

Slow tax revenue growth, rising pension contributions, and Medicaid growth lead state and local governments to reshape their finances

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Abstract

This paper analyzes and describes major changes in state and local government finances since the Great Recession. Governments have been struggling with three major sources of fiscal stress: slow tax revenue growth; growth in pension contributions heavily concentrated in a few states; and Medicaid spending growth driven by recession-related enrollment. Conditions vary greatly across states but the combined effect has been substantial: between 2008 and 2015 real per capita state and local government pension contributions plus state-funded Medicaid grew by more than state and local government tax revenue in 31 states. In response, state and local governments have cut infrastructure investment, slashed support for higher education, cut social benefits other than Medicaid, cut spending on K-12 education, reduced administrative staff, and reduced most other areas of the budget. The paper concludes that many states will continue to struggle with these three pressures, at least in the near term.

Introduction

State and local governments have been remaking their finances since the Great Recession, doing less of many traditional activities so that they can do more of what they must do. They have been struggling with three major sources of fiscal stress: slow tax revenue growth; growth in pension contributions that has been heavily concentrated in a few states; and Medicaid spending growth driven by recession-related enrollment. Some states have been unscathed by one or more of these forces, but in combination their effect has been substantial for most states. In 31 states pension contributions plus state-funded Medicaid grew by more than state and local government tax revenue between 2008 and 2015, in real per-capita terms. In response to these strains, state and local governments have cut infrastructure investment, slashed support for higher education, cut social benefits other than Medicaid, cut spending on K-12 education, reduced administrative staff, and reduced most other areas of the budget.

The near-term outlook is dour. Tax revenue is likely to grow slowly, pension contributions almost certainly will increase substantially and forecasters anticipate that the state share of Medicaid will continue to grow faster than the economy. This suggests that many states will struggle to fund desired programs. As always, conditions vary greatly across states. Oil-patch states are suffering devastating revenue declines and several states face extreme pension problems, but some states are relatively unstressed.

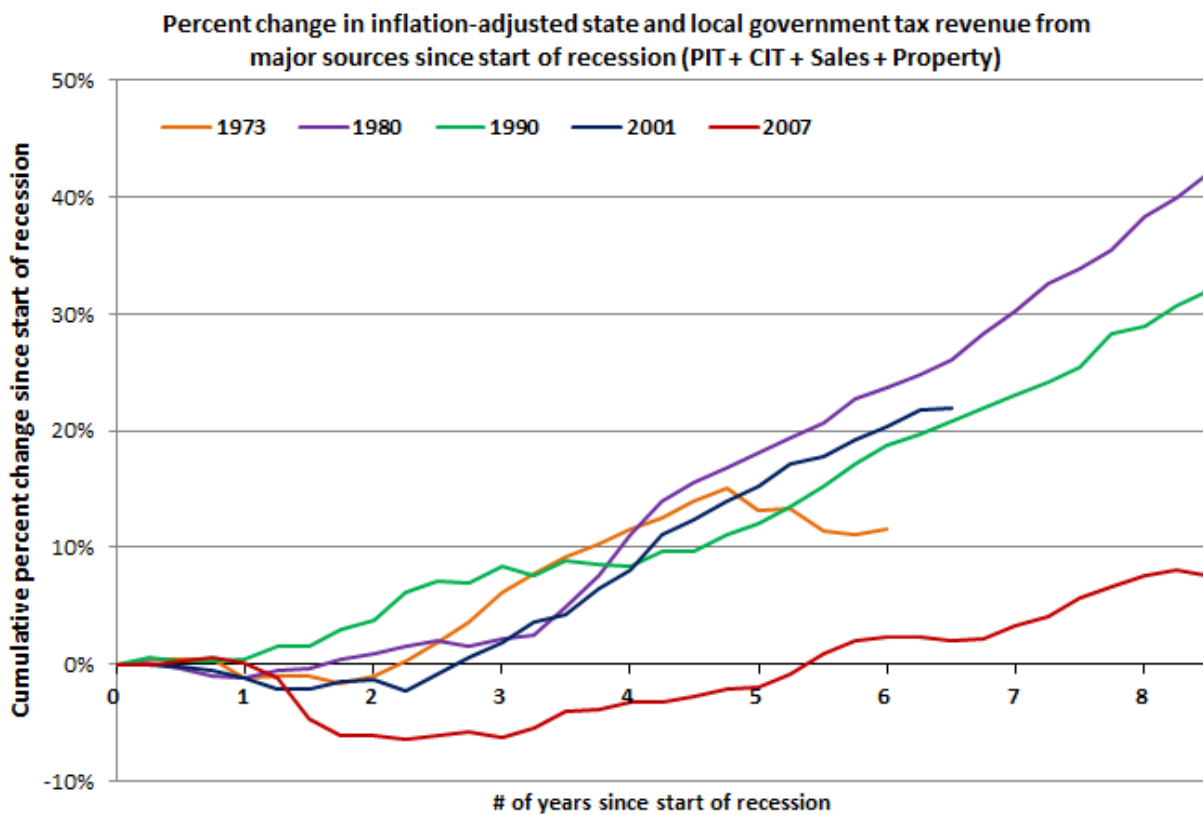
Three major sources of stress: taxes, pensions, and Medicaid

Slow tax revenue growth

State and local government tax revenue has grown far more slowly than it has following prior recessions. More than 8 years after the start of the recession, inflation-adjusted tax revenue is only 7.6 percent above the pre-recession level, compared to about 42 percent after the 1980 recession, 32 percent after the 1990 recession, and 22 percent after the 2001 recession.¹ (See Figure 1.)

The main reasons for weak tax revenue relative to past recessions are (1) the drop in revenue at the start of this recession was much larger than previous declines, (2) the economic recovery has been slow, and (3) states have had little appetite for tax increases. We have discussed these issues in depth elsewhere.²

Figure 1 The recovery in state and local government tax revenue has been slow



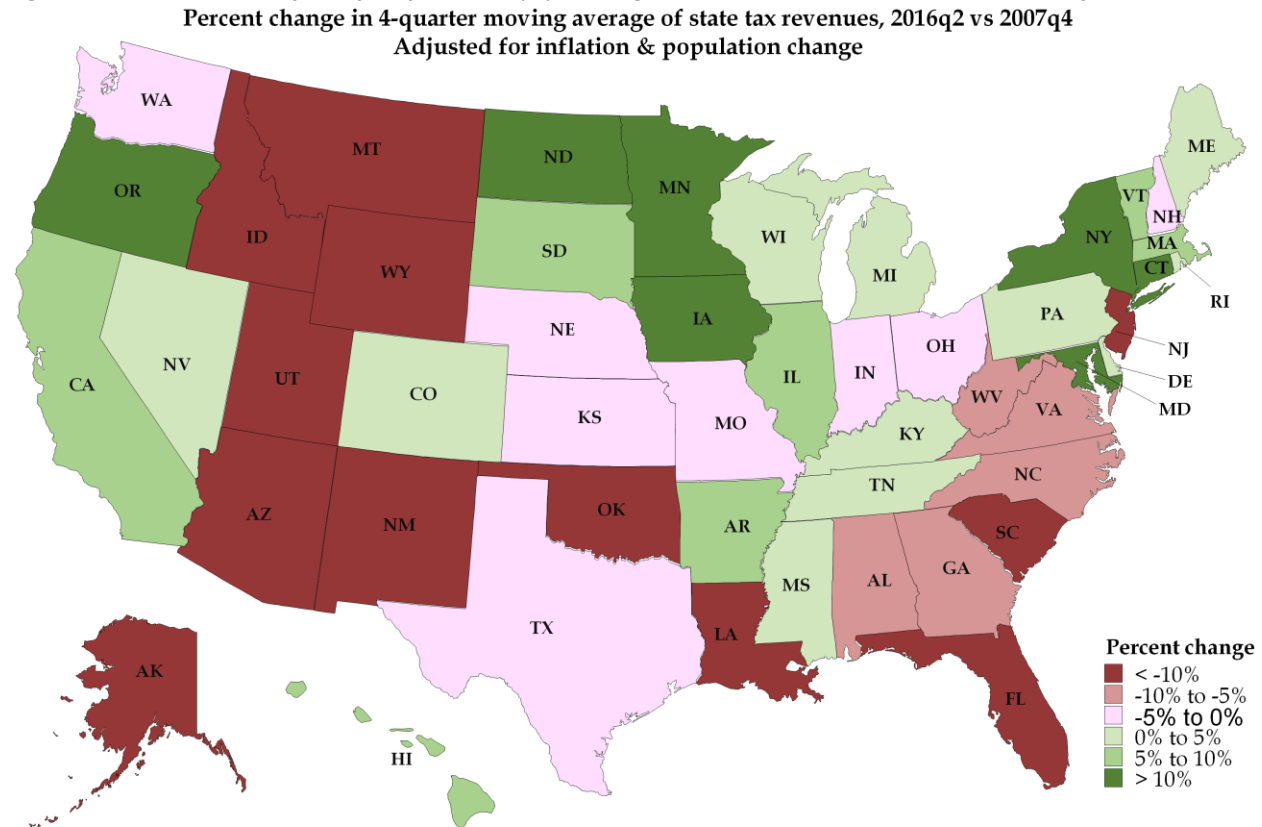
Source: Rockefeller Institute analysis of data from U.S. Census Bureau.

Notes: Data are shown only until the start of the next recession; 1980 & 1981 recessions are treated as single recession.

State government tax revenue has been hit harder than local government revenue because many states rely especially heavily on economically sensitive personal income and sales taxes. The extent of weakness varies greatly. In 25 states, inflation-adjusted per-capita state government tax revenue remains below its level at the start of the recession, particularly in the southeast and the southwest – many of these states suffered greatly from the real estate bust and also have been reluctant to raise taxes. Revenue is up more than 10 percent in seven states, and more than 5 percent in 14 states;

revenue growth has been strongest among states where the economic recovery has been strong and among states willing to increase taxes. (Figure 2)

Figure 2 State tax revenue adjusted for inflation and population growth is lower in 25 states than at the start of the recession



Sources: U.S. Census Bureau (tax revenue and population), Bureau of Economic Analysis (GDP price index).

Extraordinary growth in pension contributions in some states

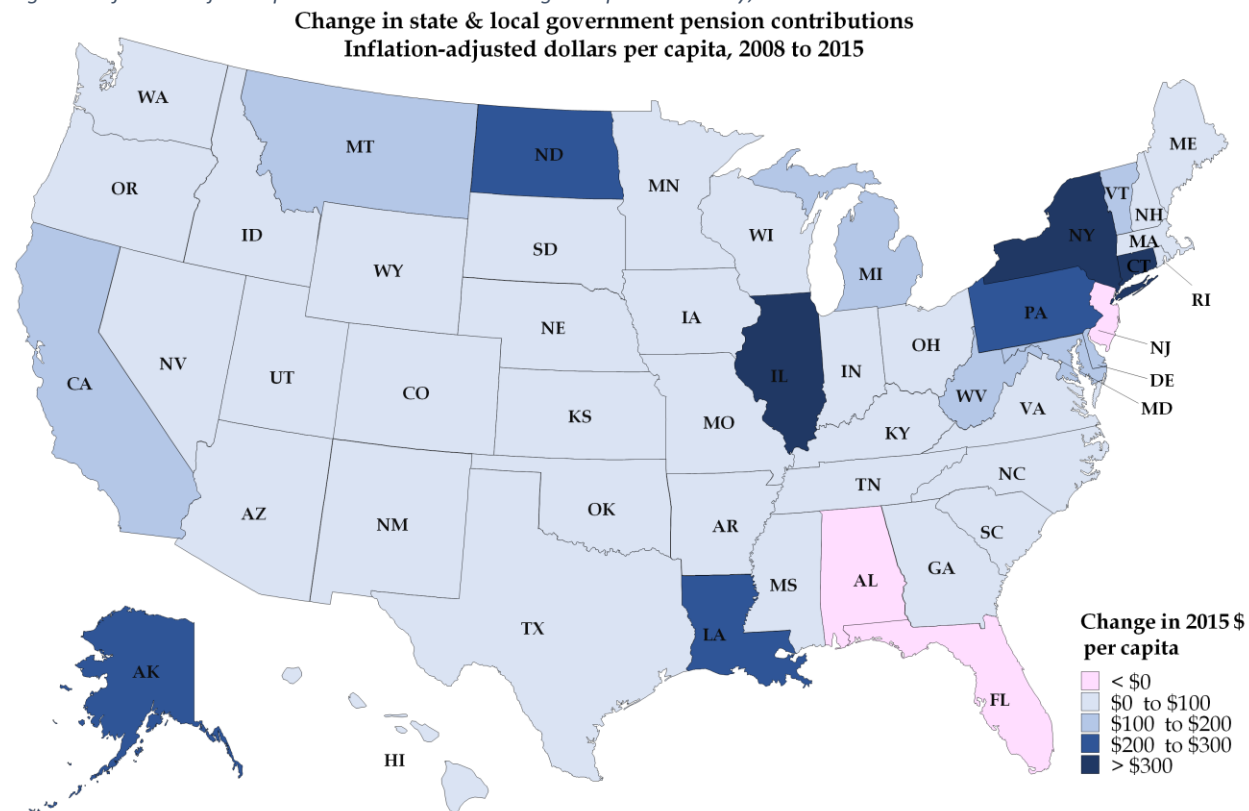
Pension contributions historically have been a relatively small share of state budgets and until recently had not been a major source of fiscal stress: in 2008, contributions were 6.1% of state and local government tax revenue. Pension contributions are essentially “must do” expenditures: most public pensions have strong legal protections and if pension funds become underfunded state and local governments must, eventually, make up the shortfalls. These catch-up contributions are particularly painful because they purchase no new services – they are needed to pay for services delivered years in the past.

Pension contributions for the United States as a whole have been driven up dramatically since the recession, primarily because of pension fund investment shortfalls. Between fiscal years 2008 and 2015 inflation-adjusted state and local government annual pension contributions increased by \$40 billion, or 45 percent. This amounted to 46 percent of the growth in state and local government inflation-adjusted tax revenue over this period.

Pension contribution increases have been very uneven. Real per-capita expenditures rose by more than \$300 in three states (Illinois, New York, and Connecticut), accounting for nearly half of the national

contribution increase. Contributions rose by \$200-300 in four states, by \$100-200 in seven states, and increased by less than \$100 in 36 states (including declines in 3 states). (Figure 3) Thus, the extent to which pension contributions have caused fiscal stress varies greatly.

Figure 3 Inflation-adjusted pension contributions have gone up substantially, with wide variation across states



Source: U.S. Census Bureau, Annual Survey of Public Pensions.

Note: Data adjusted for Alaska (2015) and Connecticut (2008) due to extraordinary contributions funded from bond proceeds.

Higher Medicaid spending, driven by recession-related enrollment growth

State-financed Medicaid expenditures have risen by \$37 billion between 2008 and 2015, or 23 percent, after adjusting for inflation. Most of this increase was driven by recession-related rises in enrollment that have not been reversed. Between 2008 and 2011 enrollment rose by 18.5 percent, compared to an increase of only 2.9 percent over the prior 3-year period. While states can choose how generous their Medicaid programs will be, both in terms of populations and services covered, within those parameters Medicaid is essentially an entitlement, and the costs of enrollment increases must be funded unless policies are changed.

States were protected initially from the costs of recession-related enrollment increases by the federal stimulus program, the American Recovery and Reinvestment Act (ARRA). However, ARRA provided only temporary support to states, and as that support was removed, states had to replace lost federal funds: although enrollment rose by only 4.3 percent between 2011 and 2013, state inflation-adjusted expenditures rose by 20.3 percent while federal expenditures declined by 7.6 percent. (See Table 1.)

After 2013, enrollment began to rise in large part because of newly eligible enrollees in states opting into Medicaid expansion under the Affordable Care Act (ACA). Enrollment rose by an estimated 19 percent between 2013 and 2015.³ These enrollment increases had little impact on state finances because the federal government picked up new costs in expansion states. Thus, between 2013 and 2015, inflation-adjusted state-financed Medicaid spending increased by only 3.7 percent even though federal spending increased by 29.5 percent. In fact, inflation-adjusted state-financed Medicaid spending was up only 1.3 percent in expansion states, and was up 10.3 percent in non-expansion states.

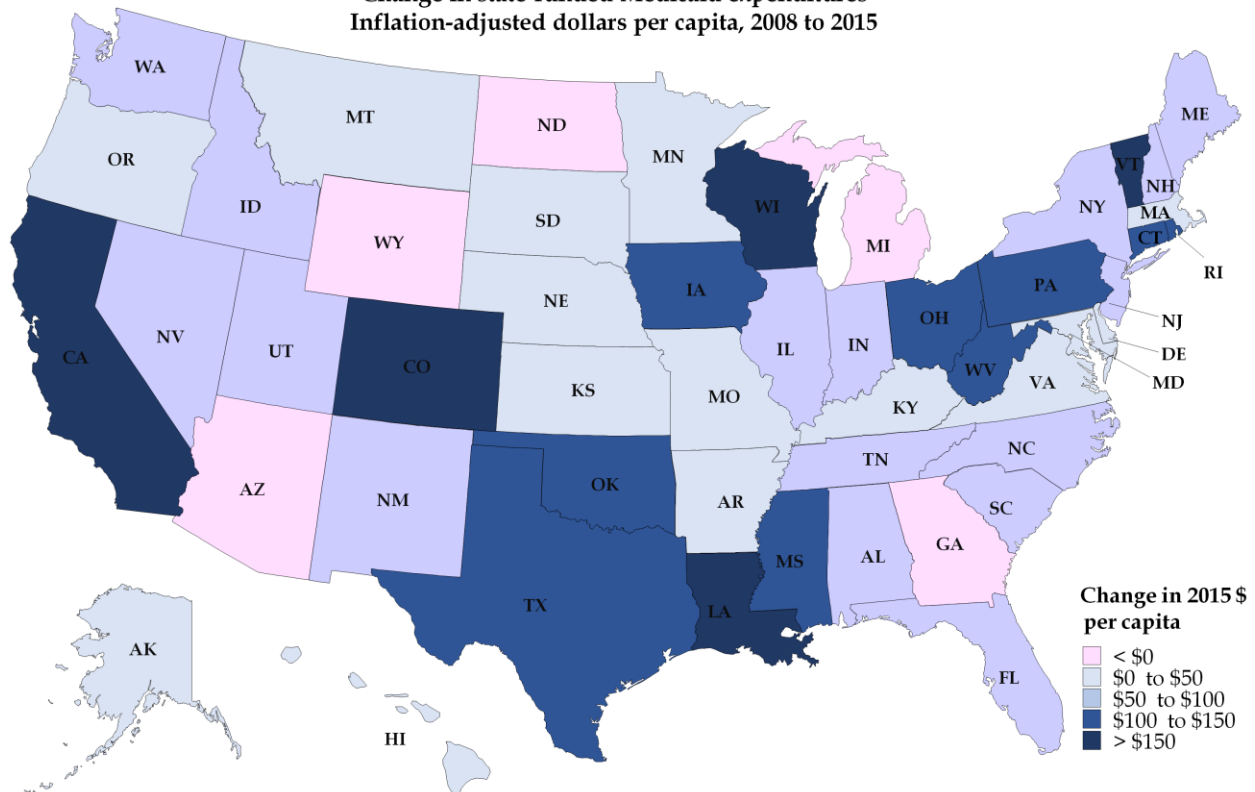
Table 1 Inflation-adjusted state Medicaid spending is up \$37 billion since 2008, driven by recession-related enrollment

| Medicaid Expenditures and Enrollment Before, During and After the Great Recession | | | | | |
|---|-----------------------|-----------------------------------|---------|---------|--|
| Federal fiscal years | Enrollment (millions) | Expenditures (billions of 2015\$) | | | Notes |
| | | Total | Federal | State | |
| 2005 | 46.3 | \$357.6 | \$204.7 | \$152.9 | |
| 2008 | 47.7 | 368.5 | 210.3 | 158.3 | |
| 2011 | 56.5 | 431.8 | 275.2 | 156.6 | |
| 2013 | 58.9 | 442.6 | 254.3 | 188.3 | |
| 2015 | 70.1 | 524.5 | 329.3 | 195.2 | |
| % change | | | | | |
| 2005 to 2008 | 2.9% | 3.1% | 2.7% | 3.5% | Slow growth in enrollment and spending. |
| 2008 to 2011 | 18.5 | 17.2 | 30.9 | (1.1) | Recession-related enrollment growth, cost absorbed by federal ARRA. |
| 2011 to 2013 | 4.3 | 2.5 | (7.6) | 20.3 | Slow enrollment growth but state spending rises as ARRA wanes. |
| 2013 to 2015 | 19.0 | 18.5 | 29.5 | 3.7 | ACA-related enrollment kicks in, driving federal expenditures up. |
| Post recession: 2008 to 2015 | 47.1 | 42.3 | 56.6 | 23.4 | State post-recession 23.4% increase driven by 2008-2011 enrollment rises. |
| \$ change | | | | | |
| 2005 to 2008 | 1.3 | \$10.9 | \$5.6 | \$5.4 | |
| 2008 to 2011 | 8.8 | 63.2 | 64.9 | (1.7) | |
| 2011 to 2013 | 2.4 | 10.8 | (20.9) | 31.7 | |
| 2013 to 2015 | 11.2 | 81.9 | 75.0 | 6.9 | |
| Post recession: 2008 to 2015 | 22.4 | 156.0 | 119.0 | 37.0 | State post-recession \$37 billion increase driven by 2008-2011 enrollment rises. |

Sources: CMS (expenditures), MACPAC (enrollment), Bureau of Economic Analysis (GDP price index).
Note: Enrollment is average monthly enrollment for the federal fiscal year. Enrollment for 2015 estimated by authors.

Figure 4 maps the change in Medicaid spending per capita, adjusted for inflation, between 2008, before recession-related enrollment increases were substantial, and 2015.⁴ Spending increased in 45 states, and was up by \$68 per capita in the median state, but the range was great. Two of the nation's most populous states had large increases: The California increase of \$233 per capita requires taxpayers to pay \$9 billion more than in 2008, given the state's population of approximately 39 million.⁵ The Texas increase of \$141 per capita amounts to almost \$3.9 billion more annually given the state's population of 27.5 million. By contrast, Medicaid increased by less than \$50 per capita in 21 states (including declines in 5 states), presumably causing relatively little fiscal stress in those states.

Figure 4 Inflation-adjusted state-funded Medicaid spending per-capita was up in 45 states
Change in state-funded Medicaid expenditures
Inflation-adjusted dollars per capita, 2008 to 2015



Sources: CMS (Medicaid), U.S. Census Bureau (population), and Bureau of Economic Analysis (GDP price index).

Net effect: Tax revenue growth has not kept up with pension contribution and Medicaid increases

These three sources of stress have cramped the ability of state and local governments to finance other services. State and local government inflation-adjusted spending on pension contributions and state-funded Medicaid increased by a combined \$77 billion between 2008 and 2015, while state and local government tax revenue increased by \$87 billion.⁶ (Table 2.) These difficult-to-avoid spending increases were quite significant, leading state and local governments to cut elsewhere in their budgets, as discussed in *How governments have responded - the reshaping of state and local government finance*.

Table 2 Pension contributions and Medicaid combined grew by nearly as much as state & local government taxes between 2008 and 2015

| Pension Contributions, Medicaid and Taxes: Before and After the Great Recession (Billions of 2015\$) | | | | | |
|---|-------------|-------------|------------------|-----------------|--|
| | 2008 | 2015 | \$ change | % change | \$ change as % of change in taxes |
| Pension contributions—state and local | \$88.8 | \$129.1 | \$40.3 | 45.4% | 46.2% |
| Medicaid state share (mostly paid by states) | 158.6 | 195.2 | 36.6 | 23.1% | 42.0% |
| Pensions plus Medicaid | 247.4 | 324.4 | 77.0 | 31.1% | 88.2% |
| Taxes—state and local | \$1,468.1 | \$1,555.3 | \$87.3 | 5.9% | |

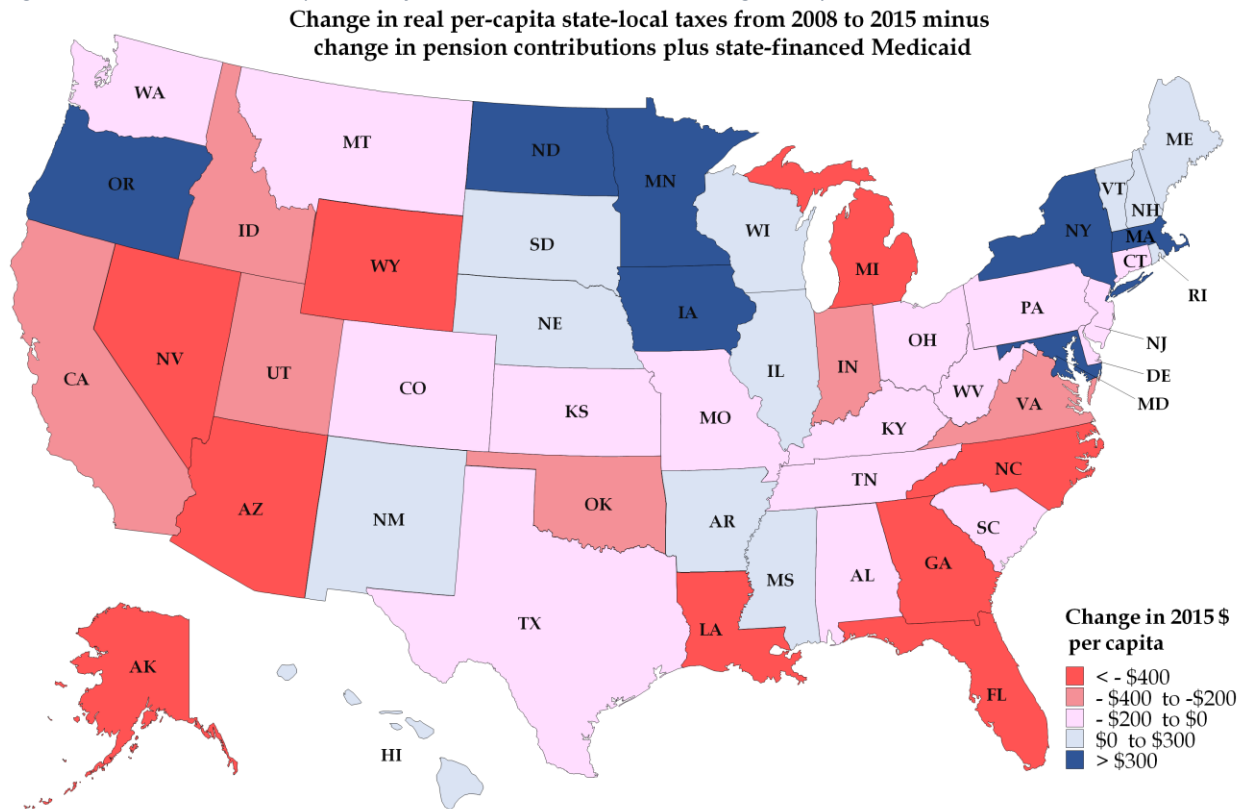
Sources:
Pension contributions: data are for pension fund fiscal year; source is Census Bureau, Annual Survey of Public Pensions.
Medicaid state-share: data are for federal fiscal year; source is Centers for Medicare and Medicaid Services.
State and local taxes: data are for state fiscal year; source is U.S. Census Bureau.
Note: All items are adjusted to 2015 dollars using the GDP index from BEA.

Figure 5 shows the net impact by state; because state tax revenue data were available for 2015 but local revenue data were not, we estimated local government tax revenue to obtain state and local tax revenue for each state.⁷⁸ Different states have been affected in different ways: for example, 14 states had inflation-adjusted per-capita pension contribution increases of more than \$100, 14 states had state-funded Medicaid increases of more than \$100, and 21 states had declines in state and local tax revenue. In combination, the effect has been widespread and substantial. In 31 states pension contributions plus state-funded Medicaid have grown by more than state and local government tax revenue. (Figure 5.)

States face different stresses – for example:

- Louisiana faced difficulty in all three areas: pension contributions and state-funded Medicaid both increased by more than twice the United States average, while tax revenue declined by more than \$400 per capita. Alaska, too, faced difficulty in all three areas.
- By contrast, in Florida pension contributions did not increase and Medicaid spending increases were far below the U.S. average; however, tax revenue is below pre-recession levels (as Figure 2 showed for state government taxes); as a result, pension contributions plus Medicaid spending increased by more than taxes. Although Florida governments in aggregate have less inflation-adjusted revenue per capita than before the recession, this may be exactly what political leaders want. It does not necessarily mean that the state is stressed, but it does mean that cuts in spending have been needed to keep spending within available resources.
- In Illinois, tax revenue growth outstripped growth in pension contributions plus Medicaid simply because the state enacted very large tax increases.
- Tax revenue grew by more than pensions plus Medicaid in New York even though New York had the second-highest pension contribution increase in the nation (after Illinois), because Medicaid growth was slow and tax revenue was strong.
- Some states have not experienced stress by these measures, particularly the oil patch states, because the tax data do not reflect their tax revenue declines; unfortunately, their situation is worsening.

Figure 5 Pension contributions plus state-funded Medicaid, combined, have grown by more than taxes in 31 states



Sources: CMS (Medicaid), U.S. Census Bureau (pension contributions and population), and Bureau of Economic Analysis (GDP price index).

How governments have responded - the reshaping of state and local government finance

State and local governments have responded to sharply constrained resources not by raising taxes (with some exceptions), but by slashing capital spending and cutting many other areas sharply. The Bureau of Economic Analysis develops estimates of annual state and local government expenditures. These expenditures include amounts spent from state and local governments' own funds as well as amounts spent from federal funds or financed by bonds. We have arranged these expenditures into four broad categories:

- Consumption expenditures, which include spending on critical current activities such as education, public safety, public health, income security, and parks and recreation;⁹
- Social benefit spending, which includes Medicaid spending (including spending from federal funds) and other social program spending;
- Net investment spending, which includes gross investment (actual outlays) on capital projects such as highway and water infrastructure, school buildings, and power projects, reduced by an estimate of the amount of capital that was consumed or used up by wear and tear, economic obsolescence, and other factors. (Consumption of capital is a non-cash expenditure.) In concept, net investment spending is the amount actually added to state and local government capital stock above and beyond what is needed to make up for wear and tear and obsolescence.

- All other expenditures, amounting to less than 10 percent of the total. This includes interest payments among other things.

In the tables that follow, we examine how inflation-adjusted state and local government spending changed between 2009 and 2015. We begin with 2009 because that was the peak recession-related year – it takes time for elected officials to change policies in response to a shock such as the Great Recession, and policy responses play out over several years. We end with 2015 because that is the latest year available. We convert all numbers to 2015 dollars using the gross domestic product price index so that they are on the same basis as most other data in this chapter.¹⁰

Table 3 shows that total state and local government expenditures, as measured by the Bureau of Economic Analysis, increased by 0.3 percent between 2009 and 2015: Medicaid expenditures were up 32.9 percent, and capital used up or “consumed” (a non-cash expenditure) also increased, but all other major categories decreased. Gross investment – that is, the amount actually spent on capital – was down 11.8 percent. And because gross investment in 2015 was only slightly more than the capital that was used up, state and local governments added 40.6 percent less to their capital stock in 2015 than they did in 2009.

We examine several of these areas in more detail below.

Table 3 State and local government inflation-adjusted expenditures increased by 0.3% between 2009 and 2015

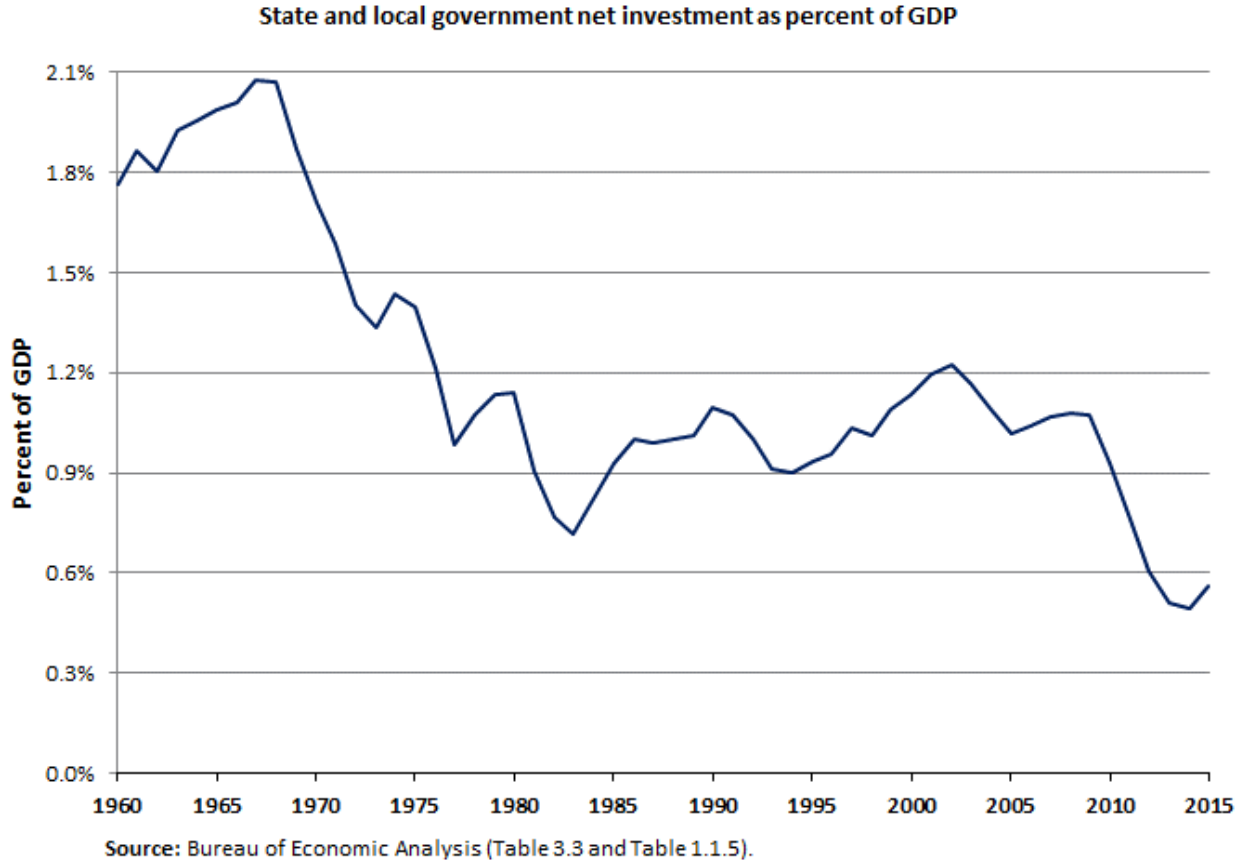
| State and Local Government Inflation-Adjusted Total Expenditures (Billions of 2015\$) | | | | |
|--|------------------|------------------|------------------|-----------------|
| | 2009 | 2015 | \$ change | % change |
| Total expenditures | \$2,594.1 | \$2,603.1 | \$9.0 | 0.3% |
| Consumption expenditures | 1,659.2 | 1,641.2 | (18.0) | -1.1% |
| Medicaid (including federal share) | 406.1 | 539.6 | 133.5 | 32.9% |
| Other social benefit spending | 135.7 | 126.4 | (9.3) | -6.9% |
| Net investment | 170.3 | 101.2 | (69.1) | -40.6% |
| <i>Gross investment in infrastructure, buildings, other capital</i> | <i>399.3</i> | <i>352.2</i> | <i>(47.1)</i> | <i>-11.8%</i> |
| <i>Less: Consumption of fixed capital</i> | <i>229.0</i> | <i>251.0</i> | <i>22.0</i> | <i>9.6%</i> |
| All other expenditures | 222.7 | 194.7 | (28.0) | -12.6% |

Sources: Bureau of Economic Analysis, Tables 3.3 and 3.12 for expenditure data and Table 1.1.4 for GDP price index.
Note: All items adjusted by GDP price index, not expenditure-specific indexes.

Cuts in infrastructure spending

State and local government net investment fell as a share of the gross domestic product from the late 1960s through the early 1980s after the buildout of the national highway system, then was relatively stable for about 20 years before falling after the 2001 recession and plunging after the Great Recession. It is now at its lowest point in more than 50 years. (Figure 6)

Figure 6 State and local government net investment spending is lower, as a percentage of gross domestic product, than at any point in more than 50 years



The available data do not allow us to examine changes in *net* investment by category, but they do allow us to examine *gross* investment. Table 4 shows that every major category of investment with the exception of transportation was down between 2009 and 2015. The largest dollar decline was in education, reflecting reductions in construction of education buildings. Spending on water and sewer systems, public safety, and most other categories was down by double-digit percentages. The most notable exception was transportation investment spending, which was up by 6.5 percent.

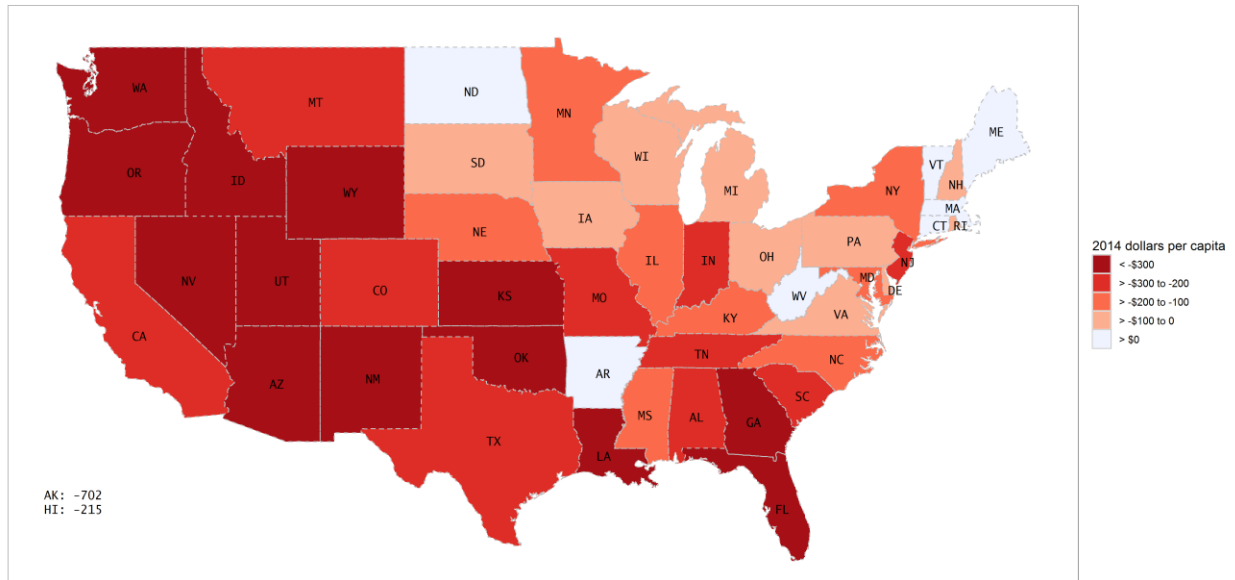
Table 4 Most categories of gross investment are down by double-digit percentages since 2009

| State and Local Government Inflation-Adjusted Gross Investment (Billions of 2015\$) | | | | |
|---|----------------|----------------|------------------|-----------------|
| | 2009 | 2015 | \$ change | % change |
| Gross investment | \$399.3 | \$352.2 | (\$47.1) | -11.8% |
| Education | 91.1 | 66.5 | (24.6) | -27.0% |
| Water & sewer systems | 41.7 | 34.9 | (6.8) | -16.3% |
| Office | 23.4 | 19.2 | (4.2) | -18.1% |
| Transportation total | 112.0 | 119.3 | 7.3 | 6.5% |
| <i>Highways and streets</i> | 88.4 | 92.8 | 4.4 | 4.9% |
| <i>Other transportation</i> | 23.5 | 26.5 | 3.0 | 12.6% |
| Public safety | 5.2 | 3.7 | (1.5) | -28.4% |
| Health care | 6.7 | 5.1 | (1.6) | -24.0% |
| Amusement and recreation | 8.5 | 5.3 | (3.2) | -37.4% |
| Power | 12.3 | 8.3 | (4.0) | -32.6% |
| Equipment, intellectual property | 80.5 | 75.2 | (5.3) | -6.6% |
| All other | 17.9 | 14.7 | (3.2) | -18.0% |
| Sources: Bureau of Economic Analysis, Table 5.9.5B for gross investment and Table 1.1.4 for GDP price index. | | | | |
| Note: All items adjusted by GDP price index, not expenditure-specific indexes. | | | | |

The Census Bureau collects capital expenditure data for each state; the most recent year for these data is 2013, making it possible to determine which states have cut total capital expenditures the most. As Figure 7 shows, capital expenditure cuts have been widespread, and real per-capita spending is down in 43 states. Spending was down by more than \$100 per capita in 33 states. It is not possible to know from these data the extent to which individual states have cut spending on traditional infrastructure, such as highways, transit, and water and sewer system, versus spending on school buildings, office buildings, and other purposes that are not traditional inventory assets.

Figure 7 Capital expenditures are down in 43 states

**Change in inflation-adjusted state and local government capital expenditures per capita
2009 to 2013**



Source: Rockefeller Institute analysis of data from Census Bureau (expenditures) and Bureau of Economic Analysis (GDP price index)

Cuts in consumption and social benefit spending

States have cut consumption spending, although not by as much as capital spending. Table 5 shows that the largest cuts, in dollar terms have been in general public service. However, several of the largest cuts in percentage terms have been in categories that tend to include assistance for the needy, such as income security and housing and community service.

Table 5 States and localities have cut spending on most "consumption" activities, adjusted for inflation

| State and Local Government Inflation-Adjusted Consumption Expenditures (Billions of 2015\$) | | | | |
|--|------------------|------------------|-----------------|--------------|
| | 2009 | 2015 | \$ change | % change |
| State & local gov. consumption expenditures, total | \$1,659.2 | \$1,641.2 | (\$18.0) | -1.1% |
| Education | 778.0 | 791.7 | 13.7 | 1.8% |
| Public safety | 309.8 | 308.0 | (1.8) | -0.6% |
| Economic affairs | 185.5 | 184.3 | (1.2) | -0.6% |
| General public service | 192.1 | 179.3 | (12.8) | -6.6% |
| Income security | 82.7 | 78.0 | (4.7) | -5.7% |
| Net health expenditures; excludes Medicaid | 68.7 | 61.3 | (7.4) | -10.8% |
| Recreation & culture | 32.3 | 29.7 | (2.6) | -8.2% |
| Housing and community service | 10.1 | 8.9 | (1.2) | -12.1% |

Sources: Bureau of Economic Analysis, Table 3.17 for expenditure data and Table 1.1.4 for GDP price index.
Note: All items adjusted by GDP price index, not expenditure-specific indexes.

Cuts in higher education support

Higher education is often called the “balance wheel” of state budgets: when times are bad, states cut support substantially and when times are good, they increase support. States do this in part because there is another major source of revenue – tuition – that institutions or states can raise in response.¹¹ Because enrollment has been rising over most of the last two decades, cuts per full-time enrolled student (FTE) have been large, while restorations per FTE have been muted.

In response to the Great Recession almost every state cut funding for higher education substantially. For the United States as a whole, inflation-adjusted state appropriations per FTE declined by 17.8 percent between the peak year of 2008 and 2014 (see Table 6, which also provides data for periods before the recession). These cuts were widespread and deep: of the 47 states that cut inflation-adjusted appropriations per FTE, 40 cut funding by more than 10 percent, 32 cut by more than 20 percent, and 8 states cut by more than 30 percent.

Table 6 States are increasingly relying on tuition to finance higher education

| Higher Education Enrollment and Inflation-Adjusted Per FTE Revenues Before, During and After the Great Recession | | | | | |
|--|------------------------------|-------------------------------|-------------|-------------------------------|--|
| State FY | FTE enrollment (millions) | 2014\$ per FTE | | | Net tuition as % of total education revenues |
| | | Educational appropriations | Net tuition | Total educational revenues | |
| 2000 | 8,605 | \$8,011 | \$3,313 | \$11,323 | 29.3% |
| 2005 | 9,896 | 7,154 | 4,053 | 11,169 | 36.3% |
| 2008 | 10,254 | 7,966 | 4,419 | 12,344 | 35.8% |
| 2011 | 11,644 | 6,717 | 4,947 | 11,612 | 42.6% |
| 2014 | 11,138 | 6,552 | 5,777 | 12,266 | 47.1% |
| | | % change | | | Change in % |
| 2000 to 2005 | 15.0% | -10.7% | 22.3% | -1.4% | 7.0% |
| 2005 to 2008 | 3.6% | 11.4% | 9.0% | 10.5% | -0.5% |
| 2008 to 2011 | 13.6% | -15.7% | 12.0% | -5.9% | 6.8% |
| 2011 to 2014 | -4.4% | -2.5% | 16.8% | 5.6% | 4.5% |
| Post-Recession: 2008 to 2014 | 8.6% | -17.8% | 30.7% | -0.6% | 11.3% |

Source: State Higher Education Executive Officers (SHEEO).
Note: Adjusted for inflation using GDP price index.

Higher education institutions and states responded by raising tuition. For the nation as a whole, inflation adjusted net tuition per student increased from \$4,419 in 2008 to \$5,777 in 2014, or 30.7 percent. Of the 47 states that increased inflation-adjusted tuition per FTE, 44 increased tuition by more than 10 percent, 37 increased it by more than 20 percent, and 25 states increased tuition by more than 30 percent.

Appropriation cuts and tuition increases have shifted costs from states to students: between 2008 and 2014, the tuition share of education revenue increased from 35.8 percent to 47.1 percent. (Table 6) This was part of a longer term trend – back in 2000, the tuition share of education revenue was only 29.3 percent. Tuition increases have made higher education more difficult to afford and potentially have reduced access. In addition, tuition increases have not kept up fully with appropriation cuts: total education revenue is down slightly since 2008, potentially jeopardizing education quality. In fact, costs of higher education have been increasing more rapidly than overall prices in the economy, so institutions are able to buy less with a dollar now than they could previously.¹² Public higher education institutions in many states cut full-time faculty positions, eliminated course offerings, and reduced library and computer lab services, among other service reductions. These cuts diminish the quality of education and the potential quality of the workforce, which in return can have a negative impact on the longer-term economic growth.

Cuts in K-12 education spending

A majority of states have cut K-12 spending in response to the Great Recession. For the United States as a whole, inflation-adjusted per pupil K-12 spending from state, local, and federal sources combined declined by 5.4 percent between 2008 and 2014, in contrast to more than 20 percent growth between 2000 and 2008 before the Great Recession (see Table 7). Overall 33 states cut inflation-adjusted per-pupil spending between 2008 and 2014, 12 of which cut funding by more than 10 percent. Most of the states that cut per pupil K-12 spending are in the south or the west.

Despite post-recession economic growth, many states have continued to cut funding for K-12 education.¹³ States' cuts in K-12 funding have been driven by factors including state efforts to close budget shortfalls, rising costs, reduction in federal education aid, and other state policy choices.¹⁴ The cuts in K-12 education spending have resulted in layoffs of more recently hired teachers, larger class sizes, cuts in instructional and non-instructional services, cuts in professional development for teachers and staff, among service reductions. While the cuts may help the states to close the budget shortfalls, they could result in diminished educational outcomes and a less qualified workforce for the future.

Table 7 States have been cutting spending on K-12 education

| School year | Fall enrollment (millions) | 2014 \$ | |
|------------------------------|-------------------------------|----------------------------------|--------------------------------|
| | | K-12 expenditures \$ billions | K-12 per pupil expenditures |
| 2000 | 46.9 | \$507.5 | \$10,905 |
| 2005 | 48.8 | 591.1 | 12,177 |
| 2008 | 49.3 | 655.2 | 13,286 |
| 2011 | 49.5 | 636.5 | 12,895 |
| 2014 | 50.0 | 625.0 | 12,564 |
| | | % change | |
| 2000 to 2005 | 4.1% | 16.5% | 11.7% |
| 2005 to 2008 | 1.0% | 10.8% | 9.1% |
| 2008 to 2011 | 0.4% | -2.9% | -2.9% |
| 2011 to 2014 | 1.1% | -1.8% | -2.6% |
| Post-Recession: 2008 to 2014 | 1.5% | -4.6% | -5.4% |

Source: National Center for Education Statistics (NCES).
Note: Adjusted for inflation using GDP price index.

Workforce changes

As we have discussed elsewhere, state and local governments cut employment considerably in response to the Great Recession, unlike most prior recessions when employment growth generally slowed but did not decline.¹⁵ State and local governments cut employment repeatedly between the peak in state fiscal year 2009 and state fiscal year 2013, before employment stabilized and began to rise slightly. As of state fiscal year 2015, state and local government employment was down by over half a million jobs.

Table 8 shows the change in employment by major activity of government, based on the Quarterly Census of Employment and Wages from the Bureau of Labor Statistics. K-12 education accounts for more than half of the decline in employment, followed by general administration, including cuts to executive and legislative bodies and boards and commissions, as well as staff that administer staff of major governmental programs.

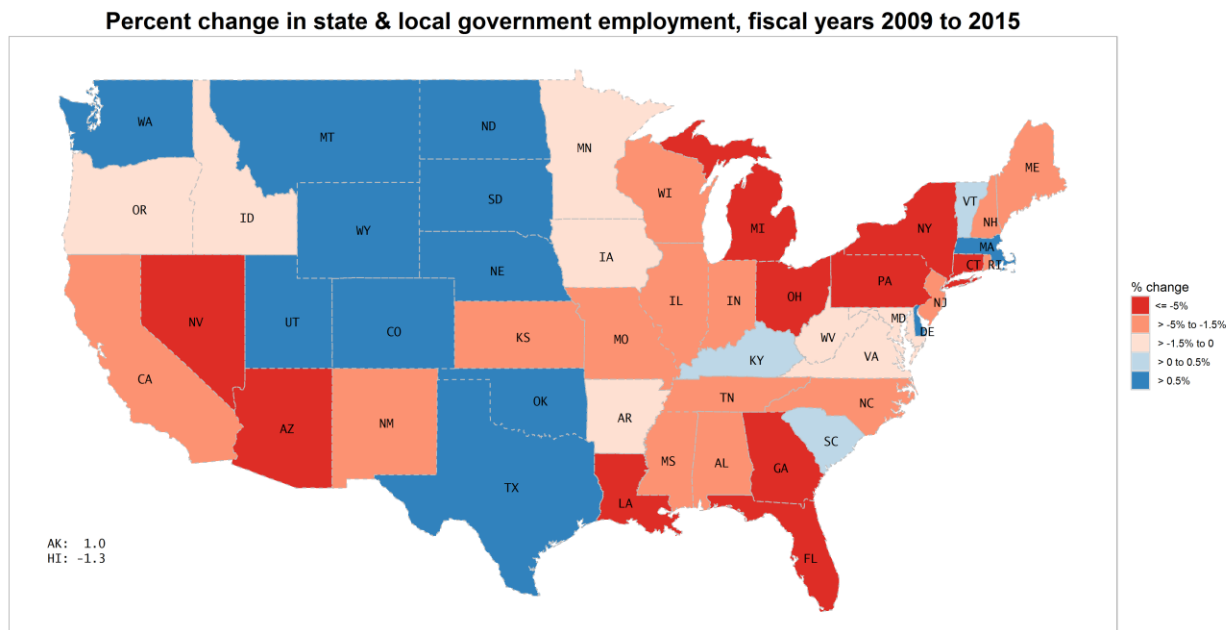
Table 8 State and local government employment is down by more than half a million jobs

| State and Local Government Employment | | | | |
|--|--------------------------|--------------------|---------------|-----------------|
| Most Recent Year Compared to Peak Following Start of Great Recession | | | | |
| | Year ending June: | | | |
| | 2009 emp. | 2015 emp. | Change | % Change |
| | (thousands) | (thousands) | | |
| Total state and local government employment | 18,888 | 18,372 | (516) | -2.7% |
| Education | 9,753 | 9,556 | (197) | -2.0% |
| Elementary and secondary education | 7,400 | 7,123 | (277) | -3.7% |
| Colleges, universities and junior colleges | 2,290 | 2,371 | 81 | 3.5% |
| Business, trade and other instructional schools | 46 | 37 | (9) | 20.5% |
| Education consultants, guidance counselors, testing and other support | 17 | 25 | 9 | 52.9% |
| Justice, public order and safety activities | 1,674 | 1,617 | (56) | -3.4% |
| Fire protection | 188 | 198 | 10 | 5.4% |
| Police protection | 512 | 509 | (3) | -0.5% |
| Correctional institutions, parole and probation | 548 | 505 | (43) | -7.9% |
| Courts, legal counsel and prosecution | 269 | 261 | (8) | -3.0% |
| Other justice and safety activities | 157 | 144 | (13) | -8.0% |
| Health care | 1,320 | 1,283 | (39) | -3.0% |
| Hospitals other than psychiatric and substance abuse | 867 | 863 | (5) | -0.5% |
| Physicians, medical & diagnostic laboratories & other ambulatory health care | 91 | 100 | 9 | 10.0% |
| Nursing, community care and other residential facilities | 99 | 97 | (3) | -2.9% |
| Psychiatric and substance abuse hospitals and residential mental health facilities | 263 | 223 | (40) | 15.3% |
| Social assistance services for children, youth, elderly, disabled | 235 | 237 | 2 | 0.9% |
| General administration | 4,312 | 4,117 | (195) | -4.5% |
| Executive and legislative offices, legislative bodies, commissions | 2,982 | 2,843 | (139) | -4.7% |
| Administration of programs | 1,330 | 1,274 | (56) | -4.2% |
| All other | 1,591 | 1,560 | (31) | -2.0% |

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

States and localities in 35 states cut government employment between 2009 and 2015, as Figure 8 shows, with the deepest cuts in the eastern and southwestern states. Employment generally grew in oil-dependent states, which boomed during much of this period, but that may change given the plunge in oil prices and cuts in oil production.

Figure 8 State and local government employment is lower than in 2009 in 35 states



The outlook

Tax revenue growth is likely to continue to be slow

The current economic environment is not likely to support strong tax revenue growth for state and local governments. Economic growth has accelerated slightly as has inflation but both remain low by historical standards. In its latest economic forecast, the Congressional Budget Office anticipated real gross domestic product growth of 2.5 percent in calendar year 2016, consumer price inflation of 1.3 percent, and growth in nominal GDP of 4.1 percent.¹⁶ This is broadly consistent with the consensus of private forecasters.¹⁷ Moderate economic growth and low inflation is likely to lead to relatively slow tax revenue growth. All else equal, sales taxes tend to be higher when prices are higher, and higher prices often work their way into wages and other forms of income, boosting income taxes. So lower inflation tends to restrain state and local tax revenue growth.

One factor that can make income tax revenue grow faster or slower than the economy is the stock market. A strong stock market often leads to significantly higher capital gains income, and a declining stock market can lead to sharp decreases. The weak 2015 stock market affected tax returns filed in April 2016. The stock market declined by about 0.7 percent in 2015, so states didn't get a boost from this source, and many states actually got unpleasant April surprises.¹⁸ Based on other work of the Rockefeller Institute, the states that have the most to gain or lose from large shifts in capital gains are New York, California, Oregon, Connecticut, and Massachusetts, followed by Minnesota, Montana, and New Jersey. Most other states are much less affected by swings in capital gains.

State revenue forecasters are aware of these trends and risks, and generally forecasted slower tax revenue growth in their 2017 fiscal years than in 2016.¹⁹ In the next section we examine current state forecasts and in the following section we summarize the troubles of oil and coal states, discussed more fully in a recent Rockefeller Institute brief.²⁰

States forecast weak tax revenue growth in fiscal year 2017

States expect tax revenue growth to be weak in fiscal year 2017. Table 9 summarizes states' actual revenue growth for fiscal years 2015 and 2016 and revenue forecasts for 2017 for income and sales taxes, the two largest taxes, for 43 states for which we were able to collect actual data for fiscal year 2016 and forecast data for fiscal years 2016 and 2017. (See Table 10 for individual states' forecasts.) The actual growth in income tax collections in the median state was much weaker in fiscal year 2016 at 2.9 percent compared to 7.7 percent growth in fiscal year 2015. The median state forecast for personal income tax growth is 3.9 percent in 2017. Similarly, sales tax collections in the median state were weak in fiscal year 2016 at 2.9 percent compared to 4.7 percent growth in fiscal year 2015. The median state forecast for sales tax growth is 3.9 percent in fiscal year 2017. Fewer states are forecasting growth of more than 5 percent in 2017 than in prior years, for both the income tax and the sales tax. Overall, 9 of 37 states had declines in income tax collections in fiscal year 2016, and 6 of 40 states had declines in sales tax collections, both in nominal terms.

Table 9 States predict weak income and sales tax revenue growth in 2017

| Most Recent Actual Revenue Collections Versus Revenue Forecasts from States | | | |
|---|---------------------------------------|------------------|------------------------------|
| | % change in actual collections | | % change in forecasts |
| | 2014-2015 | 2015-2016 | 2016-2017 |
| Personal income tax | | | |
| Median forecast | 7.7% | 2.9% | 3.9% |
| Number of states with over 5% growth | 30 | 11 | 5 |
| Sales tax | | | |
| Median forecast | 4.7% | 2.9% | 3.9% |
| Number of states with over 5% growth | 19 | 9 | 9 |
| Source: Individual state data, analysis by the Rockefeller Institute. | | | |
| Note: Reflects 36 states with income tax forecasts and 38 states with sales tax forecasts. | | | |

States benefited from the strong stock market in 2014, which led to strong income tax collections in fiscal year 2015. The subsequent weakening of the stock market largely contributed to states' weak income tax growth in fiscal 2016 and forecasts of slower growth in fiscal 2017.

Table 10 shows the forecasts for the individual states. It also shows the forecast month and year. Forecasts vary significantly from state to state, reflecting many factors including reliance on capital gains, state overall economic conditions, oil supplies and oil prices, financial and real estate market developments, state specific policy changes, and others. Most states anticipate considerable downward pressure over the long-term revenue forecast horizon. The overall picture is of continued but sluggish growth in fiscal year 2017 and continued fiscal challenges and uncertainties for the states.

Table 10 State personal income and sales tax revenue actual collections for FY 2015 and FY 2016 and forecasts for FY 2017

| State | Forecast date | Personal income tax | | | Sales tax | | |
|---------------------|---------------|--------------------------|--------------------------|---------------------------------|--------------------------|--------------------------|---------------------------------|
| | | FY 2015 vs FY 2014 | FY 2016 vs FY 2015 | 2017 | FY 2015 vs FY 2014 | FY 2016 vs FY 2015 | 2017 |
| | | | | forecast vs 2016 forecast | | | forecast vs 2016 forecast |
| U.S. median | | 7.7 | 2.9 | 3.9 | 4.7 | 2.9 | 3.9 |
| U.S. average | | 7.7 | 2.8 | 3.4 | 5.1 | 2.8 | 3.6 |
| Arizona | Jan-16 | 8.6 | 5.5 | 5.2 | 5.1 | 3.0 | 4.0 |
| Arkansas | Feb-16 | 2.4 | 4.4 | 1.5 | 1.1 | 4.2 | 3.9 |
| California | May-16 | 15.2 | 4.2 | 4.3 | 4.4 | 5.9 | 2.8 |
| Colorado | Jun-16 | 11.5 | 2.8 | 5.4 | 8.0 | 0.5 | 3.6 |
| Connecticut | Apr-16 | 4.9 | 0.3 | 2.7 | 2.4 | (0.5) | (3.8) |
| Delaware | Jun-16 | 5.4 | 2.8 | 3.7 | N/A | N/A | N/A |
| Florida | Jan-16 | N/A | N/A | N/A | 6.9 | 4.4 | 4.1 |
| Georgia | Jan-16 | 8.0 | 7.9 | 6.3 | 5.2 | 1.6 | 4.2 |
| Hawaii | May-16 | 13.9 | 6.5 | 9.0 | 5.9 | 7.1 | 6.1 |
| Idaho | Jan-16 | 10.7 | 2.9 | 5.4 | 6.4 | 6.9 | 5.2 |
| Illinois | Mar-16 | (3.8) | (13.5) | 1.2 | 4.6 | 0.4 | 1.9 |
| Indiana | Dec-15 | 6.8 | (0.3) | 2.3 | 3.9 | 0.4 | 4.4 |
| Iowa | Mar-16 | 5.8 | 3.5 | 3.9 | 4.2 | 2.1 | 3.4 |
| Kansas | Jul-16 | 2.7 | (1.3) | 2.2 | 1.6 | 7.0 | 3.8 |
| Kentucky | Dec-15 | 8.5 | 5.2 | 4.2 | 4.3 | 6.0 | 3.5 |
| Maine | Mar-16 | 8.2 | 1.4 | (5.2) | 8.0 | 6.6 | 4.9 |
| Maryland | Mar-16 | 7.4 | 2.1 | 2.1 | 5.0 | 2.2 | 2.8 |
| Massachusetts | Dec-15 | 9.4 | (0.4) | 4.0 | 5.1 | 4.7 | 5.7 |
| Minnesota | Feb-16 | 7.7 | 3.0 | 4.0 | 1.7 | 2.0 | 4.8 |
| Mississippi | Oct-15 | 4.6 | 1.5 | 4.0 | 2.7 | 1.8 | 3.8 |
| Missouri | Jan-16 | 8.5 | 3.9 | 4.8 | 2.3 | 4.4 | 3.1 |
| Montana | Jun-16 | 10.6 | 0.8 | 4.9 | N/A | N/A | N/A |
| Nebraska | Oct-15 | 7.0 | 0.7 | 5.0 | 0.7 | (0.5) | 3.5 |
| Nevada | May-15 | N/A | N/A | N/A | 6.9 | 4.3 | 5.4 |
| New Mexico | Jan-16 | 6.8 | (0.9) | (4.4) | 4.7 | (6.7) | (9.3) |
| New York | Feb-16 | 1.7 | 7.7 | 3.8 | 1.9 | 2.2 | 3.1 |
| North Carolina | Mar-16 | 7.8 | 7.5 | (0.1) | 12.3 | 4.9 | 5.7 |
| Ohio | Jan-16 | 5.5 | (8.3) | 3.0 | 8.7 | 3.9 | 4.2 |
| Oklahoma | Jun-16 | 6.5 | (5.2) | (9.1) | 3.1 | (7.2) | (9.7) |
| Oregon | Jun-16 | 10.6 | 5.8 | 4.1 | N/A | N/A | N/A |
| Pennsylvania | Jun-16 | 5.9 | 3.3 | 3.6 | 4.0 | 3.2 | 3.5 |
| Rhode Island | May-16 | 10.0 | (0.8) | 2.7 | 5.2 | 0.9 | 3.5 |
| South Carolina | Feb-16 | 7.0 | 4.7 | 4.6 | 5.6 | 6.1 | 5.0 |
| South Dakota | Jan-16 | N/A | N/A | N/A | 1.6 | 2.9 | 14.5 |
| Tennessee | Nov-15 | 26.8 | 6.8 | 4.7 | 5.8 | 6.8 | 5.3 |
| Texas | Oct-15 | N/A | N/A | N/A | 5.5 | (2.3) | 4.8 |
| Utah | Nov-15 | 9.3 | 6.7 | 4.4 | 3.5 | 3.7 | 4.0 |
| Vermont | Jan-16 | 5.2 | 5.8 | 2.1 | 3.1 | 1.7 | 1.3 |
| Virginia | Nov-15 | 9.6 | 1.8 | 0.1 | 5.5 | 1.9 | 0.4 |
| Washington | Jun-16 | N/A | N/A | N/A | 6.8 | 8.8 | 4.8 |
| West Virginia | Jan-16 | 10.6 | (2.0) | 4.0 | 4.7 | 0.2 | 8.6 |
| Wisconsin | Jan-16 | 3.7 | 5.7 | 3.1 | 5.7 | 3.4 | 3.3 |
| Wyoming | Jan-16 | N/A | N/A | N/A | 4.4 | (20.6) | (11.5) |

Source: Individual state data, analysis by the Rockefeller Institute.

Note: Reflects 36 states with income tax forecasts and 38 states with sales tax forecasts.

Oil and coal states face special difficulties

Oil prices dropped from an average of \$99 per barrel in 2014 to \$52 in 2015, and fell below \$30 in January of 2016, the lowest level in the last twelve years. The steep declines in oil prices throughout 2015 and early 2016, had a negative economic and fiscal impact on oil- and mineral-dependent states. Oil, natural gas, and mining account for about 10 percent or more of gross domestic product in eight states: Alaska, Louisiana, New Mexico, North Dakota, Oklahoma, Texas, West Virginia, and Wyoming. As a group, in fiscal year 2015 these states relied on severance taxes for 11.4 percent of their total tax revenue, far more than the 0.2 percent for the rest of the country. They accounted for nearly 86 percent of the \$12.6 billion in severance tax revenue raised nationally in 2015. This revenue fell by 42.7 percent in the twelve months ending in June 2016, with declines that ranged from 32.8 percent in West Virginia to 45.6 percent in New Mexico. (See Table 11).

The steep price declines are leading to cuts in production and employment, weakening mineral-state economies and likely leading to slower growth in revenue from other tax sources. At the end of September 2016, total employment was lower in seven of the eight states than it was in January 2015. At the end of June 2016, revenue from non-severance taxes, such as income and sales taxes, declined by 3.3 percent compared to 2.3 percent growth in the other forty-two states. Total tax revenues in the eight states declined by 8.2 percent. The remaining forty-two states reported 2.2 percent growth in total tax revenues.

Table 11 Economy, Employment, and Taxes in Oil- and Mineral-Dependent States

| State | Mining industries as share of state GDP, 2014 | | | Employment change, Sep. 2016 vs. Jan. 2015 | Severance taxes as % of total taxes (FY 2015) | Percent change, 4-quarters ending June 2016 vs. year | | |
|-----------------------|---|-----------------------------|--------------|--|---|--|--------------|--------------|
| | Oil & gas extraction | All other mining activities | Total mining | | | Severance taxes | Other taxes | Total taxes |
| | | | | | | | | |
| Alaska | 19.7% | 7.8% | 27.4% | -1.1% | 12.2% | -39.4% | 41.7% | -24.6% |
| Louisiana | 5.0% | 2.2% | 7.3% | -1.6% | 7.5% | -44.7% | 0.7% | -3.8% |
| New Mexico | 8.8% | 5.0% | 13.7% | -0.3% | 16.7% | -45.6% | 20.2% | -10.5% |
| North Dakota | 7.4% | 10.6% | 18.0% | -5.2% | 49.6% | -40.6% | -31.5% | -32.4% |
| Oklahoma | 14.6% | 2.7% | 17.3% | -1.3% | 5.9% | -47.4% | 30.9% | -10.2% |
| Texas | 10.8% | 2.4% | 13.3% | 2.6% | 7.3% | -36.5% | -5.3% | -5.7% |
| West Virginia | 4.8% | 10.4% | 15.2% | -1.4% | 12.0% | -32.8% | -3.1% | -7.8% |
| Wyoming | 11.8% | 15.8% | 27.6% | -5.1% | 37.5% | 0.0% | -8.6% | -8.6% |
| Oil states | 10.4% | 3.3% | 13.8% | 1.1% | 11.4% | -42.7% | -3.3% | -8.2% |
| Non-oil states | 0.4% | 0.5% | 0.9% | 3.1% | 0.2% | -41.7% | 2.3% | 2.2% |
| United States | 1.8% | 0.9% | 2.6% | 2.9% | 1.4% | -42.6% | 1.8% | 1.1% |

Sources: Bureau of Economic Analysis (GDP), Bureau of Labor Statistics (employment) and U.S. Census Bureau (taxes).
Notes: Analysis by the Rockefeller Institute.

As a result, the oil- and mineral-dependent states are all facing fiscal challenges and budget shortfalls, particularly Alaska, New Mexico, North Dakota, and Wyoming where severance taxes represent a significant share of total taxes.²¹

Pension contributions are poised to rise further

Despite large contribution increases discussed earlier, and widespread benefit cuts, public pensions in aggregate remain woefully underfunded. At the end of June 2016, unfunded liability as measured by the Bureau of Economic Analysis and the Federal Reserve Board was \$1.9 trillion, or 10.6 percent of gross domestic product. This was little better than the situation shortly after the worst of the recession-

related stock market declines, even though we are eight years past the declines of 2008. (Figure 9) (Note that the Federal Reserve Board estimates of unfunded liabilities are greater than those of actuaries.²²)

Pension contributions currently generally are being made on the basis of actuarial valuations developed in 2014 and 2015, and recognize very little if any of the investment shortfalls that have occurred since then. In fiscal year 2015, the median public pension fund earned about 3.4 percent despite assuming that it would earn approximately 7.5 percent.²³ Fiscal year 2016 was another a bad year: the typical pension fund still assumed it would earn about 7.5 percent on its portfolio, but most earned only about 1 to 2 percent. With more than \$3.5 trillion of assets under investment, the shortfalls for the 2015 and 2016 fiscal years are likely to be substantial.

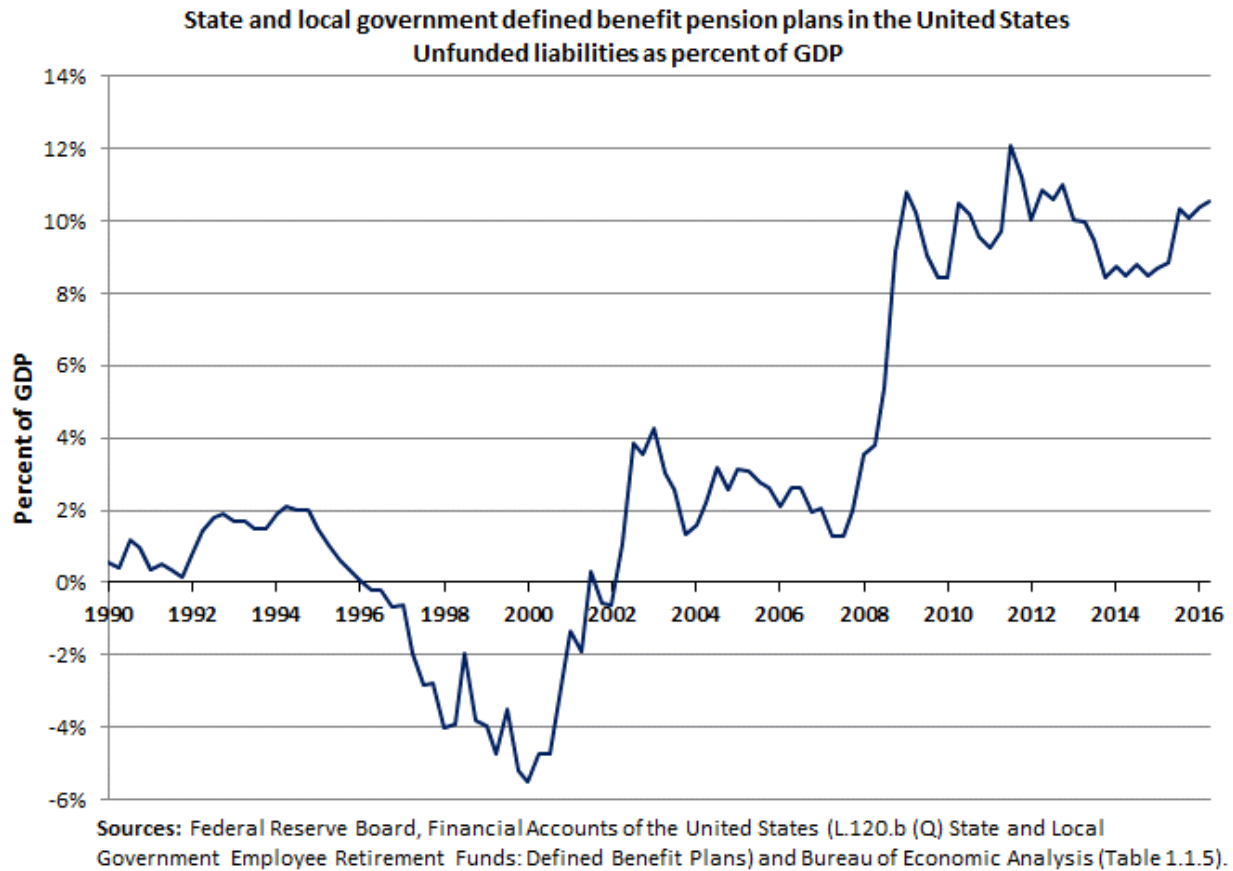
Although pension funds are slow to reflect these shortfalls in actuarially determined contributions, over the next several years requested contributions are likely to rise substantially. In what may seem like an unfair twist, these increases often will be largest for governments with the best funded plans, because those are the plans with the most assets and therefore the most to lose.

Over the longer term, public pensions will be a major risk for state and local governments. Public pension funds keep contributions low by assuming that they will earn about 7.5 percent annually through investments in diversified portfolios of stocks, bonds, real estate, hedge funds, and many other assets. This may or may not be attainable, but if the risk is sizeable: for example, annual contributions would have to be \$130-200 billion higher than they are now to fund public pensions without taking investment risk, based on our analysis of estimates by the Bureau of Economic Analysis.²⁴ Governments certainly don't want to pay the higher contributions that would be needed to avoid this risk; instead, they (and their taxpayers) will be exposed to the risk of loss.

In some states pensions are not just a longer term risk: They are a near and present danger. In particular, Connecticut, Illinois, Kentucky, and New Jersey, and Pennsylvania all face pension crises that will play out over the next several years. In addition, in California, contributions were slated to rise substantially even before the latest stock market declines: legislation finally requires governments to contribute actuarially based payments to CalSTRS, and so contributions will rise; in addition, CalPERS has announced that it intends to mitigate risk by slowly lowering its earnings assumption, which in turn will raise contributions for the state and local governments. These actions will help make these funds and their beneficiaries more secure than they otherwise would be – and they may not even go far enough – but they will squeeze their governments and taxpayers.

Pension fund stress is going to be a continuing issue for state and local governments for many years.

Figure 9 Pension underfunding is almost as great, as a percentage of GDP, as it was right after the severe market drops of the Great Recession



Medicaid still expected to grow faster than the economy

Medicaid has been a long-term source of fiscal pressure for state and local governments, although not as much as in past years and decades. According to the Centers for Medicare and Medicaid Services, between 1990 and 2007 total Medicaid expenditures grew at an average annual rate of 9.7 percent, while the economy (gross domestic product) grew at an annual rate of 5.4 percent – a difference of 4.3 percentage points, far outstripping growth in tax bases.²⁵ As discussed earlier, after the Great Recession federal spending on Medicaid grew rapidly as a result of recession-related enrollment increases, and states absorbed some of those costs after the federal stimulus program waned.

Looking forward, CMS researchers expect that state-funded Medicaid will grow at an average annual rate of 6.4 percent between 2016 and 2019 while the economy grows at a 4.8 percent rate – a gap of 1.6 percentage point. Between 2019 and 2025 CMS forecasts state-funded Medicaid will grow at a 6.3 percent rate, 1.7 percentage points faster than anticipated GDP growth.²⁶ CMS forecasts that growth in spending per enrollee will accelerate as dually eligible beneficiaries (eligible for both Medicare and Medicaid) age into the program and as the aging of the population leads to higher costs, particularly for nursing home care. Thus, Medicaid is likely to be a continuing source of pressure on state budgets, albeit not as great as in the 1990s and early 2000s.

Conclusion

State and local governments play a crucial role in the nation's economy. They are responsible for three-quarters of the nation's transportation and water infrastructure, they finance 90 percent of the nation's public elementary and secondary schools, they provide a majority of the nation's higher education in degree-granting institutions, and they implement much of the nation's social safety net. They have scaled many of these activities back in response to slow growth in taxes, rapid growth in pension contributions, and enrollment-driven Medicaid growth. The outlook is for more of the same over the next several years, suggesting that states will continue to struggle to provide these crucial services.

¹ Percentage change in taxes after the start of a recession are calculated only until the start of the next recession, consistent with Figure 1.

² Donald J. Boyd and Lucy Dadayan, "The Economy Recovers While State Finances Lag," The Blinken Report (Nelson A. Rockefeller Institute of Government, June 2015), http://www.rockinst.org/pdf/government_finance/2015-06-23-Blinken_Report_Two.pdf. Also see the Institute's quarterly *State Revenue Reports*.

³ We estimated federal fiscal year 2015 average monthly enrollment assuming growth of 8.2%, which is the growth rate for average monthly enrollment reported in the December 2015 "CMS Fast Facts" (Centers for Medicare & Medicaid Services, December 2015), <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/CMS-Fast-Facts/index.html>. It is faster than the 6.3% growth rate implied in an earlier CMS publication, "2015 CMS Statistics" (Centers for Medicare & Medicaid Services, n.d.), <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/CMS-Statistics-Reference-Booklet/Downloads/2015CMSStatistics.pdf>, Table I.16, which was based on the President's budget from early 2015. It appears to be broadly consistent with the 13.8% June to June growth estimated in Robin Rudowitz, Laura Snyder, and Vernon K. Smith, "Medicaid Enrollment & Spending Growth: FY 2015 & 2016," Issue Brief (Kaiser Commission on Medicaid and the Uninsured, October 2015) based on our examination of the past relationship between fiscal year growth and June to June growth.

⁴ Per-capita spending means spending per person in the state, not per Medicaid enrollee.

⁵ States do have other resources besides taxes with which to pay pensions and other expenditures – fees, for example – but as a practical matter, higher pension contributions generally will require higher taxes or cuts in other spending.

⁶ We use 2008 through 2015 to have a consistent set of years for all three sources of stress, even though our earlier tax revenue analysis spans between 2008 and 2016 to give a more recent picture. It is not possible to make perfect comparisons because available measures for these sources of stress come from different data sources and are for slightly different annual periods.

⁷ For each state, we estimated 2015 local government taxes by adding the average annual growth rate in local government taxes from 2010 to 2014 to 2014 local tax revenue. We then added this estimate of 2015 local government taxes to reported 2015 state government taxes. All tax data were from Census Bureau surveys.

⁸ As in the earlier pension contributions analysis, we have adjusted 2008 pension contributions for Connecticut and 2015 pensions contributions for Alaska

⁹ Consumption expenditures include, within each category, what the Bureau of Economic Analysis calls "consumption of fixed capital" – the estimated amount of state and local government capital stock, such as roads and bridges that is used up by wear and tear, economic obsolescence, and other causes. It is similar in concept to depreciation. It is not a cash expenditure.

¹⁰ We use the gross domestic product price index for these calculations rather than separate price indices for each expenditure category because we are interested here in the resources that state and local governments devoted to each category (that is, how much "effort" they put into different forms of expenditure), rather than the quantity they were able to purchase. The latter is important, too, and is affected by price differentials, but it answers a different question.

¹¹ For research and pragmatic underpinnings, see Donald Boyd, "Public Research Universities: Changes in State Funding" (The Lincoln Project, October 2015).

¹² In this analysis, we adjust education revenue using the GDP price index, so that they are comparable to other inflation-adjusted numbers in this report. In essence, the result is a measure of effort by governments rather than a measure of how much may be bought of each governmental good or service. However, according to estimates by the State Higher Education Executive Officers, the cost of “producing” education has risen more rapidly than prices in the overall economy. Between 2008 and 2014, SHEEO’s higher education cost index rose by 11.3 percent, compared to 9.7 percent for the GDP price index; between 2000 and 2014, the higher education cost index increased by 44.6 percent compared to 32.9 percent for the GDP price index.

¹³ Michael Leachman, et. al, “Most States Have Cut School Funding, and Some Continue Cutting,” Center on Budget and Policy Priorities, January 25, 2016, <http://www.cbpp.org/research/state-budget-and-tax/most-states-have-cut-school-funding-and-some-continue-cutting>

¹⁴ Ibid.

¹⁵ Lucy Dadayan and Robert B. Ward, “Data Alert: State and Local Government Employment Shows Broad, Continuing Declines,” July 22, 2011, <http://archive.constantcontact.com/fs091/1104610489644/archive/1106689721430.html>.; Donald J. Boyd and Lucy Dadayan, “The Economy Recovers While State Finances Lag.”

¹⁶ “The Budget and Economic Outlook: 2016 to 2026” (Congressional Budget Office, January 2016), <https://www.cbo.gov/publication/51129>.

¹⁷ “Economic Forecasting Survey,” accessed November 3, 2016, <http://projects.wsj.com/econforecast/#ind=gdp&r=20>.

¹⁸ Based on S&P 500 adjusted close at end of 2014, 2015, and February 12, 2016, as obtained from the Yahoo API using the R package `quantmod`.

¹⁹ Lucy Dadayan and Donald J. Boyd, “By The Numbers: States Forecast Slower Tax Growth Through 2017 and Beyond” (Rockefeller Institute of Government, December 23, 2015), http://www.rockinst.org/pdf/government_finance/2015-12-By_Numbers_Brief_2_Page.pdf.

²⁰ Lucy Dadayan and Donald J. Boyd, “By The Numbers: Double, Double, Oil and Trouble” (Rockefeller Institute of Government, February 1, 2016), http://www.rockinst.org/pdf/government_finance/2016-02-By_Numbers_Brief_No5.pdf.

²¹ Ibid.

²² Discussed in Donald J. Boyd and Yimeng Yin, “By The Numbers: State and Local Government Unfunded Pension Liabilities Rise by \$268 Billion in the Third Quarter of 2015” (Rockefeller Institute of Government, January 30, 2016), http://www.rockinst.org/pdf/government_finance/2016-01-20_By_the_Numbers_Brief_No4.pdf.

²³ Wilshire Trust Universe Comparison Service calculated the median return of public plans with more than \$5 billion in assets at 3.4%, and Callan Associates Inc. calculated an average investment return of 3.2% for 265 public plans with assets of more than \$1 billion. (<http://www.pionline.com/article/20150810/PRINT/308109985/high-return-era-ends-for-many-big-public-pension-funds>)

²⁴ According to NIPA table 7.24 published on August 26, 2015, employer contributions in 2014 were \$71 billion below what was needed to fund annual benefits earned without taking investment risk (Imputed employer contributions, Line 6). In addition, unfunded liabilities were accruing interest of \$63 billion (Line 13). Thus, to avoid taking investment risk, governments would have needed to pay an additional \$134 billion (\$71 billion + \$63 billion) just to keep unfunded liabilities from rising. Amortizing the existing unfunded liabilities would take another \$70 billion or more in annual contributions, depending on the amortization method chosen.

²⁵ Exhibit 3, S. P. Keehan et al., “National Health Expenditure Projections, 2015-25: Economy, Prices, And Aging Expected To Shape Spending And Enrollment,” *Health Affairs* 35, no. 8 (August 2016).

²⁶ Ibid.