to 100 percent of the deceased worker's benefits.

Social Security pays disability benefits to workers whose disability is sufficient to prevent them from doing any substantial gainful work and is expected to last at least 12 months or end in death. The benefits are based on workers' average indexed monthly earnings at the time of disability and are adjusted annually to reflect changes in the cost of living thereafter. In addition, benefits are available to the worker's spouse and eligible children, subject to a family maximum. Workers are eligible for disability benefits if they have earnings in covered employment for half the quarters since age 21.[6] Workers are permanently and fully insured – that is, their insurance will not lapse if they leave covered employment – once they have accumulated 40 quarters of coverage.

For a long time, Social Security benefits were not subject to the federal personal income tax, but Congress made them partially taxable in 1983 and increased their taxation further in 1993. Under current law, up to 50 percent of Social Security benefits are taxable if recognized income falls within specified levels – $25,000 to $34,000 for single individuals and $32,000 to

[6] Under current law, workers over age 31 are eligible for Social Security disability benefits if they have covered earnings in 20 of the 40 quarters immediately preceding disability. Younger workers can qualify if they had covered wages in one half the quarters they worked since age 21.

$44,000 for married couples. If income exceeds these levels, then 85 percent of benefits are taxable.[7]

The Social Security program operates more or less on a pay-as-you-go basis. The costs of providing the current level of benefits exceed the tax rate, and the discrepancy between the cost and income rate will increase over time (see Figure 1). Under the Social Security actuaries' intermediate assumptions from the 2013 Trustees Report, over the next 75 years the program has a long-run deficit equal to 2.72 percent of covered payroll earnings.

In 2013, the Social Security actuaries estimated that extending coverage to all new state and local workers would reduce the 75-year deficit by 0.15 percent of taxable payrolls over the next 75 years and would extend the date of the exhaustion of the trust fund by one year. The favorable impact on 75-year costs comes primarily from the limited nature of the projection period. That is, workers who pay taxes within the 75-year horizon but receive at least part of their benefits after the horizon help the actuarial calculation, even if they do not contribute to Social Security from a lifetime perspective.[8]

Furthermore, mandatory coverage would help cover the costs associated with the startup of the pay-as-you-go system. When Social Security started, the President and Congress decided to pay benefits to the first generation of retirees whose lives had been disrupted by the Great Depression. The workers, who had paid taxes only for a short period, received benefits far in excess of their contributions. While early generations enjoyed the benefits, later generations have to pay the bill. Geanakoplos, Mitchell, and Zeldes (1998) estimate that roughly 3 percentage points of the current 12.4-percent payroll tax goes towards covering the startup costs. In other words, 25 percent of the Social Security tax from newly covered workers would go toward covering the legacy costs.

On balance, the financial implications of extending coverage are modest. That outcome is not surprising given that state and local workers account for only 11 percent of the workforce,

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[7] The 85-percent figure is still short of the standard used for taxation of private and public pensions generally – namely, full taxation of benefits in excess of those attributable to employee after-tax contributions.

[8] Surprisingly, the actuaries show coverage adding to costs in the 75$^{th}$ year of the projection period. The reason that the 75$^{th}$ year actuarial balance becomes more negative is simply because it is defined as a percentage of *current-law* taxable payroll. Covering more state-local workers would add to revenue, cost, *and* taxable payroll in similar proportions. Since the increase in payroll (denominator) is not reflected in the calculation of the actuarial balance, and the change in the numerator (revenue minus cost) is negative, the resulting change is negative.

and only between 25 and 30 percent of those workers are uncovered. As a result, covered workers would increase by only about 3 percent.

## The Case for Mandatory Coverage of State and Local Workers

The most compelling arguments for mandatory coverage have little to do with the projected long-run deficit of the Social Security system. Rather the case rests on issues of equity and ensuring that all state and local workers have protections not currently provided under public plans.

### *Equity Considerations*

The first equity issue is straightforward. Social Security redistributes income from workers with higher lifetime earnings towards workers with lower lifetime earnings. To the extent that higher-paid people do not participate in this national program of redistribution, they place an extra burden on the rest of the population. Moreover, the excluded state and local workers benefit from this redistribution in that they have to pay less taxes for means-tested programs for the elderly. Advocates of universal coverage contend that it is only fair for state and local government workers and their employers, like their private and public sector counterparts, to participate in this national endeavor.

The second equity issue relates to paying for the unfunded liability associated with the startup of the program that was discussed above. The early benefits during the 1940s, 1950s and 1960s went to the parents, grandparents, and great grandparents of today's uncovered state and local workers. Those who support mandatory coverage believe that state and local workers should pay their share of the inherited unfunded liability.

### *Improved Protection for State and Local Employees and their Families*

Equity considerations are only half the story, however. Social Security coverage also would provide important protections for state and local workers that they do not have now. State and local workers face gaps in insurance protection and gaps in benefits.

*Gaps in insurance protection*. The most serious gap in insurance protection relates to disability insurance. Workers moving between jobs that are covered by Social Security and jobs that are not covered may experience long periods without disability protection. When young workers leave covered employment and go to work for a state or local government not covered

by Social Security, their insured status under Social Security may lapse. (This lapse occurs because workers must have five of the last ten years in covered employment to qualify for disability benefits.) Since it may take five years, or even ten years, to become insured under the public plan, they will have a significant period with no protection at all. Similarly, a worker who leaves a non-covered state or local plan may have to wait five years before gaining insured status under Social Security. Although such workers are young, they would face a very long period with little income if they became disabled.

*Gaps in benefit protection.* Gaps in benefit protection arise because state and local plans do not provide the portability, dependents' and survivors' benefits, and full cost-of-living adjustments offered by Social Security.

Workers covered by state and local defined benefit plans lose benefits when they move from one job to another, since portability of state and local defined benefit pensions is usually limited to employment within state government. Defined benefit plans have the advantage of offering a predictable benefit, expressed as a percent of final pay for each year of service. But because benefits are based on *final* pay, mobile employees receive significantly lower benefits as a result of changing jobs than they would have received from continuous coverage under a single plan. Essentially, the worker who remains with a plan receives benefits related to earnings just before retirement, but the benefits for mobile employees are based on earnings at the time they terminate employment. In contrast, Social Security allows employees to build on previous earnings as they move from job to job, so mobility does not reduce benefits.

Second, most state and local plans provide little in the way of dependents' benefits. They provide nothing for a spouse of a retired worker when the worker is alive. In contrast, as noted above, Social Security offers spousal benefits for those without significant earnings records. State and local plans generally offer only modest survivor benefits: before retirement the benefit is often either a refund of employees' contributions or a lump sum, whichever is greater. After retirement, survivor benefits are available only if the employee selects a joint-and-survivor option for his annuity, and few choose this option. In contrast, Social Security provides a widow's benefit equal to 100 percent of the worker's pension.

Third, state and local pension plans generally provide some post-retirement cost-of-living adjustments, and those plans where workers do not have Social Security coverage tend to provide more protection. Nevertheless, the cost-of-living adjustments are sometimes *ad hoc* and

generally capped at 3 percent; it is unclear what the sponsors of these plans would do if inflation were substantially higher. Social Security, on the other hand, provides full cost-of-living adjustments no matter how rapid inflation might be, ensuring that beneficiaries do not see the value of their pension benefits eroded.

Social Security's guarantee of portability, generous ancillary benefits, and full inflation protection means that extending mandatory coverage would bring real gains to state and local workers and their spouses. Coverage under a national social insurance system would also eliminate gaps in disability protection that occur as workers move between covered and uncovered employment.

## The Costs of Mandating Coverage for Uncovered State and Local Employees

The main reason that the public sector employers and employees oppose mandatory Social Security is cost.[9] While virtually all recent proposals to extend coverage apply only to new hires, opponents recognize that once the transition is complete state and local governments would face the full impact of the cost.[10] Lost in the fervor is the notion that any increase in ultimate cost of the combined Social Security/public pension system depends crucially on how plan sponsors respond to the introduction of Social Security.

### *Previous Research*

The last comprehensive examination of the cost increases associated with mandatory coverage of uncovered state and local workers was undertaken for the 1980 Study Group established by the Secretary of Health, Education, and Welfare.[11] Although this work is now more than 30 years old, subsequent studies, such as a 1998 report from the U.S. General Accounting Office and Munnell (2000), have tended to build on the 1980 effort.

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[9] See, for example, Ohio Public Employee Retirement System (2013).

[10] For examples of proposals that include the mandatory coverage provision, see 1994-96 Advisory Council on Social Security (1997); Moynihan (1999); Diamond and Orszag (2004); National Commission on Fiscal Responsibility and Reform (2010); and Bipartisan Policy Center (2010). Focusing on new employees avoids personnel problems and legal challenges associated with benefit reductions for existing personnel; it requires no hold harmless provisions; it means each employee deals with only one benefit formula; and it allows a gradual phase-in of the required tax increase. See U.S. House of Representatives (1980).

[11] The final report of the Study Group was published in U.S. House of Representatives (1980).

The 1980 Study Group examined two sources of data.[12] One source was the Actuarial Education and Research Fund (AERF) study of 25 representative uncovered systems. The second source was The Urban Institute study, produced in collaboration with the actuarial firm of Howard Winklevoss and Associates, Inc., of 22 of the 50 largest uncovered plans. The difference between these two studies is that the AERF relied on the local actuaries to design the revised benefit formulas, while The Urban Institute specified the revisions so that the results for different plans were directly comparable. Both studies employed the actuarial and economic assumptions actually used by the various state and local plans.

The 1980 Study Group analyzed three different responses to Social Security by state and local plans. The first was the reproduction of existing benefits or the "constant benefit" response. Here the AERF attempted to preserve first-year benefits for all age and salary combinations, while The Urban Institute selected a single target group – an unmarried employee with average age, salary, and service characteristics.[13] The second analysis, by AERF, asked the actuaries to estimate the costs of the plans that they thought "most likely" to be adopted. The third analysis, by The Urban Institute, reproduced "typical benefits" for employees already covered by Social Security.

The AERF study calculated that the normal cost of maintaining "constant benefits" would be roughly halved in large state/local plans and reduced by a third for small plans, which cover primarily police and fire. In terms of total cost, the net increase would be about 5 percent of payroll to maintain constant benefits, according to the AERF calculations. The Urban Institute showed results that were slightly higher. If plans adopted the actuaries' "most likely" scenario, the increase would be about 6 percent. If the plans adopted the "typical plan" of those pension plans with Social Security coverage, the cost increase would be between 6 and 11 percent.

A number of states – Colorado, Illinois, and Ohio – have undertaken studies to determine the cost to their systems of mandatory Social Security coverage and have found costs to be in the

[12] See Actuarial Education and Research Fund (1979); and U.S. House of Representatives (1980).

[13] Constant benefits were estimated on an after-tax basis to reflect the fact that state and local pensions were taxable under the federal personal income tax, while Social Security benefits were not. This situation changed with the 1983 Social Security Amendments, which made Social Security benefits partially taxable. Thus, the estimates of "constant benefits" made for the 1980 Study Group somewhat overstate the size of Social Security benefits because these benefits no longer have a full tax advantage.

range estimated by the 1980 Study Group.[14] For example, a 1997 study for an Ohio plan found that providing benefits to new employees that approximated retirement benefits for current employees would require an increase in contributions of 6 to 7 percent of new employee payrolls. Similarly, a study for the State University Retirement System of Illinois concluded that it would cost an additional 6 percent for the combined Social Security/state system to provide benefits comparable to the current state plan. These studies also equalized first year, rather than lifetime, benefits.

While costs will almost certainly increase with mandatory coverage, existing estimates of the cost of maintaining "constant benefits" are misleading. They represent the costs of duplicating first-year benefits for an unmarried worker in the middle of the age, service, and pay scales. As the 1980 Study Group and some other reports point out, participants will actually get more in lifetime benefits under the combined Social Security/public system than they get under the public plan alone for two major reasons. First, Social Security provides full cost-of-living adjustment, while public pension plans typically provide only some ad hoc adjustment or a COLA capped at a fixed percentage. Second, Social Security also provides generous spouse and survivor benefits for qualifying married and divorced couples.

In addition for the need to look at an alternative integration approach, much has changed since 1980. Public plan benefits have become more generous, and the cost of Social Security has also increased substantially. Public plan sponsors pay more attention to funding, and, in the wake of the financial crisis, they may select less liberal integration schemes than they have in the past. And the portion of Social Security payroll taxes that go toward the system's legacy costs have been isolated and quantified.[15] Finally, it is important to look beyond the increase in plan costs to the impact on overall state and local finances.

*Identifying the Plans without Coverage*

The most basic questions of how many workers are not covered and where they reside are not as easy to answer as one would think. In the past, numerous sources provided very different

[14] Colorado State University (1998); Denver Public School Employees' Pension and Benefit Association (1999); Fire and Police Pension Association of Colorado (1999); Public Employees' Retirement Association of Colorado (1999a, b); and Ohio Public Employees Retirement System (1997).

[15] Geanakoplos, Mitchell, and Zeldes (1998).

pictures.[16] A relatively recent study by the U.S. Government Accountability Office offers a useful anchoring device.[17] The report describes, on a state-by-state basis for 2007, earnings covered and not covered by Social Security. The covered earnings come from the data that employers report to the Social Security Administration on Form W-2; estimates of total earnings are based on the assumption that all earnings were covered and taxable up to the Social Security 2007 maximum. This approach suggests that 29 percent of state and local earnings was not covered by Social Security (see Table 1). Although almost every state has some workers without Social Security coverage, about 70 percent of state and local government earnings not covered by Social Security are concentrated in five states – California, Texas, Ohio, Illinois, and Massachusetts; plans in eight additional states are included in this analysis.

In order to estimate the impact of extending Social Security to uncovered workers, it is necessary to focus on plans rather than state averages. For that information, we turn to the *Public Plans Database*, which identified 22 state-administered plans without Social Security in 13 states (see Figure 2). These plans have 3.1 million active workers, about 26 percent of the total active workers in state-administered plans. Teacher systems constitute a disproportionate share of those employees not covered by Social Security. For example, in California and Texas the system for general public employees is covered, while the teacher retirement system is not.

*Overall Approach*

The goal of this analysis is to measure the short, medium, and ultimate impact on plan costs and state budgets of extending Social Security coverage to all newly hired state and local employees. The exercise involves projecting pension costs over the 30-year period from 2012 (the last year for which plan data are available) to 2042. Separate projections are made for the base case of no Social Security coverage and four alternative integration strategies. Any reduction in the cost of the defined benefit plan is allocated to employers and employees in proportion to their current contributions. The four integration strategies include:

[16] Munnell (2000).

[17] U.S. Government Accountability Office (2010).

- No adjustment to current defined benefit plan; Social Security costs are simply added to defined benefit costs.

- Current defined benefit plan benefits and costs are reduced by an amount that preserves first-year benefits for the average employee.

- Current defined benefit plan benefits and costs are reduced by an amount that preserves lifetime benefits for the average employee.

- Current defined benefit plan benefits and costs are reduced by an amount that is similar to adjustments made in surrounding states that already have Social Security coverage.

The baseline costs of both state-local plans and of Social Security raises issues. In the state-local sector, the main issue is the interest rates used to discount pension promises. Under standards established by the Government Accounting Standards Board, the actuaries are directed to use the long-run expected return on plan assets. In contrast, financial economists argue that investment returns are irrelevant and that the discount rate rather should reflect the riskiness of the benefit promises. Since benefits are protected under most state laws, the appropriate discount rate should be close to the riskless rate. Using a higher rate understates the true cost of state-local plans, and overstates the budgetary impact of introducing Social Security. Nevertheless, the calculations presented below are based on state-local sponsors' own assumptions because that is the basis on which they will make decisions about the impact of Social Security.

The baseline cost of the plan – that is, the cost without Social Security – generally differs from today's cost because most plans have cut benefits and/or increased contributions for new hires in the wake of the financial crisis. Over the 30-year projection period, as new hires replace the population of current workers, the sponsor's normal cost shifts from the pension plan's current normal cost to the plan's new lower normal cost for new hires. This declining cost curve serves as the baseline for the analysis.

The focus is on the Old-Age and Survivors Insurance (OASI) portion of the Social Security program and excludes the Disability Insurance (DI) portion. This approach is necessary because little systematic information is available on state disability insurance programs. These programs appear to be important for police and firefighters, but less so for teachers and general employees. The cost as a percent of payroll ranges from 1.0 to 1.5 percent for police and fire and from 0.3 to 0.7 percent for other public employees. If Social Security coverage were extended,

states and localities would see their ultimate costs increase by about an additional 2 percent for federal disability insurance. If sponsors reduced their own expenditures to reflect the federal coverage – as appears to have occurred in public plans with Social Security coverage – the net increment would be about an additional 1 percentage point on top of the numbers reported below.

Social Security raises an additional issue, because the program is running a long-term deficit. The current tax rate for the OASI portion of the program is 10.6 percent of payroll, but this tax rate is not sufficient to cover retirement and dependents' benefits promised over the next 75 years. Full payment of benefits would require an increase in the rate immediately to 2.4 percentage points (see Table 3). So the OASI tax rate used in the following analysis is 13 percent. It Congress instead decided to restore solvency by cutting benefits, the tax rate could remain at its current level and benefits would be 16 percent lower. As a result sponsors would see a lower rate, but would not be able to reduce their defined benefit plans as much. For the purpose of this analysis, it does not matter very much whether the adjustment is made on the tax or benefit side of the equation.

In order to project the impact on plan costs of extending coverage for the period 2012-2042, the cost increase is estimated for the average new hire. The assumption is then that the percent of the workforce comprised of new hires increases linearly from zero in 2012 to 100 percent in 2042. Plan costs increase commensurately.

Finally, to assess the impact of mandatory Social Security coverage on the overall budget for each state, the costs for the newly covered state-administered plans are combined with the costs for already covered state plans and local plans. The costs for the state plans that are already covered are based on a detailed methodology from an earlier study; the costs for the local plans are assumed to stay at current levels as a percent of budgets.[18] For those plans that contain a defined contribution component, the new hire costs also include the minimum employer contribution allowed by the defined contribution plan. The budget measure is defined as general own-source state-local revenues.[19]

[18] For more details on these calculations, see Munnell et al. (2013).

[19] Own-source revenues exclude revenues received from other levels of government, such as federal contributions for Medicaid.

*Methodology: CalSTRS as an Example*.

Looking at the calculations for an individual plan – California State Teachers' Retirement System (CalSTRS) – will help clarify the methodology. The cost of CalSTRS' defined benefit plan as a percent of payroll both today and projected for 2042 is 18.3 percent (see Table 4). (CalSTRS has not fundamentally reduced benefits for new hires.) As discussed, the Social Security contribution rate is set at 13.0 percent of payrolls. With these rates in hand, it is possible to estimate the effects of combining the two sources of retirement income. Again, this exercise should be viewed as the cost for each newly hired worker. The effect on plan costs will increase over time as new hires gradually replace current employees.

The most straightforward assumption is that CalSTRS makes no adjustment and just adds Social Security onto its existing benefits. In this case, the cost would rise from 18.3 percent to 31.3 percent of payroll.

A more likely response would be that CalSTRS would adjust its current benefits to take account of Social Security benefits.[20] The first approach considered is to reduce benefits so that the combined defined benefit and Social Security benefit in the retiree's first year equals the amount that the worker would have received under the defined benefit plan alone. In the case of CalSTRS, the typical worker in 2012 was age 45 with 12 years of service. Based on plan assumptions, he will retire in 2027 at age 60 and receive a benefit of $61,775, in nominal dollars, from the defined benefit plan. If he had been steadily covered by Social Security, he would receive a benefit of about $32,000, in nominal dollars, in two years. To keep the nominal age 62 benefit constant, the defined benefit could be reduced by 45 percent. This reduction brings the cost of the defined benefit plan to about 10.1 percent, and the combined cost to 23.1 percent.

The second approach is to match lifetime benefits. That is, the employer wants to keep the worker "whole" over the entire retirement period. On the Social Security side, the calculation involves projecting nominal benefits each year multiplied by the probability that the worker is still living and the probability that he will receive spouse and survivor benefits. This nominal stream is then discounted to 2012 using the Social Security assumptions of 2.8 percent

[20] In determining the benefit adjustment, earlier analyses – such as those conducted for the 1980 Study Group – considered only Social Security benefits earned during the worker's service in state or local government. In contrast, our analysis considers Social Security benefits earned over the worker's full career, covering both private and public sector employment.

inflation and a 2.9 percent real rate of return. On the defined benefit side, the projection of nominal benefits reflects CalSTRS cost-of-living provisions; public plans do not offer supplementary spousal or survivor benefits. Further to equalize the benefit package from the perspective of the worker, the benefit streams need to be adjusted before the calculation of present values. First, Social Security benefits are increased to reflect the provision of dependents and survivor benefits.[21] Second, the defined benefit plan benefits are reduced to reflect the fact that they are less certain because these plans are more likely to make changes, such as suspending COLAs[22] or raising employee contribution rates, in response to adverse economic conditions and because they provide only *ad hoc* inflation adjustments or COLAs capped at 3 percent (see Appendix Table 1). The lack of full inflation protection is not that significant in the current low-inflation environment, but should inflation rise to 4 percent the "exchange rate" between Social Security and public plan benefits would decline substantially. To account for both the greater uncertainty of defined benefit payments and the less COLA protection, the value of the public plan benefit stream was reduced by 6.2 percent.[23] The result is that CalSTRS could reduce the cost of its defined benefit plan by 54.4 percent and provide its workers with comparable lifetime retirement benefits at a combined cost of 21.3 percent of payrolls – only slightly higher than current costs.

[21] The average worker used in the analysis is assigned a probability of being male and married for each plan based on plan actuarial valuations, as well as a probability of having a non-working spouse based on national averages. For married men with non-working spouses, we add the full spousal benefit to the stream of lifetime Social Security benefits and increase the value of Social Security benefits by the difference in the cost of a single life annuity and an annuity with 100 percent survivor benefits as provided by Social Security. For married men with working spouses, we only apply half the increase in value of Social Security benefits received by men with non-working spouses. Women and unmarried men are not assigned survivor or spousal benefits.

[22] In the wake of the financial crisis, 35 of the 107 state-administered plans reduced or suspended their COLAs.

[23] The value of benefits in the defined benefit plan is decreased by a total of 6.2 percent to account for the protection Social Security provides against benefit cuts and inflation. We reduce benefits by 3.7 percent to account for the possibility of increases in employee contributions and COLA cuts in response to an economic downturn. We estimate the chance of an economic downturn severe enough to warrant cutbacks at 33 percent, the chance of COLA cuts at 30 percent, and the chance of employee contributions increasing one percentage point at 90 percent. The loss of the COLA is assumed to reduce the lifetime value of pension benefits by 15 percent. Benefits are also reduced by 2.5 percent to account for the possibility of inflation being 2 percentage points higher than expected. This adjustment is estimated using a 25-percent chance of high inflation and a 10-percent decrease in the value of lifetime benefits as a result of high inflation. At plausible coefficients of risk aversion, the reductions in benefits are not sufficiently large for a participant to be willing to accept significantly less than the certainty equivalent in exchange for the elimination of the risk of loss.

The final option is for plan sponsors to adopt the normal cost for Social Security covered plans in bordering states. California is bordered by Nevada, Oregon and Arizona, but Nevada's state-administered plans are also not covered by Social Security. The average cost of covered plans in Oregon and Arizona is 12.6 percent.[24] Taking this approach would produce a total cost for CalSTRS of 25.6 percent.[25]

As discussed, these cost numbers should be viewed as the cost once all current employees have been replaced by new hires. In the short run, the population of new hires, being small, should have little effect on plan costs. To project the trajectory of normal cost after mandatory Social Security coverage, the assumption is that the current normal cost for the whole population increases linearly from its current level to the normal cost for the new hire population by 2042.

Table 5 shows the projected costs of CalSTRS after 5 years (Near-Term), 15 years (Mid-Term), and 30 years (Ultimate). The numbers show that, regardless of the integration scheme adopted, the near-term effects would be minimal. Ultimately, normal cost as a percent of payroll could vary by 10 percentage points depending on the approach taken.

From a policy perspective, the key issue is the total budgetary commitment represented by all pension plans in the state. To assess the impact of employer pension costs on overall state budgets, the normal cost for all of the state-administered pension plans in California are combined with those for local plans using the method from Munnell et al. (2013) described above. Depending on the approach taken, the ultimate impact of mandatory coverage of new hires under Social Security should increase pension costs as a percent of own-source revenues by about 0.5 percent because CalSTRS is the only state-administered plan in California without Social Security coverage.

*Aggregate Results*

The preceding discussion has focused on CalSTRS, the state-administered plan without Social Security coverage in California. A similar analysis was undertaken for each of the other

[24] In 2012, the normal cost for Oregon PERS including both the defined benefit plan and the member contribution to the IAP account was 12.3 and for Arizona SERS 12.9 percent.

[25] One could argue that California, being such a large state, would look within rather than without. In California, schools cover their teachers through CalSTRS, but many also cover non-teaching, non-certificated employees through CalPERS. The total CalPERS-related normal cost for schools was 14.2 percent of payroll in the 2012 actuarial valuation. If CalSTRS used this cost as a benchmark, the normal cost of the combined plans also would be 25.2 percent.

21 plans distributed across the remaining 12 states. In several cases the analysis was undertaken for different classes of workers in the plan, and the results were combined to get plan-level costs. The following discussion summarizes the aggregate results.

Table 6 shows the costs as a percent of payroll for the new hire population, which ultimately turns into the cost of the plan as new hires replace existing employees. Figure 3 presents a graphic representation of the alternate outcomes. The cost depends critically on the integration scheme adopted. "No integration" is clearly the most expensive, while preserving lifetime benefits is the least expensive. Note costs go up even under the preservation-of–lifetime-benefits option for two reasons: 1) the Social Security tax includes legacy "startup" costs estimated at 3 percent of payroll; and 2) state and local defined benefit plans assume they can deliver more benefits per dollar in contribution than Social Security due to their investment strategy – pension liabilities are discounted by a higher rate of return when normal costs are reported. Comparable information is provided for each of the 22 plans, as well as for separate groups within some of the plans, in Appendix Table 2.

Table 7 presents the normal cost for the new hire population with and without mandatory coverage by plan type. Because Social Security benefits are not available until age 62, they cannot offset as much of the cost for police and fire plans as for plans for general employees and teachers.[26] Similarly, but somewhat less obvious, because the salaries of teachers exceed those of general employees, Social Security – with its progressive benefit structure – does not offset as much of the defined benefit plan.

Table 8 shows the incremental costs of mandatory Social Security coverage as a percent of state/local own-source revenues. Comparable information is provided for each of the 22 plans in Appendix Table 3. The key message is that while the change in normal cost for a single plan may look large, the incremental cost on a statewide basis as a percent of revenues is relatively modest.

Finally, Table 9 presents a form of sensitivity analysis. The exercise begins by constructing a hypothetical state-administered plan with typical benefit design, salary growth,

[26] Members of police and fire plans retire before they are eligible to receive Social Security benefits. To match first-year benefits for such plans, we reduce age 62 Social Security benefits 5 percent each year (the benefit reduction applied by Social Security between age 63 and age 62) between 62 and the average retirement age for the plan.

and mortality assumptions. It then asks how the introduction of mandatory coverage would affect costs as a percent of payroll if the average salary, retirement age, and inflation assumption differed from the baseline. The results are consistent with intuition. If the average salary in the plan were $25,000 as opposed to the $50,000 assumed, costs would rise less than in the baseline. If the average salary in the plan were $75,000 as opposed to the $50,000 assumed, costs would rise more. This pattern reflects Social Security's progressive benefit structure, which replaces a higher percent of earnings for the lower paid than for the higher paid. This pattern means that in plans with low earners, Social Security will replace more of the defined benefit plan, but without a commensurately higher cost. Similarly, if the average retirement age of plan participants were 67 instead of the 62 assumed for the hypothetical plan, monthly Social Security benefits would be higher and therefore replace more of the defined benefit plan under the first-year match, reducing the cost increase. The reason is that, unlike Social Security, state pension benefits are typically not actuarially adjusted above the plan's normal retirement age. With respect to the lifetime match, given Social Security's actuarial adjustment, participants' retirement age would have no effect. In contrast, a retirement age of 55 would lead to greater cost under either integration scheme since no Social Security benefits are available before 62 and therefore the program could not offset as much of the defined benefit plan as in the base case. Finally, higher inflation makes Social Security much more valuable and able to replace more of the defined benefit plan than in the base case, thereby lowering the cost increase.

The sensitivity analysis suggests that the model developed for this study should provide state governments with a reasonable estimate of the financial implications of mandatory coverage of new hires. The final answer, of course, depends on the integration scheme selected. In earlier periods, plan sponsors appear to have simply stacked Social Security on top of the existing plans, which is consistent with the fact that the cost of plans with and without Social Security is virtually identical, with the exception of plans for police and fire (see Figure 4). One explanation for the lack of an offset is that many such plans were designed in the 1950s when Social Security provided very modest benefits. However, even in the 1980s when actuaries were asked to predict what plans would actually do, they envisioned very little offset.[27]

[27] Part of their response may have resulted from their considering that the extension of coverage would be applied to all employees rather than just new hires. But they did suggest that "liberalization of overall benefits would follow any requirement that public employees join Social Security."

In the current environment, plan sponsors may well resist any obvious liberalization in benefits as a result of Social Security coverage. The actions of plan sponsors in the wake of the financial crisis suggest that they are perfectly willing to substantially reduce benefits for new employees. In our view, however, the most likely approach would be to match first-year benefits, which involves some liberalization of benefits because of Social Security's superior COLA protection and dependent benefits, but it sounds like " holding the line." If sponsors follow that route, cost increases as a percent of payroll will initially be very modest, but in the end will add 6 percentage points to total normal cost. But half of that amount is likely to be paid by the employee. Thus, the impact of mandatory coverage on state and local budgets is likely to be only 1 percent even after all participants are covered.

**Conclusion**

The strongest argument for mandatory Social Security coverage rests on equity considerations. Universal coverage is the only way to run a national social insurance system that redistributes income from those with high lifetime earnings to those with low lifetime earnings. Universal coverage is also the only way to ensure that all workers pay their share of the legacy costs associated with the startup of the program. Yet, today, more than one quarter of state and local employees belong to retirement plans that do not participate in Social Security. These excluded workers not only fail to support the program but also lack important protections provided by Social Security in terms of portability of benefits, full inflation protection, and spouse and survivor benefits. In terms of disability insurance – not considered in this study – these workers also face gaps to the extent that they move between covered and uncovered employment.

The action-forcing event for the extension of coverage to newly hired state and local workers likely will be a package of reforms to eliminate Social Security's 75-year deficit. While coverage of new employees would eliminate only a tiny fraction of the shortfall, the equity argument looms large. The change will almost certainly be limited to new hires. Nevertheless, sponsors of state and local pension plans will be forced to rethink their existing plans. They are unlikely to layer Social Security on top of current benefits, but rather will search for some form of integration.

The alternatives considered in this study include preserving first-year benefits, preserving lifetime benefits, and adopting the cost structure of neighboring plans with Social Security coverage. The most likely path is to match first-year benefits, which would raise costs as a percent of payroll by about 6 percentage points. In addition, the costs for Social Security's Disability Insurance program – not considered here – will raise costs by about another 1 percent. These cost increases are likely to be split between the employer and employee. Moreover, looking at costs as a percent of payrolls tends to exaggerate the burden. For states with uncovered plans, pension costs as a share of total own-source revenue are likely to rise by approximately 1 percent as a result of the extension of Social Security coverage to new hires.

As discussed throughout, even this calculation exaggerates the true burden due to the fact that state-local pension costs are understated. Promised benefits are discounted to the present using the long-run expected return on plan assets rather than a rate that more accurately reflects the riskiness of the promised benefits. Understating the current cost of plan benefits overstates the burden of introducing Social Security coverage. If the calculations were done using a riskless rate, the only addition to plan costs would arise from Social Security's legacy costs – roughly 3 percent of payroll. If this cost were split between employer and employee, the impact on state and local budgets would be trivial.

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Table 1. *Prevalence of State-Local Government Earnings Not Covered by Social Security, 2007*

| Rank | State | Percentage not covered |
|---|---|---|
| 1 | Ohio | 99% |
| 2 | Massachusetts | 97 |
| 3 | Nevada | 96 |
| 4 | Louisiana | 83 |
| 5 | Colorado | 70 |
| 6 | Illinois | 64 |
| 7 | Maine | 64 |
| 8 | California | 60 |
| 9 | Alaska | 58 |
| 10 | Texas | 53 |
| 11 | Connecticut | 45 |
| 12 | Missouri | 35 |
| 13 | Kentucky | 33 |
| Total | | 29 |

| Rank | State | Earnings not covered (dollars in millions) |
|---|---|---|
| 1 | California | $60,506 |
| 2 | Texas | 26,755 |
| 3 | Ohio | 25,332 |
| 4 | Illinois | 20,322 |
| 5 | Massachusetts | 15,414 |
| 6 | Colorado | 8,631 |
| 7 | Louisiana | 6,617 |
| 8 | Nevada | 5,640 |
| 9 | Connecticut | 4,948 |
| 10 | Missouri | 4,087 |
| 11 | Kentucky | 2,936 |
| 12 | Maine | 1,716 |
| 13 | Alaska | 1,038 |
| Total | | 213,534 |

*Source:* U.S. Government Accountability Office (2010).

Table 2. *State-Administered Plans without Social Security, 2011*

| State | Plan | Active workers |
|---|---|---|
| Alaska | PERS | 24,393 |
| | Teachers | 7,303 |
| California | CalSTRS | 429,600 |
| Colorado | PERA | 185,841 |
| Connecticut | TRS | 50,588 |
| Illinois | Universities | 81,611 |
| | TRS | 170,190 |
| Kentucky | Teachers | 76,349 |
| Louisiana | SERS | 54,930 |
| | TRS | 86,742 |
| Maine | TRS | 38,759 |
| | Local | 10,614 |
| Massachusetts | SERS | 85,935 |
| | TRS | 86,860 |
| Missouri | PEERS | 48,800 |
| | PSRS | 77,708 |
| Nevada | PERS | 99,911 |
| Ohio | PERS | 333,340 |
| | Police and Fire | 28,073 |
| | School Employees | 125,337 |
| | Teachers | 177,897 |
| Texas | Teachers | 828,919 |
| Total | | 3,109,700 |

Source: Public Plans Database (2013).

Table 3. *Total Cost of Social Security's Old Age and Survivors Insurance (OASI) and Disability Insurance (DI) Programs*

| Program | Tax rate | 75-year deficit | Total cost |
|---|---|---|---|
| OASI | 10.6% | 2.4% | 13.0% |
| DI | 1.8 | 0.32 | 2.12 |
| OASDI | 12.4 | 2.72 | 15.12 |

Source: U.S. Social Security Administration (2013).

Table 4. *CalSTRS Costs for New Hire as a Percent of Payroll*

| | Baseline values | | Integration options | | | |
|---|---|---|---|---|---|---|
| | Defined benefit plan | Social Security | No Social Security offset | Match 1st-year benefit | Match lifetime benefit | Match Social Security covered plans |
| Employer | 10.3% | 6.5% | 16.8% | 12.2% | 12.9% | 13.6% |
| Employee | 8.0 | 6.5 | 14.5 | 10.9 | 10.9 | 12.0 |
| Total | 18.3 | 13.0 | 31.3 | 23.1 | 21.3 | 25.6 |

*Sources*: Authors' calculations based on the 2012 CalSTRS actuarial valuation report and U.S. Social Security Administration (2013).

Table 5. *CalSTRS Total Costs, as a percent of Payroll, Over Time*

| Time period | No SS Coverage | No Social Security offset | Match 1st-year benefit | Match lifetime benefit | Match Social Security covered plans |
|---|---|---|---|---|---|
| Near-term | 18.3% | 20.4% | 19.1% | 18.8% | 19.5% |
| Mid-term | 18.3 | 24.8 | 20.1 | 19.8 | 21.9 |
| Ultimate | 18.3 | 31.3 | 23.1 | 21.3 | 25.6 |

*Sources*: Authors' calculations based on CalSTRS 2012 actuarial valuation report and U.S. Social Security Administration (2013).

Table 6. *Costs as a Percent of Payroll for New Hire, All Plans*

| | Baseline values | | Integration options | | | |
|---|---|---|---|---|---|---|
| | Defined benefit plan | Social Security | No Social Security offset | Match 1st-year benefit | Match lifetime benefit | Match Social Security covered plans |
| Employer | 4.3% | 6.5% | 10.8% | 8.8% | 8.3% | 9.9% |
| Employee | 8.7 | 6.5 | 15.2 | 10.6 | 9.6 | 15.2 |
| Total | 12.9 | 13.0 | 25.9 | 19.4 | 17.8 | 25.1 |

*Sources*: Authors' calculations based on various actuarial valuation reports and U.S. Social Security Administration (2013).

Table 7. *Average Normal Cost for New Hires With and Without Mandatory Social Security Coverage, by Plan Type*

| | Police and firefighters | Teachers | General employees |
|---|---|---|---|
| No Social Security coverage | 14.9% | 13.1% | 11.7% |
| No Social Security offset | 27.9 | 26.1 | 24.6 |
| Match 1st-year benefit | 23.4 | 19.1 | 17.2 |
| Match lifetime benefit | 21.4 | 17.6 | 16.0 |
| Match Social Security covered plans | 27.9 | 24.2 | 24.5 |

*Sources*: Authors' calculations based on various actuarial valuation reports and U.S. Social Security Administration, *2013 Social Security Trustees Report*.

Table 8. *Cost of Mandatory Social Security Coverage as a Percent of Budget, by Time Period*

| | Near-term (5 years) | Mid-term (15 years) | Ultimate (30 years) |
|---|---|---|---|
| No Social Security offset | 0.24% | .73% | 1.47% |
| Match 1st-year benefit | 0.14 | .43 | 0.92 |
| Match lifetime benefit | 0.11 | .36 | 0.79 |
| Match Social Security covered plans | 0.21 | .62 | 1.25 |

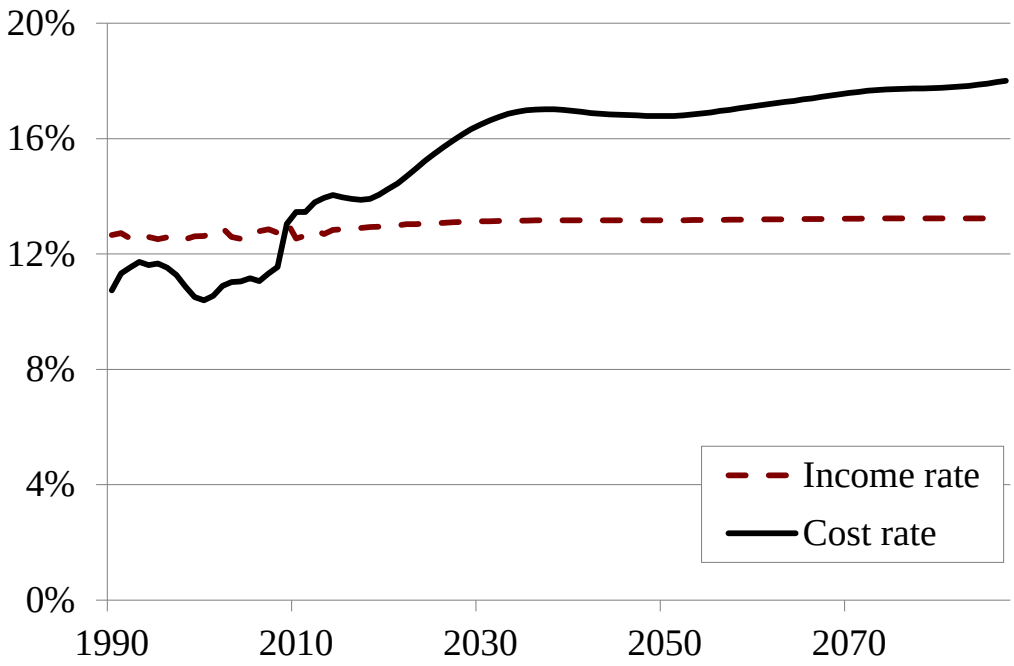
*Sources*: Authors' calculations based on various actuarial valuation reports; U.S. Social Security Administration, *2013 Social Security Trustees Report*; U.S. Census Bureau, *State and Local Public-Employee-Retirement Systems*; and U.S. Census Bureau, *State and Local Government Finances*.

Table 9. *Sensitivity of New Hire Normal Cost to Model Assumptions, by Offset Method*

| Model assumption | Alternative assumption | Change in costs due to alternative assumptions (percent of payroll) | | |
|---|---|---|---|---|
| | | Match 1st-year benefit | Match lifetime benefit | Match Social Security covered plans |
| Average earner ($50,000/year) | Low earner ($25,000/year) | -2.3 | -2.8 | n/a |
| Average earner ($50,000/year) | High earner ($75,000/year) | +1.4 | +1.7 | n/a |
| Normal retirement (age 62) | Delayed retirement (age 67) | -3.9 | -4.5 | n/a |
| Normal retirement (age 62) | Early retirement (age 55) | +3.4 | +3.3 | n/a |
| Average inflation (2.8%) | High inflation (4.0%) | 0 | -1.5 | n/a |

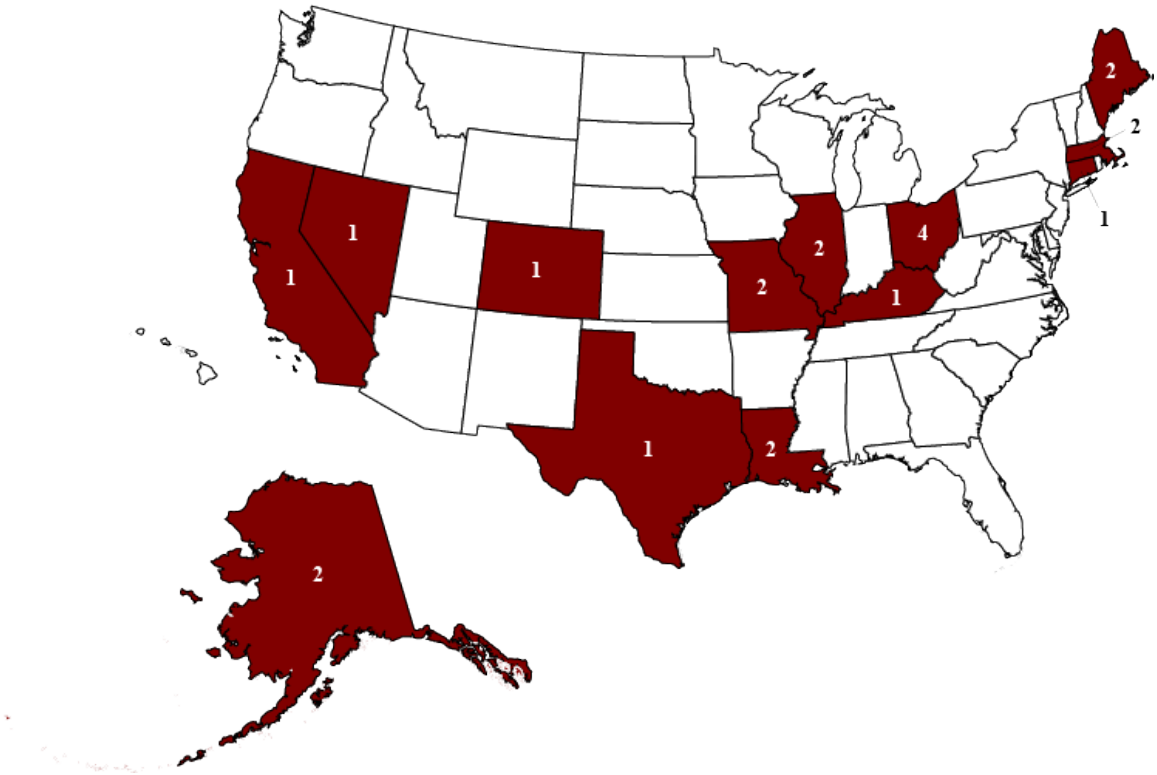
Note: This analysis was performed using typical salary growth, mortality, and benefit design for a large state-administered plan.
*Sources*: Authors' calculations based on various actuarial valuation reports and U.S. Social Security Administration, *2013 Social Security Trustees Report*.

Figure 1. *Projected Social Security Income and Cost Rates, as a Percent of Taxable Payroll, 1990-2087*



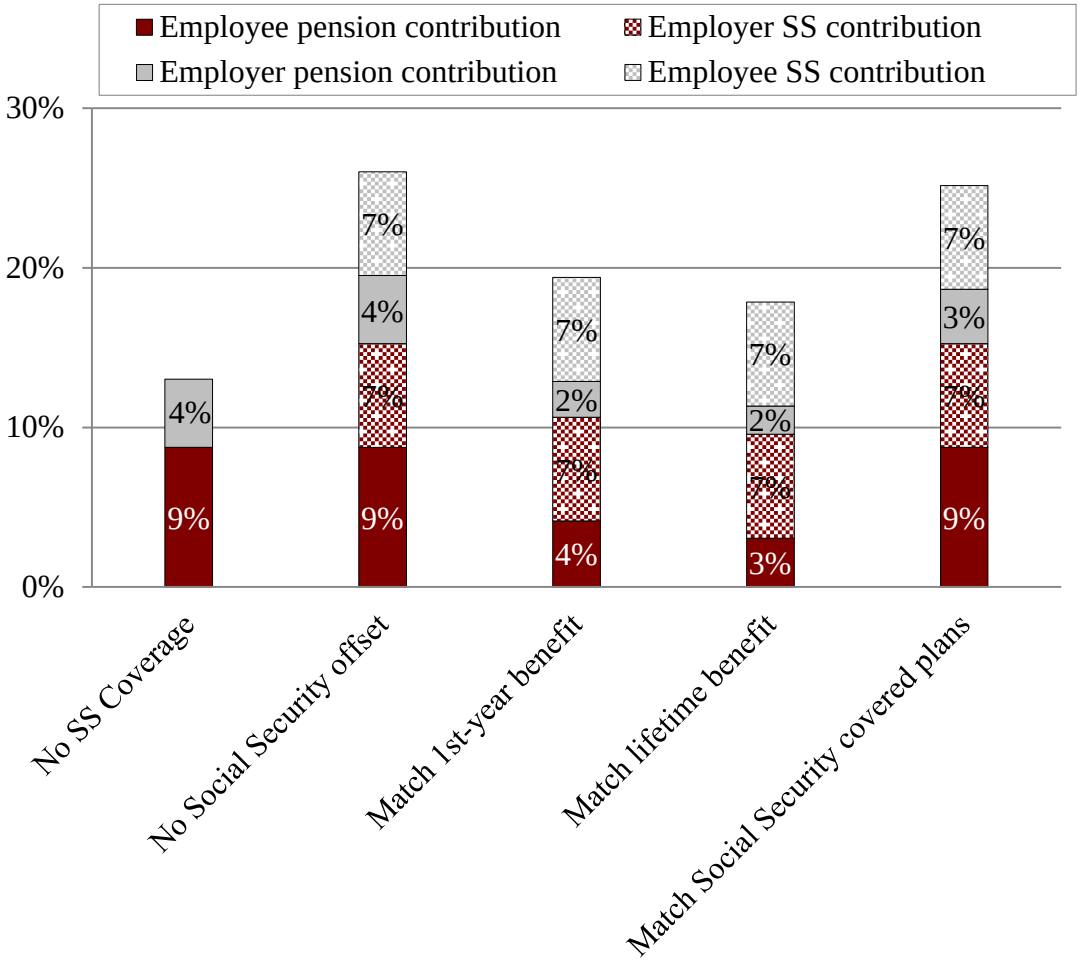

*Source*: U.S. Social Security Administration (2013).

Figure 2. *States with Plans Not Covered by Social Security*



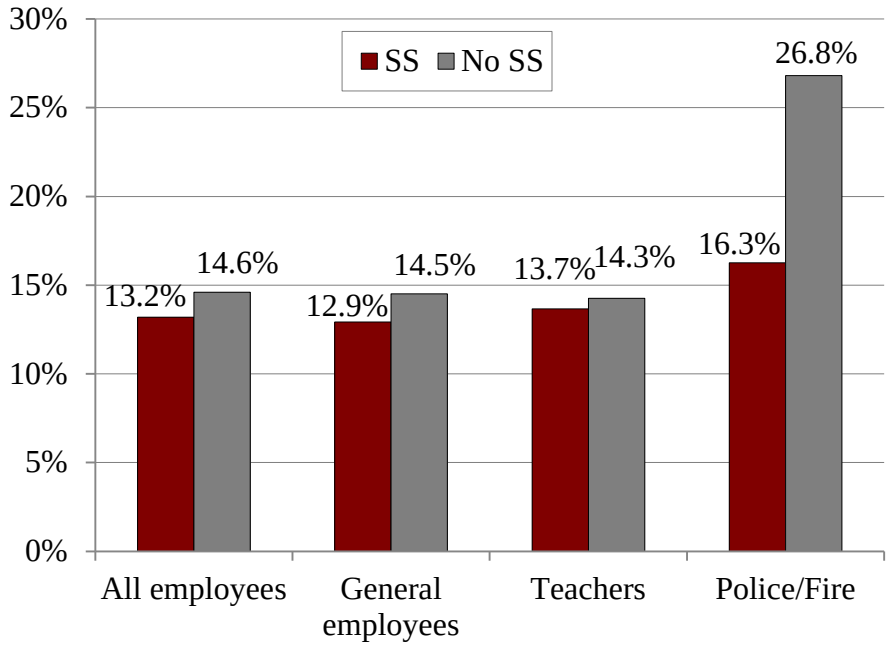

*Source: Public Plans Database* (2012).

Figure 3. *Average Normal Cost for New Hires With and Without Mandatory Social Security Coverage, as a Percent of Payroll*




*Sources*: Authors' calculations based on various actuarial valuation reports and U.S. Social Security Administration (2013).

Figure 4. *Total Normal Cost as a Percentage of Payroll, by Plan Type and Social Security Coverage*




Source: *Public Plans Database (2013).*

Appendix Table 1. *Cost-of-Living Protection in Major State Plans with Employees Not Covered by Social Security*

| Plan Name | COLA Protection |
|---|---|
| Alaska PERS | Automatic, lesser of 75% of CPI or 9%, simple, for those age 65 and above; lesser of 50% of CPI or 6% for those age 60 or with 8 or more years of service (annuitant must reside in-state to receive the COLA) |
| Alaska teachers | Automatic, lesser of 75% of CPI or 9%, simple, for those age 65 and above; lesser of 50% of CPI or 6% for those age 60 or with 8 or more years of service (annuitant must reside in-state to receive the COLA) |
| California teachers | Automatic 2% simple, plus adjustments designed to maintain retirees' purchasing power made through a "supplemental benefits maintenance account" financed with an employer contribution of about 2.5% of worker pay. |
| Colorado PERA | Varies by date of hire, automatic 2% unless negative investment return in previous year, then lesser of average monthly CPI-W or 2%, compounded |
| Connecticut teachers | For members who retired before 9/92 , automatic, based on CPI, with 3% minimum and 5% max, compounded; for those after 9/92, no COLA is provided |
| Illinois teachers | Automatic 3%, compounded, for those hired before 1/1/11; for those hired after 12/31/10, lesser of 3% or half of CPI, simple |
| Illinois universities | Automatic 3%, compounded , for those hired before 1/1/11; for those hired after 12/31/10, lesser of 3% or half of CPI, simple |
| Kentucky teachers | Automatic 1.5% compounded |
| Louisiana SERS | Contingent up on funded status of system and/or actuarial return; must be approved by the Legislature; lesser of 2% or CPI-U, plus up to 1% additional depending on actuarial return |
| Louisiana teachers | Subject to approval by the legislature and contingent upon funding available in COLA account consisting of excess investment returns; COLA lesser of 3% or CPI-U if investment returns meet or exceed actuarial assumption; if investment returns are less than actuarial assumption, COLA lesser of 2% or CPI-U, if system at least 80% funded; COLA applies only to first $70,000 of benefit, indexed to CPI; participants may elect retirement option providing an actuarially reduced benefit with auto annual 2.5% COLA beginning at age 55 |
| Maine local | Based on individual employer election. If provided, based on CPI up to 4% |
| Maine state and teacher | COLA is suspended through 7/1/14, after which it h 7/1/14, after which it will be based on the CPI up to 3% applicable to the first $20,000 of benefit, indexed for inflation |
| Massachusetts SERS | Ad hoc, typically based on CPI up to 3% applied to first $13,000 of benefit, subject to legislative approval and enactment |
| Massachusetts teachers | Ad hoc, typically based on CPI up to 3% applied to first $13,000 of benefit, subject to legislative approval and enactment |
| Missouri PEERS | Automatic, compounded at 2% if CPI-U is between 0% and 5%; 5% if CPI-U is 5% or higher, and no COLA is given if CPI-U is less than 0%; subject to a lifetime cap of 80% |

| | |
|---|---|
| Missouri teachers | Automatic, compounded at 2% if CPI-U is between 0% and 5%; 5% if CPI-U is 5% or higher, and no COLA is given if CPI-U is less than 0%; subject to a lifetime cap of 80% |
| Nevada PERS | After 3 years of receiving benefits, auto 2% annually, rising gradually to 5% annually, compounded, after 14 years of receiving benefits; the compounded COLA is capped by the lifetime CPI for the period of retirement, i.e., it may not exceed inflation |
| Ohio police & fire | CPI with 3 percent cap |
| Ohio school employees | Automatic 3%, simple |
| Ohio teachers | Automatic 2%, simple |
| Texas teachers | No COLA |

Sources: *Various Actuarial Reports and National Association of State Retirement Administrators 2012.*

Appendix Table 2. *New Hire Normal Cost as a Percent of Payroll With and Without Social Security Coverage, by Plan and Offset Type*

| Plan | EE Group | No Social Security coverage | No Social Security offset | Match 1st-year benefit | Match lifetime benefit | Match Social Security covered plans |
|---|---|---|---|---|---|---|
| Average | | 13.0% | 26.0% | 19.4% | 17.8% | 25.1% |
| Alaska PERS | | 13.0 | 26.0 | 15.7 | 13.4 | 13.0 |
| Alaska PERS | Police/fire | 13.0 | 26.0 | 20.8 | 16.0 | 13.0 |
| Alaska PERS | General | 13.0 | 26.0 | 15.0 | 13.0 | 13.0 |
| Alaska teachers | All | 15.0 | 28.0 | 21.2 | 20.0 | 15.0 |
| California CalSTRS | All | 18.3 | 31.3 | 22.8 | 21.3 | 18.3 |
| Colorado PERA | | 10.4 | 23.4 | 17.2 | 15.5 | 10.4 |
| Colorado PERA | Local | 9.7 | 22.7 | 17.4 | 15.5 | 9.7 |
| Colorado PERA | State | 9.6 | 22.6 | 17.0 | 15.2 | 9.6 |
| Colorado PERA | Schools | 11.1 | 24.1 | 17.3 | 15.7 | 11.1 |
| Colorado PERA | State troopers | 10.0 | 23.0 | 20.7 | 18.0 | 10.0 |
| Connecticut CT TRS | All | 9.7 | 22.7 | 16.6 | 14.8 | 9.7 |
| Illinois universities | All | 12.3 | 25.3 | 14.6 | 13.0 | 12.3 |
| Illinois TRS | All | 9.7 | 22.7 | 17.6 | 15.8 | 9.7 |
| Kentucky TRS | All | 15.2 | 28.2 | 17.5 | 14.6 | 15.2 |
| Louisiana SERS | All | 14.7 | 27.7 | 22.2 | 21.2 | 14.7 |
| Lousiana TRS | | 13.7 | 26.7 | 20.6 | 19.4 | 13.7 |
| Louisiana TRS | Regular EEs | 13.7 | 26.7 | 20.7 | 19.4 | 13.7 |
| Louisiana TRS | Universities | 13.7 | 26.7 | 20.2 | 19.0 | 13.7 |
| Maine SERS | | 10.8 | 23.7 | 15.7 | 14.0 | 10.8 |
| Maine SERS | Regular + special | 11.0 | 23.8 | 15.6 | 14.7 | 11.0 |
| Maine SERS | Teachers | 10.6 | 23.6 | 15.7 | 13.6 | 10.6 |
| Maine Local | | 11.0 | 24.0 | 16.4 | 15.6 | 11.0 |
| Maine Local | Regular | 11.0 | 24.0 | 15.7 | 14.9 | 11.0 |
| Maine Local | Special | 10.9 | 23.9 | 18.9 | 18.1 | 10.9 |
| Massachusetts SERS | | 9.9 | 22.9 | 16.7 | 15.9 | 9.9 |
| Massachusetts SERS | Regular | 9.9 | 22.9 | 16.2 | 15.3 | 9.9 |
| Massachusetts SERS | Hazardous duty | 9.9 | 22.9 | 17.7 | 17.3 | 9.9 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Massachusetts SERS | State police | 12.0 | 25.0 | 20.3 | 19.9 | 12.0 |
| Massachusetts SERS | Corrections officers | 9.9 | 22.9 | 18.8 | 18.1 | 9.9 |
| Massachusetts TRS | All | 9.8 | 22.8 | 17.8 | 17.2 | 9.8 |
| Missouri PEERS | All | 10.8 | 23.8 | 13.6 | 13.0 | 10.8 |
| Missouri PSRS | All | 19.0 | 32.0 | 25.2 | 23.6 | 19.0 |
| Nevada PERS | | 18.7 | 31.7 | 24.3 | 23.1 | 18.7 |

*Sources*: Authors' calculations based on various actuarial valuation reports and U.S. Social Security Administration, *2013 Social Security Trustees Report*.

Appendix Table 3. *Ultimate Cost of Mandatory Social Security Coverage as a Percent of Budget, by State and Offset Type*

| State | No Social Security coverage | Match 1st-year benefit | Match lifetime benefit | Match Social Security covered plans |
|---|---|---|---|---|
| Alaska | 1.25 % | 0.53% | 0.37 % | 0.94% |
| California | 0.60 | 0.16 | 0.08 | 0.31 |
| Colorado | 1.33 | 1.03 | 0.95 | 1.39 |
| Connecticut | 0.83 | 0.53 | 0.44 | 0.90 |
| Illinois | 1.03 | 0.87 | 0.85 | 1.02 |
| Kentucky | 0.99 | 0.34 | 0.17 | 0.65 |
| Louisiana | 1.40 | 0.91 | 0.81 | 1.15 |
| Maine | 2.36 | 1.54 | 1.34 | 2.54 |
| Massachusetts | 1.38 | 1.31 | 1.30 | 1.38 |
| Missouri | 0.90 | 0.68 | 0.62 | 0.61 |
| Nevada | 2.09 | 0.03 | (0.32) | 0.41 |
| Ohio | 3.27 | 2.83 | 2.75 | 3.19 |
| Texas | 1.64 | 1.16 | 0.93 | 1.77 |

*Sources*: Authors' calculations based on various actuarial valuation reports; U.S. Social Security Administration, *2013 Social Security Trustees Report*; U.S. Census Bureau, *State and Local Public-Employee-Retirement Systems*; and U.S. Census Bureau, *State and Local Government Finances*.

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