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Understanding States' Fiscal Health During and After the 2001 Recession

by Elaine Maag and David F. Merriman

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Introduction

Every state except Vermont operates under some sort of balanced budget requirement (National Conference of State Legislators 1999). That means that to serve the increased need of distressed populations during recessions, states must either increase revenue or reallocate resources dedicated to other programs. Similarly, when revenue declines, states must raise taxes or reallocate resources. That requirement can cause states substantial fiscal stress. Often, states will experience revenue declines (absent offsetting tax or fee increases) as they experience rising eligibility for state services such as unemployment insurance and Medicaid (Mattoon 2003). Thus, to provide even the same services available before a recession, states will have to increase spending to account for the larger, newly eligible population. Also, if costs rise from a particular part of the budget — for example, healthcare — level spending will still mean real cuts in services the state provides.

Typically, state tax policy increases during economic downturns fully offset revenue declines from slowed economic activity (Dye and McGuire 1999). State tax reactions to the recession in the early 2000s differed markedly. Rather than reacting quickly to increase revenue when it declined by increasing broad-based taxes, states enacted relatively few tax increases — and concentrated those increases on narrowly targeted tobacco taxes (Maag and Merriman 2003). Despite dramatic declines in revenues, McGuire and Merriman (2006) observe that social spending on two core programs — Medicaid and TANF — increased during the most recent economic downturn — even more than in downturns before welfare reform. Conversely, McGuire and Merriman find that other parts of the budget became more procyclical in the post-welfare-reform era, experiencing substantial cuts.

This report examines the extent to which rainy day and general fund savings were a significant factor in helping states cope with fiscal stress, a possible explanation for the lower than expected legislated tax increases and social welfare cuts. We begin by reviewing previous literature on the effectiveness of rainy day funds. We describe the data used for that analysis and define critical terms. We then summarize state resources during and after the 2001 recession. We ask whether states with relatively high levels of savings entering the fiscal downturn were able to weather it with fewer spending cuts than those with a smaller cushion. Further, we explore whether the size of the fiscal shock that a state suffered in 2002 reverberated beyond the recession into 2004 and 2005.

Literature Review

The concept behind state budget stabilization or rainy day funds is simple: States make deposits in a designated account when revenue exceeds what the state needs and make withdrawals from the account when revenue falls below need. A rainy day fund allows states to avoid tax increases that might exacerbate economic slowdowns during periods of fiscal shortfalls. Despite the simplicity of that concept, states have a large variety of budgetary arrangements that might be classified as rainy day funds. Much of the literature defines a rainy day fund as a fund that allows accumulations during

economic expansions that can be spent during economic declines. According to that definition, six states — Arkansas, Colorado, Illinois, Kansas, Montana, and Oregon — had no rainy day fund in fiscal 2000, as they headed into the 2001 recession.[1,2] The absence of a rainy day fund does not preclude the state from saving in the general fund, but to the extent that rainy day funds increase state savings, states without rainy day funds may be more vulnerable to budget shortfalls.

Rainy day funds vary widely across states and, as pointed out by Rodriguez-Tejedo (2006), are often configured in ways that undermine their effectiveness. The same policies that attempt to make legislators fiscally prudent during times of economic excess often make it more difficult for them to respond quickly to a crisis. For example, some states require a supermajority vote of two-thirds to three-quarters before states can make rainy day fund withdrawals (NCSL 2004). Supermajority requirements may make frivolous spending more difficult, but they also can increase the probability that minority parties will use the system to reduce the majority party's ability to "solve" a fiscal crisis. Similarly, provisions that require rainy day fund withdrawals to be replaced as soon as possible may ensure that the rainy day fund is not used to ratchet up budgets, but also may make legislators reluctant to use rainy day funds even when appropriate.

> ***The same policies that attempt to make legislators fiscally prudent during times of economic excess often make it more difficult for them to respond quickly to a crisis.***

It is not surprising then, that the mere existence of a rainy day fund does not protect a state from experiencing fiscal stress during an economic downturn. Sobel and Holcombe (1996) measure fiscal stress by the amount discretionary tax increases plus expenditure reductions differ from their long-term trend growth. Sobel and Holcombe find that rainy day funds with legal requirements to make deposits significantly reduced fiscal stress for states during the economic downturn of the 1990-1991 recession. Other rules, such as those regulating whether the rainy day fund has a cap or can be accessed under ordinary legislative rules, were not significant determinants of the rainy day fund's ability to alleviate fiscal stress.

> ***The ability to avoid tax increases or service cuts depends on the total amount of savings a state has and whether the state is willing to spend that savings — not necessarily on where that savings is held.***

Douglas and Gaddie (2002) note that rainy day fund caps actually bind in very few states so caps are unlikely to be important determinants of a rainy day fund's effectiveness. Using a definition of fiscal stress similar to Sobel and Holcombe, Douglas and Gaddie study other features of rainy day funds to determine their effect on alleviating fiscal stress. Douglas and Gaddie classify withdrawal requirements into two types: withdrawals dictated by a formula (for example, actual revenue was below estimates, a revenue shortfall is predicted, the state is experiencing high unemployment, or there has been low growth in adjusted personal income) and withdrawals that require legislative supermajorities. Here, Douglas and Gaddie find a counterintuitive result — a positive relationship between the size of a state's rainy day fund (as a percent of expenditures) and fiscal stress. That could be a result of budget practices that cause more vulnerable states to build up bigger balances or it could be because states under extreme fiscal stress are more likely to cut expenditures to balance budgets, so the ratio of rainy day fund balances to general expenditures will be higher. Joyce (1997) offers support for the former theory. Those early studies provide guidance on how states could structure rainy day funds to be most effective in alleviating fiscal stress.

Since the recession of the 1990s, when those studies were performed, rainy day funds have changed substantially. Not only did the number of states with rainy day funds increase, but balances increased as well. Estimates of the size of rainy day funds (when added to state general fund balances) at the start of the 2001 recession range from 10.4 percent (Zahradnik and Ribeiro 2003) to over 12 percent of expenditures (Gonzalez and Levinson

[1]Kansas did not have a separate rainy day fund in fiscal 2000. However, state statute requires that the governor's recommended budget and the final approved budget maintain an ending balance of at least 7.5 percent of expenditures. (NASBO 2000).

[2]Some of the literature does not consider Alabama's fund to be a rainy day fund because it is only intended to shore up the education budget. Colorado technically had two funds that could be considered rainy day funds in fiscal 2000. The first is mandated by TABOR and cannot be accessed for economic downturns. The second is a fund requiring a statutory reserve of four percent, but it must be replenished each year. This fund acts more as a short-term cash flow fund rather than a rainy day fund. *Available at* http://www.coloradobudget.com/rdf_report.cfm.

2003). Balances entering the previous recession were estimated to be less than 5 percent (Gonzalez and Levinson 2003).

Having a rainy day fund may increase total savings — indeed economic analysis suggests that the states' relatively large rainy day fund balances at the start of the 2001 recession represented "new" savings rather then a rearrangement of existing funds (Gonzalez and Levinson 2003). In our analyses, we measure savings as the combined total of general fund and rainy day fund balances. Ultimately, the ability to avoid tax increases or service cuts depends on the total amount of savings a state has and whether the state is willing to spend that savings — not necessarily on where that savings is held.

Data and Definitions

Our analysis uses data on state general fund spending and revenue between 1999 and 2006 from the National Association of State Budget Officers (NASBO). The data for 2006 is the most recent available but is preliminary. Each state defines its own general fund according to the accounting rules adopted in that state. The general fund is usually the biggest state government fund, but readers should be cautioned that some major expenditures (such as Medicaid) or revenue may be in the general funds of some states but not others. Also, within a particular state, expenditures or revenue recorded in the general fund in one year may be moved to a different fund in another year. Data compiled by the U.S. Census use a uniform (and time invariant) definition for the general fund but is less current and does not detail state rainy day funds. For a more detailed description of the NASBO data and how they are used in this paper, please see the appendix.

Our analyses require that we define two central concepts — policy-neutral revenue and fiscal crisis.

We define policy-neutral revenue as a state's observed revenue minus tax increases plus tax cuts. Changes in policy-neutral revenue are a measure of the fiscal impact of economic changes in the state. We believe economy-induced changes in revenue ultimately drive changes in expenditures. States can, of course, opt to raise taxes to increase revenue, or cut taxes to decrease revenue. Those policy changes are a reaction to more fundamental economic and political conditions and should be considered symptoms, as well as causes, of expenditure change.

We define a state to be in a fiscal crisis if its policy-neutral revenue in one year is less than its actual revenue in the preceding year. That definition is simpler and more direct than that used by Sobel and Holcombe (1996) because our definition allows states to make a policy choice to slow the rate of spending growth below its long-term trend without being declared in crisis. States also may stop offering "optional" services in an effort to balance the budget without being declared in crisis. Admittedly, our definition is conservative in that it is hard to imagine a state we classify as being in a fiscal crisis without that state having severe budgetary problems. Some states that do not meet our criteria (for example, those with very slow revenue growth rates) may still face significant budgetary stress. However, we conduct a sensitivity analysis and show that our qualitative conclusions are not altered when we use a less conservative measure of fiscal crisis.

State Resources During and After the 2001 Recession

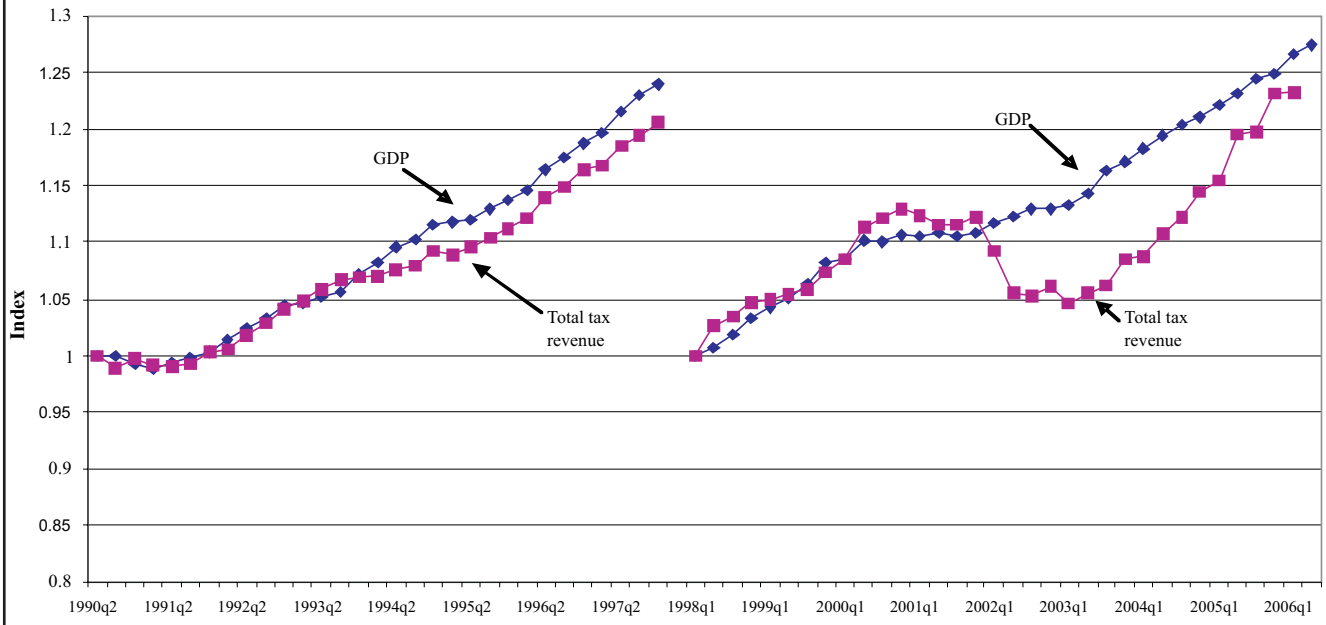
Revenue and Tax Policy Responses

Despite similarities to the previous recession nationally, during the 2001 recession state revenue reacted quite differently. Both recessions lasted about eight months — however, unlike the earlier recession in which revenue declined but roughly tracked gross domestic product, revenue in the 2001 recession dropped markedly five quarters after the recession started and stayed depressed (Figure 1, next page). As described in our earlier work (Maag and Merriman 2003), both recessions resulted in significant state fiscal stress. Total tax revenue did not exceed its prerecession level until the fourth quarter (October to December) of 2004. In the 4.25 years between the end of the last recession in March 2001 and January 2006 (the latest data available) real total state tax revenue grew only two-thirds as fast as real GDP. State tax revenue's "failure to thrive" during that period is stunning because, over the long term (from 1977 to 2001), total tax revenue grew almost 25 percent faster than GDP.[3]

At least some of the reasons for the lagged downturn in state revenue are well understood. The robust stock market that preceded the recession meant that some taxpayers had accumulated large capital gains. The realization of those capital gains after the economy turned sour provided a flood of income, and perhaps sales tax revenue that offset essentially all of the loss in revenue resulting from diminished economic activity (Sjoquist and Wallace 2003, Jenny 2003). The sharp dip in revenue long after the recession had ended is more puzzling but, as explained in our earlier work, is at least partially attributable to the states' atypical policy response in the immediate aftermath of the recession. In fiscal 2002, 12 states legislated personal income tax cuts, while only 3 enacted increases (Figure 2, p. 363). Similarly, more states enacted cuts than increases in

[3]Statements in the previous paragraph are based on data from FRED, *available at* https://research.stlouisfed.org/ and Urban Institute Tax Base, *available at* http://www.taxpolicycenter.org/slf-dqs/pages.cfm.

Figure 1. Indices of Real GDP and Real Annualized State Total Tax Revenue in Last Two Recessions



Source: State tax revenue data come from the Census Bureau. Downloaded on October 19, 2006, from http://ftp2.census.gov/govs/qtax/table2.xls, *available at* http://www.census.gov/govs/www/qtax.html (Table 2); GDP data come from the Bureau of Economic Analysis. Downloaded on October 26, 2006, from http://bea.gov/bea/dn/gdplev.xls, available at http://bea.gov/bea/dn/home/gdp.htm.

the sales and corporate income taxes. Four states enacted increased excise taxes, while none enacted cuts. The story was similar in fiscal 2003, when 12 states again cut personal income taxes and only 3 increased them. In fiscal 2003, an equal number of states cut and increased the sales tax (8) but there was a surge in states that increased excise taxes (19), with no state legislating excise tax cuts.

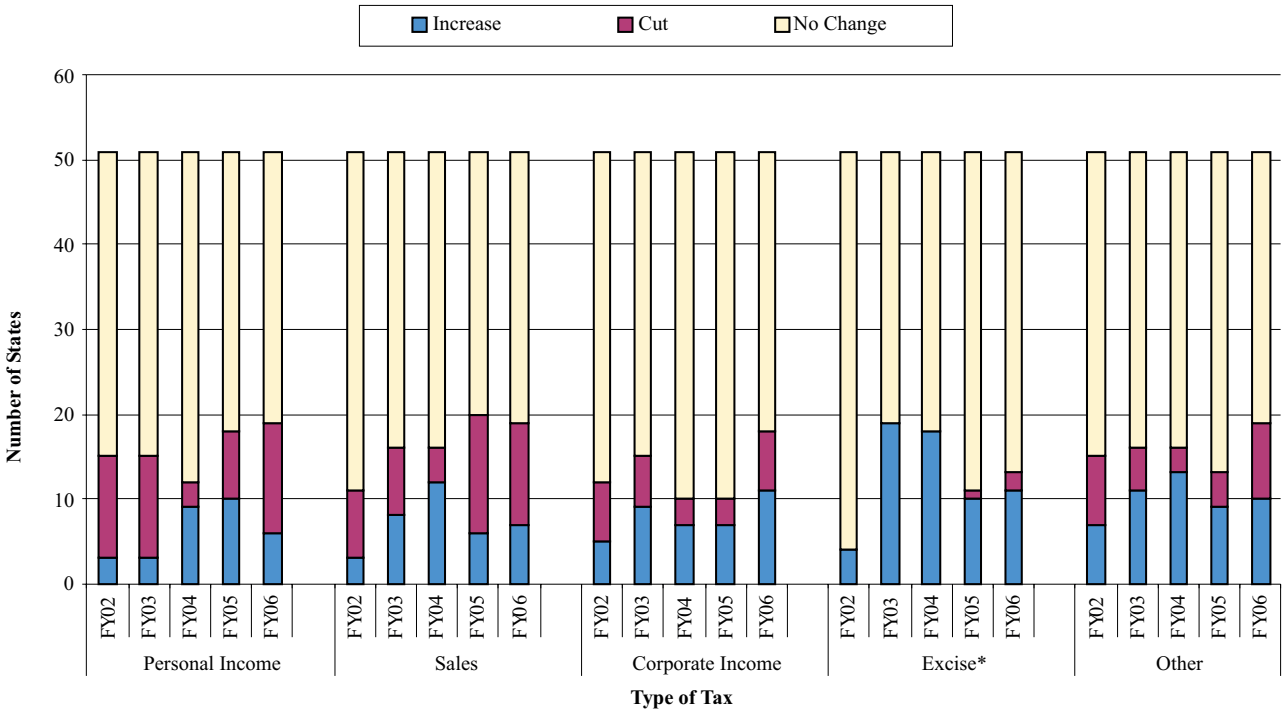
In later fiscal years (fiscal 2004 to fiscal 2006), 8 states enacted only net personal tax increases in any particular year, 15 states enacted only net tax cuts in any particular year, 6 states enacted net increases in one year and net cuts in another, and 21 states enacted no changes. During that period, 21 states enacted only net excise tax increases, while 9 states enacted net cuts in one year and increases in another. Since the end of the recession, legislated tax policy changes have accounted for a very small share of the increase in revenue. Tax policy changes probably account for less than $20 billion of the $150 billion increase in state tax revenue after December 2001. The tax increases that occurred were overwhelmingly attributable to increased excise (mostly tobacco) taxes.

Without tax increases, tax systems could not maintain revenue. At the height of the fiscal crisis in 2002, 37 states experienced declining policy-neutral revenue (Figure 3, p. 364). We did not adjust that calculation for inflation, so the estimate is conservative, indicating fiscal stress. In Figure 4 (p. 367), we graph the percentage change in nominal revenue from 1999 to 2000 against the percentage change from 2001 to 2002. Several states — Minnesota, Oregon, Massachusetts, Idaho, and Nebraska — had high rates of growth in 2000 but large declines in 2002. That turbulence may have made the fiscal crisis of 2002 especially challenging for those states and may be one reason that other analysts indicate that crisis was unique, compared with past downturns (Giertz and Giertz 2004). Only a few states — West Virginia, New York, South Dakota, Delaware, and Florida — managed similar rates of revenue growth in 2000 and 2002.

State Savings

Savings (or lack of savings) is a crucial factor that could contribute to a state's willingness to increase taxes in the face of declining revenues. As noted by others, on paper many states appeared ready for the 2001 recession. Figure 5 (p. 368) shows the number of states with various levels of savings as a percent of expenditures from 2001 to 2006. At the start of the recession, almost two-thirds of states had at least 5 percent of their expenditures saved in either a rainy

Figure 2. Net State Tax Changes Fiscal 2002-Fiscal 2006



Note: *Excise includes taxes on alcoholic beverages, motor fuel, and tobacco.
Source: NASBO 2001-2005.

day or general fund (Figure 5). That number declined as the recession wore on, but rebounded in 2005 and 2006.

The Impact of State Revenue, Savings, and Need on Spending During Fiscal Crises

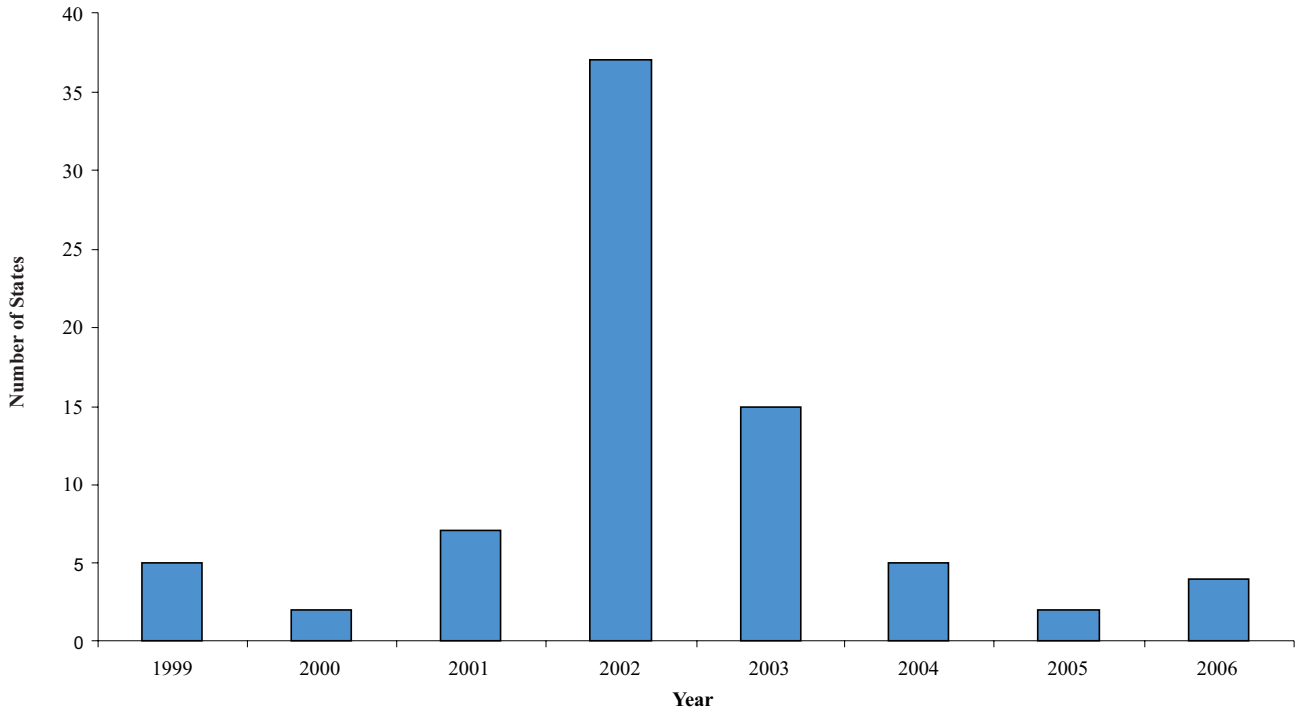
The other half of a state's budget equation — beyond revenue and savings — is spending. This section links spending and revenue to analyze the role savings played in a state's spending patterns.

Stylized Facts

Rather than increasing taxes — which most states opted against during the last recession — states could choose to balance budgets by decreasing expenditures. Some basic facts about state spending, revenue, and savings are displayed in Figure 6 (p. 369). The top panel shows actual general fund revenue and expenditures for each year between 1999 and 2006. In the bottom panel, we plot state rainy day fund balances and total savings (rainy day fund balances plus other ending balances) at the start of each year between 2000 and 2007. A clear story emerges from those two graphs.

Policy-neutral and actual revenue increased much more than expenditures between 1999 and 2000, allowing states to build up savings and cut taxes. During 2000 revenue again exceeded spending despite net tax cuts (policy-neutral revenue is greater than actual revenue), so savings were higher at the start of 2001 than they had been in 2000. In 2001 tax cuts intensified and spending increased, but actual revenue stayed nearly flat and savings declined. From 2001 to 2002, both policy-neutral and actual revenue declined precipitously, though expenditures increased slightly. A large share of states' remaining savings paid for that increase. By the start of 2003, states' savings had fallen by three-fourths since their early 2001 peak. Despite states' low level of savings at the start of 2003, they were able to maintain nominal spending at almost 2002 levels in 2003 because policy-neutral tax revenues began to rise and tax increases generated additional revenue. In 2004 actual revenue rose a bit, partially because of increased taxes, and expenditures began to rise as states also rebuilt their savings. Expenditures were higher in 2005 than 2004, but revenue rose substantially more and almost none of the increase was the result of tax policy change. By the start of 2006, states' savings exceeded their 2001 levels. In 2006 spending and revenue increased again and states had total savings of about $50 billion at the start of the 2007 budget year. From that aggregate national data, it seems clear that, despite the collapse of revenue in 2002, savings

Figure 3. Number of States Whose Policy-Neutral Revenue Declined Each Year



provided a cushion that allowed states to maintain relatively stable spending at 2001 levels. What we cannot observe from that aggregate analysis is the variation of experiences among states. Though aggregate state spending appears to be propped up by aggregate state savings, individual states may face very different circumstances. In the aggregate, increased spending in one state can offset massive cuts in another — and likewise, high savings in one state can mask low or no savings in another.

Despite the collapse of revenue in 2002, savings provided a cushion that allowed states to maintain relatively stable spending at 2001 levels.

To begin to disentangle individual state experiences, we group states into five discrete groups based on savings levels varying from states with savings of at least 10 percent of general fund revenues to states with no savings. In general, higher savings rates are associated with larger year-over-year per capita spending increases. Notably, in the most severe years of the fiscal crisis, 2002 and 2003, even states with savings rates of at least 10 percent were not, on average, able to avoid spending cuts — though the cuts were smaller than states with lower savings' rates. The exception is 2004, when the two states that had savings' rates over 10 percent still enacted the largest average per capita spending cuts (Figure 7, p. 371)).

Multivariate Analysis

We next take a more sophisticated approach to investigate whether individual states' experience during this fiscal crisis reflected the national data. In particular, with all else equal, did states with more savings cut expenditures less than states with less savings? We also analyze whether there was a lingering effect of the 2002 fiscal crisis reflected in spending after the crisis ended in 2003. If so, was the effect attenuated by substantial savings at the start of the recession?

Even after we adjust spending, change in policy-neutral revenue, and savings for population and inflation, we observe large long term and cross-state variation in per capita spending, revenue, and saving (Table 1). The recession affected policy-neutral revenue rather differently across states. While, on average, per capita policy-neutral revenue increased in every year except 2002, some states experienced significant per capita declines. For example, at the start of the recession in 2001, per capita policy-neutral revenue increased an average of $45. However, one state lost $123 per capita, while another saw revenue increase $234 — a difference of over $350.

Table 1. Per Capita Spending, Change in Policy-Neutral Revenue, and Savings				
	N	Mean (SD)	Minimum	Maximum
Per Capita Spending				
1998	44	874.25 (273.12)	467.01	1762.28
1999	48	914.24 (287.58)	459.26	1863.79
2000	48	914.12 (308.27)	460.62	1881.91
2001	49	960.16 (332.88)	461.27	1961.12
2002	48	953.21 (337.77)	484.06	1970.65
2003	48	917.95 (345.50)	471.51	1893.77
2004	49	907.29 (335.35)	454.67	1874.10
2005	48	936.32 (354.16)	438.18	1950.45
2006	48	978.40 (370.67)	443.77	1996.41
Per Capita Change in Policy Neutral Revenue				
1999	44	39.36 (36.43)	-83.14	112.30
2000	47	59.54 (98.89)	-470.17	264.39
2001	49	45.52 (63.32)	-123.70	233.84
2002	49	-43.49 (64.97)	-276.65	66.93
2003	48	33.46 (75.79)	-127.54	253.89
2004	48	46.42 (80.13)	-382.22	184.16
2005	48	67.30 (44.08)	-13.57	232.44
2006	48	73.08 (48.23)	-40.18	179.41
Per Capita Savings				
1998	48	76.07 (54.80)	7.10	235.41
1999	49	78.19 (60.46)	-0.40	324.52
2000	48	79.11 (61.29)	-2.86	298.49
2001	49	62.32 (48.60)	0.00	202.18
2002	48	25.63 (44.22)	-168.49	88.32
2003	49	28.01 (42.49)	-15.14	272.02
2004	49	48.26 (50.74)	-65.34	269.12
2005	48	78.26 (60.07)	0.00	272.96
2006	48	104.01 (73.32)	0.00	303.29

Policy-neutral revenue and savings may have differing effects on a state's spending patterns, depending on whether the state is in crisis. During noncrisis periods, states may not spend all the revenue available, but instead may choose to save or cut taxes. During times of crisis, states may spend down savings and may spend an increased share of revenue.

We use standard statistical techniques to measure the effect of state savings and changes in policy-neutral revenue on the change in state spending (regression coefficients are reported in Table 2, next page). We begin with the simplest specification measuring the effect that savings and policy-neutral revenues have on general fund spending from 1999-2006, without controlling for other factors that may affect spending. Here, we find that for each additional dollar of policy-neutral revenue a state has, we observe a per capita spending increase of about 35 cents. The effect of savings appears even larger. For each dollar of savings a state has at the start of the fiscal year, per capita spending increases 48 cents.

It may be, however, that savings and revenue affect spending differently in crisis years than in years with no crisis. We repeat our analysis, adding controls for whether the state faces a fiscal crisis by interacting savings and whether it is a crisis year and interacting policy-neutral revenue and whether it is a crisis year. We find that during ordinary (noncrisis) periods, each dollar of policy-neutral revenue is associated with increased spending of only 20 cents, but during crisis periods a $1 decline in revenue results in a spending cut of about 80 cents (20 cents + 60 cents). Similarly, an additional dollar of savings is associated with 87 cents (47 cents + 40

Table 2. Regressions to Explain Change in Spending Dependent Variable Is Annual Change in Real Capita General Fund Spending, 1999 to 2006

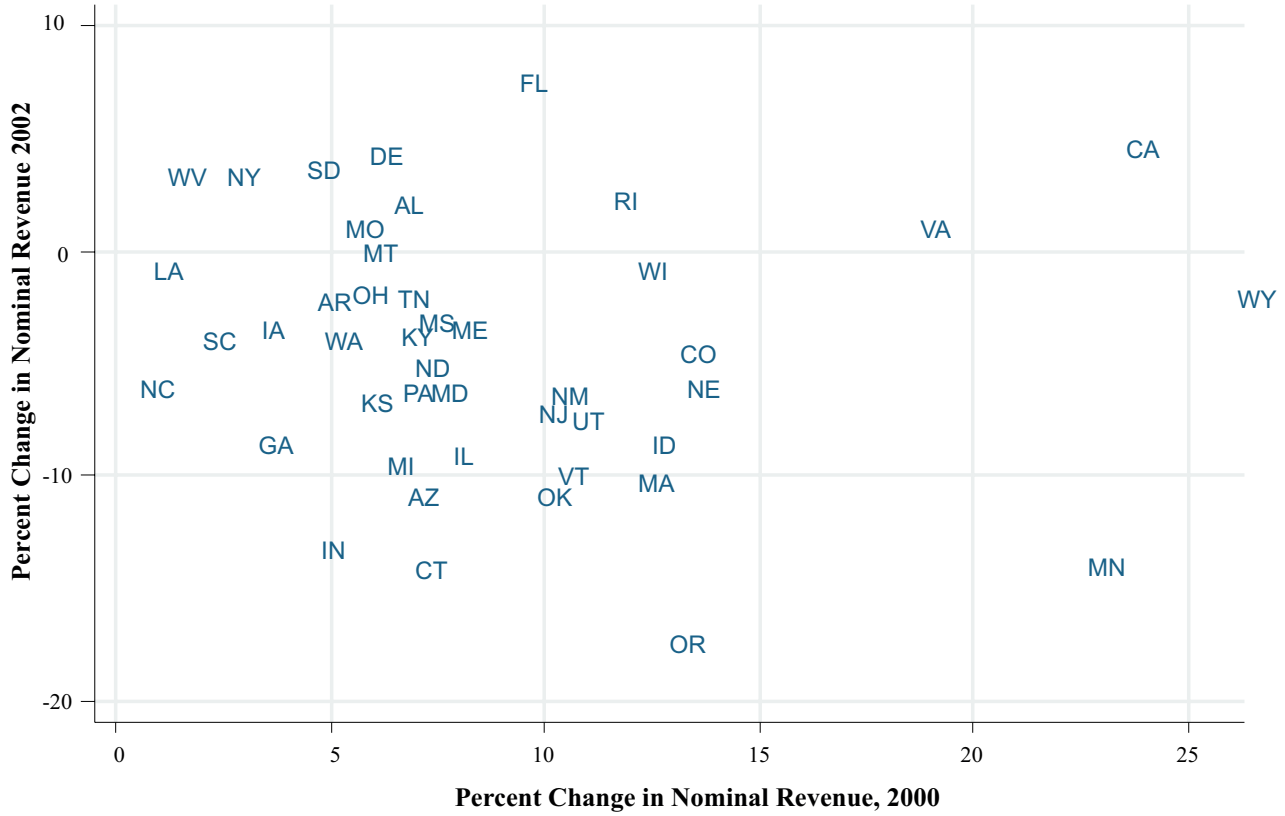
Variable	1	2	3	4	5	6
Change in Per Capita Policy Neutral Revenue	0.349	0.204	0.183	0.204	0.235	0.138
	0.0395	0.0625	0.0754	0.0785	0.0737	0.0793
	0	0	0.02	0.01	0	0.08
Change in Per Capita Policy Neutral Revenue During Crisis Years		0.597	0.665	0.607	0.36	0.468
		0.1115	0.1272	0.1287	0.15	0.1546
		0	0	0	0.02	0
Lagged Per Capita Savings	0.483	0.466	0.656	0.594	0.457	0.434
	0.0525	0.0554	0.0666	0.077	0.0747	0.0826
	0	0	0	0	0	0
Lagged Per Capita Savings During Crisis Years		0.40	0.47	0.43	0.42	0.43
		0.12	0.12	0.12	0.13	0.14
		0.00	0.00	0.00	0.00	0.00
Legend: b/se/p A Crisis year is one in which nominal policy neutral revenue fell.						
Year Dummies	no	no	no	yes	yes	yes
State Dummies	no	no	yes	yes	yes	yes
Adjusted R-Squared	0.29	0.35	0.28	0.32	0.28	0.25
N	379	379	379	379	310	271
Excluded States (in Addition to AK) By Year						
1999	Il, MT, NM, TX,WA	Il, MT, NM, TX,WA	Il, MT, NM, TX,WA	Il, MT, NM, TX,WA	IL, NM, WA and biennial states	IL, NM, WA and biennial states
2000	HI,TX	HI,TX	HI,TX	HI,TX	HI and biennial states	HI and biennial states
2001	HI	HI	HI	HI	HI and biennial states	HI and biennial states
2002	NM	NM	NM	NM	NM and biennial states	NM and biennial states
2003	NM	NM	NM	NM	NM and biennial states	NM and biennial states
2004	NM	NM	NM	NM	NM and biennial states	NM and biennial states
2005	WY	WY	WY	WY	WY and biennial states	WY and biennial states
2006	WY	WY	WY	WY	WY and biennial states	all
Notes: Biennial states are AR, ME, MT, NV, NC, ND, OR, TX, WI. For each independent variable, we show estimated coefficient, standard error, and p value. Shaded coefficients have a p value less than 0.1.						

cents) additional spending during crisis periods but only 47 cents of spending during noncrisis periods.[4]

We study the sensitivity of those results in columns 3 to 6 by further controlling for time effects — factors that vary uniformly over years that may effect states' need and desire for spending changes; for example, changes in federal tax and expenditure policy (column 3). Finally, we control for state fixed effects, which include the many state-specific factors (such as population trends and political ideology) that vary little over the short span of years (1999 to 2006) studied here (column 4). Those controls prove to be relatively unimportant here. Our qualitative conclusions appear robust to those variations — state spending is much more responsive to savings

[4]To examine the robustness of our results, we reran the regressions in columns 2 through 6 of table 2 with a fiscal crisis redefined as a year in which nominal policy-neutral revenue grew less than 2.5 percent. The qualitative conclusions were identical to those reported here.

Figure 4. Percent Change in Nominal Revenue, 2000 and 2002



Note: Alaska, Nevada, and New Hampshire are excluded.

and changes in revenue during periods of crisis than it is in other periods — and the quantitative results support that.

Some states adopt budgets every year, while others only adopt budgets every two years. Of those that budget for two years, nine states (see Table 2) also have a legislature that meets only every other year. Because those states adopt budgets less frequently, they may differ systematically in how they react to fiscal stress. To account for that possibility, we exclude the nine states that have biennial budgets and legislatures from the sample in column 5. In column 6, we also exclude 2006 data (which are still preliminary) from the sample. Those changes do not affect our qualitative conclusions.

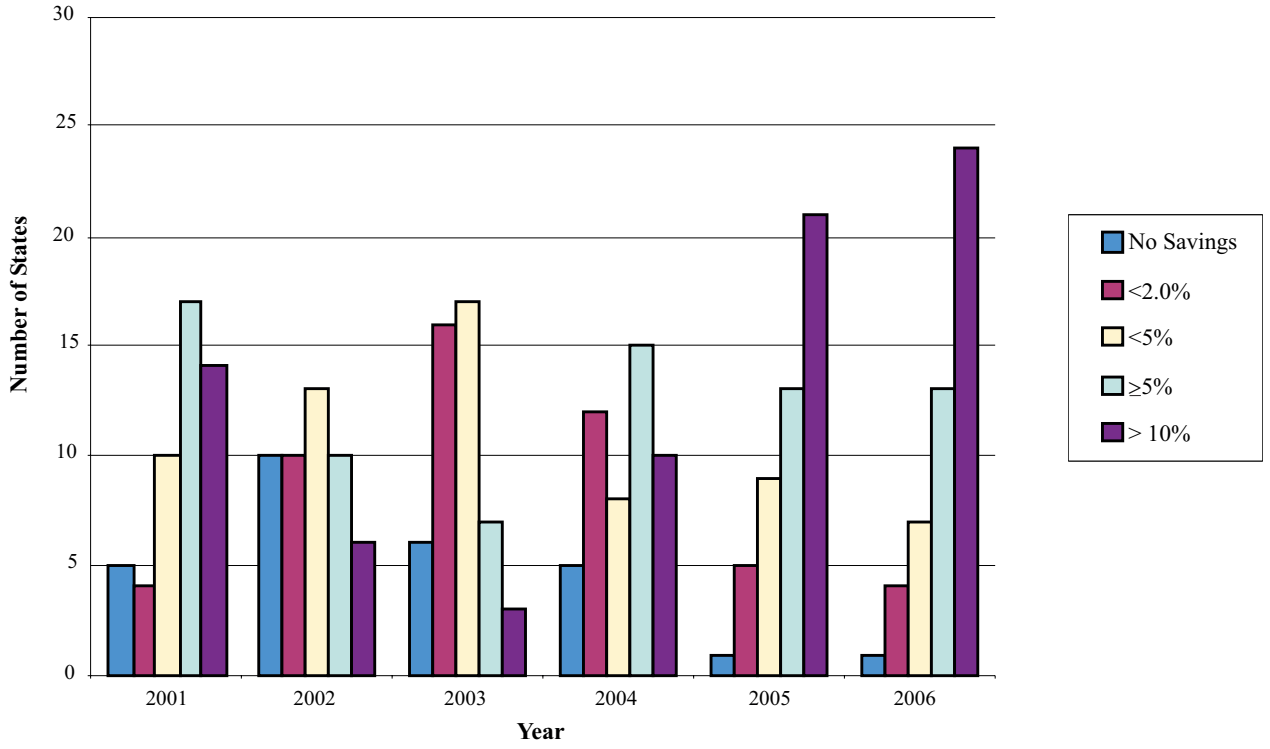
Implications

We use these statistical results to better understand what would have happened to state spending during the recession if the states had entered 2001 with no savings. We simulate that by predicting spending with observed savings and recalculating what predicted spending would have been if each of the states had enacted tax cuts that would have left them with zero savings at the start of 2001. We assume that states' savings would have stayed at zero for 2002 and 2003 and use our regression results (Table 2, specification 4) to simulate what spending would have been in each year from 2001 to 2004. We find that on average, across the states included in our analyses, real per capita spending would have fallen from $936 in 2000 to $895 in 2001 if states did not have savings, rather than rising from $936 to $948 as it did in the actual observations.[5] We predict that by 2004, spending falls to $891 per capita, a decline of 4.8 percent since 2000. However, if state savings had been zero at the start of the recession, we find spending would have fallen to $740, a decline of 21 percent. Our simulations suggest that if states had not had a substantial cushion of savings there might have been draconian cuts in spending.

In figures 8 and 9, we display the implications of savings for a few states. In Figure 8 (p. 373), we see

[5]The "base case" is our prediction of spending based on the observed level of savings and the observed level of policy-neutral revenue growth. Although the base case is not equal to observed data in general because of statistical variability, base, observed and simulated spending are constrained to be equal in 2000.

Figure 5. General Fund and Rainy Day Fund Savings as a Percent of Expenditures



that simulated 2004 spending in Michigan, New Hampshire, and South Dakota is far below both actual spending and the level predicted (assuming observed savings) based on our analysis. However, in New Hampshire and Tennessee, predicted and simulated savings are quite similar because savings was relatively small. Figure 9 (p. 374) shows several states with a much higher level of spending. Savings were also important in some of those states (Minnesota and Rhode Island) but less so in others (Wisconsin, New York, and New Jersey). Savings had an important effect on the level of spending in some high-spending states and in some low-spending states. However, for other states, the level of spending mattered little.

Tax Capacity and Need

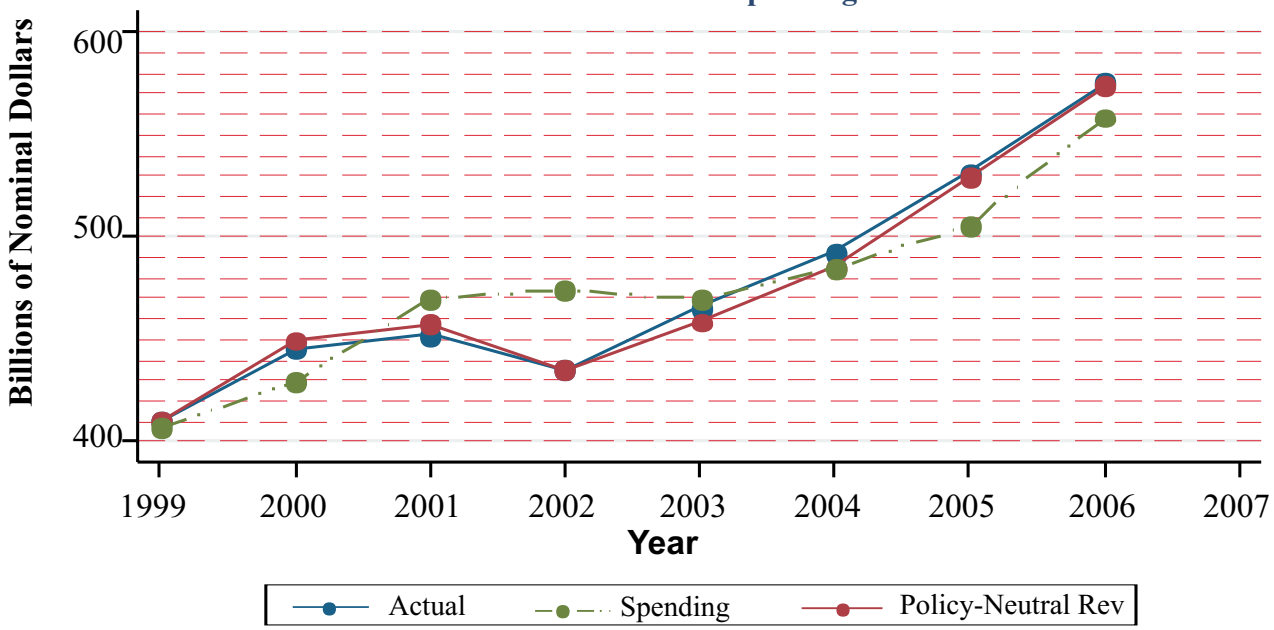
We recognize that changes in spending may be driven by recession-induced changes in the demand for expenditures as well as by changes in resources. Unfortunately, timely, high-quality measures of expenditure demand are scarce. Yilmaz, Hoo, Nagowski, et. al. (2006) provide indices of expenditure need and tax capacity based on average national behaviors. The measures of tax capacity depend on the tax base in various categories while the measures of expenditure need depend on the size of the vulnerable population as well as cost differences. It is plausible that both tax capacity and expenditure need are determined exogenously from state expenditures. In Table 3 (p. 370), we present indices of expenditure need and tax capacity by state for 2002 and 1999. The indices are measured relative to the national average, so Oregon's 2002 tax capacity index of 100 indicates that it had exactly the natural average ability to raise tax revenue per capita in 2002. According to those figures, in 1999 Oregon had the ability to raise 8 percent more revenue than the average in 1999. However, in 2002 Oregon had only 93 percent of the average spending need while it had 100 percent of the average need in 1999.[6]

States that had growing tax capacity tended to have smaller expenditure cuts in 2002.

We try to determine whether states with growing tax capacity and falling need reacted differently to the 2002 fiscal downturn than did those that did not have those characteristics. We calculate the effect that a change in need and a change in tax capacity (between 1999 and 2002) had on the change in real

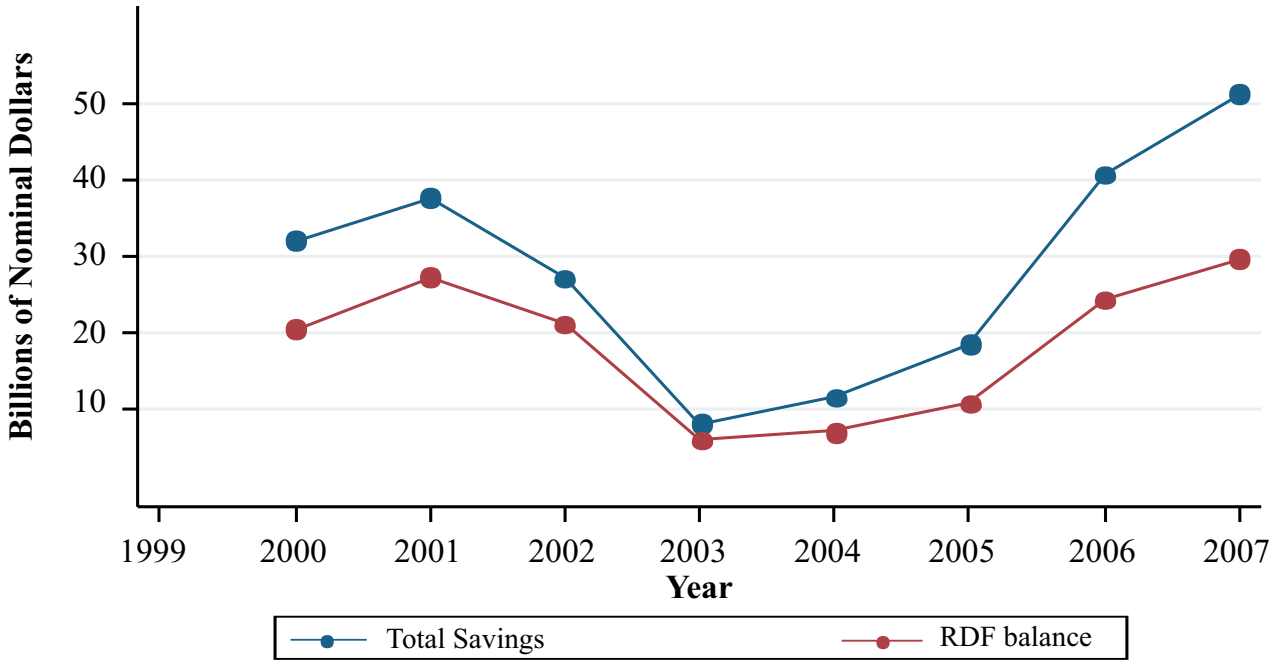
[6]Some of these changes may be driven by a change in method used in the report, rather than actual changes. The extent of this is unclear.

Figure 6.
Total Revenue and Spending



Source: NASBO. 2006 revenue and spending are preliminary actual. All other years are actual. Texas and New Mexico are omitted.

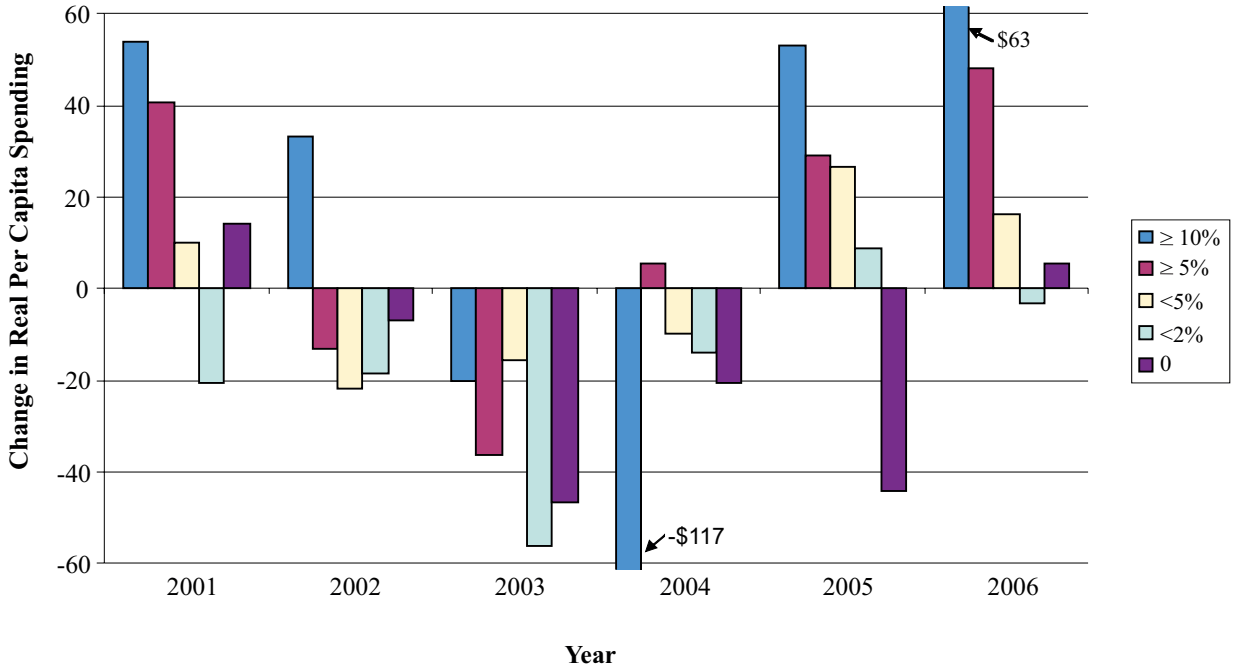
Rainy Day Fund and Savings (Start of Year)



Source: NASBO. 2007 RDF and savings are preliminary actual. All other years are actual. Texas and New Mexico are omitted.

Table 3. Indices of Tax Capacity and Need (2002 and 1999)						
	Index of Tax Capacity			Index of Expenditure Need		
State	2002	1999	Change	2002	1999	Change
Alabama	82	82	0	108	103	5
Alaska	125	109	16	100	110	-10
Arizona	91	98	-7	102	103	-1
Arkansas	76	81	-5	109	100	9
California	110	111	-1	103	107	-4
Colorado	115	105	10	93	97	-4
Connecticut	130	127	3	96	98	-2
Delaware	129	123	6	93	96	-3
Florida	104	103	1	94	92	2
Georgia	93	98	-5	105	105	0
Hawaii	108			87		
Idaho	86	84	2	98	102	-4
Illinois	103	104	-1	102	99	3
Indiana	93	94	-1	98	96	2
Iowa	96	96	0	91	90	1
Kansas	90	92	-2	97	98	-1
Kentucky	94	85	9	102	99	3
Louisiana	83	83	0	110	106	4
Maine	95	92	3	93	91	2
Maryland	102	104	-2	95	97	-2
Massachusetts	126	114	12	95	96	-1
Michigan	97	99	-2	104	104	0
Minnesota	110	108	2	92	98	-6
Mississippi	72	74	-2	113	104	9
Missouri	94	93	1	97	96	1
Montana	96	94	2	97	101	-4
Nebraska	96	98	-2	94	96	-2
Nevada	117	129	-12	91	100	-9
New Hampshire	122	114	8	88	93	-5
New Jersey	118	114	4	97	97	0
New Mexico	88	87	1	108	112	-4
New York	111	106	5	101	101	0
North Carolina	93	97	-4	102	100	2
North Dakota	99	96	3	104	102	2
Ohio	93	94	-1	97	98	-1
Oklahoma	82	79	3	101	99	2
Oregon	100	108	-8	93	100	-7
Pennsylvania	92	92	0	93	94	-1
Rhode Island	95	91	4	93	94	-1
South Carolina	83	86	-3	105	98	7
South Dakota	96	96	0	96	95	1
Tennessee	89	92	-3	104	98	6
Texas	90	90	0	107	105	2
Utah	88	90	-2	103	104	-1
Vermont	103	99	4	91	91	0
Virginia	100	102	-2	96	97	-1
Washington	104	110	-6	96	97	-1
West Virginia	74	72	2	104	99	5
Wisconsin	96	96	0	93	94	-1
Wyoming	123	111	12	98	102	-4

Figure 7. Average Change in Real Per Capita Spending From Prior Year, by Various Savings Levels



per capita spending for 38 states. Table 4 (next page), specification 1 shows that states that had growing tax capacity tended to have smaller expenditure cuts in 2002. Thus, the fall in Oregon's tax capacity index from 1999 to 2002 is associated with a decline in spending of about $26 per capita. Changes in the need index result in no significant change in expenditures in 2002, indicating that states that had a high rate of increase in need did not compensate by raising spending at a relatively rapid rate. We also estimate the change in the tax capacity and need index against the change in real per capita spending from 1999 to 2002 (specifications 2, 4, and 6). We find that tax capacity continues to have a positive and significant effect. The coefficient on the need index is still negative and, in specification 2, nearly significantly different from zero at the 10 percent confidence level. That suggests that states that had the greatest increase in their need index between 1999 and 2002 had the smallest increase in spending. That is illustrated in Figure 10 (p. 375), which shows that Massachusetts, Rhode Island, New Jersey, Maryland, and Ohio had high increases in spending despite almost unchanged relative need, while Tennessee, South Carolina, and Mississippi had large increases in relative need but only average changes in spending. The remaining specifications in Table 4 add controls for the 2002 change in policy neutral revenue and level of savings. The basic results remain the same, although the statistically insignificant coefficient on change in the need index in specification 6 casts some doubt about whether increased need is associated with decreased expenditures or is simply irrelevant to expenditures. We also find that even after controlling for long-term changes in need and tax capacity, the level of savings at the start of 2001 and the change in policy-neutral revenue between 2001 and 2002 help explain the change in spending between 2001 and 2002 (specification 5) and the change in spending between 1999 and 2002 (specification 6).

Beyond the Recession

How long the effects of a state fiscal crisis linger remains unclear. If a state spends all of its available revenue and exhausts its savings, it may have little option but to resort to budget gimmicks such as switching payment years or transferring money between various funds. In those cases, it is possible that a recession in one year could have lingering effects. However, balanced budget requirements could prevent fiscal stress from lingering. States with strong balanced budget requirements might be forced to make hard choices and cut their budgets during lean fiscal times. As long as those cuts do not effect spending in future years, we would not expect a lingering effect of the crisis.

We use standard statistical techniques to analyze whether the revenue shock a state experienced in

Table 4. Regressions on Change in Spending 2001 to 2002 and 1999 to 2002						
	Change in Real Per Capita Spending					
Variable	2001 to 2002	1999 to 2002	2001 to 2002	1999 to 2002	2001 to 2002	1999 to 2002
Change in index of tax capacity 1999 to 2002	3.23	5.35	3.25	5.36	3.25	5.35
	1.79	2.64	1.81	2.68	1.61	2.39
	0.08	0.05	0.08	0.05	0.05	0.03
Change in index of expenditure need 1999 to 2002	-0.53	-5.99	-0.75	-6.15	2.03	-2.10
	2.44	3.60	2.52	3.73	2.41	3.57
	0.83	0.10	0.77	0.11	0.41	0.56
Change in real per capita policy neutral revenue 2001 to 2002			0.05	0.03	0.22	0.28
			0.12	0.17	0.12	0.17
			0.68	0.85	0.07	0.11
Real per capita savings end of 2001					0.601	0.879
					0.189	0.2805
					0	0
Legend: b/se/p						
Adjusted r-squared	0.05	0.18	0.03	0.15	0.23	0.33
N	38	38	38	38	38	38
Excluded states (in addition to AK)	NM, HI and biennial states	NM, HI and biennial states	NM, HI and biennial states	NM, HI and biennial states	NM, HI and biennial states	NM, HI and biennial states

Notes: Biennial states are AR, ME, MT, NV,NC,ND, OR, TX, WI.
For each independent variable, we show estimated coefficient, standard error, and p value. Shaded coefficients have a p value of less than 0.1.

2002 reverberated to future years (see Table 5, p. 373). Specification 1 simply regresses the policy-neutral revenue during 2002 and savings at the beginning of 2002 on the change in expenditure from 2001 to 2002. Consistent with our earlier estimates (tables 2 and 4), we find a positive and significant effect of both variables. In specifications 2, 3, and 4, we ask whether the 2002 fiscal situation had an impact on savings in each of the years from 2003 to 2005. It is not clear a priori what sign should be expected for those variables in years after 2002. A state that had a large revenue shock in 2002 (change in policy neutral revenue is small or negative) might have had to constrain its spending in 2002 (for example, suspend pay raises for its workers), resulting in significant pent-up demand in 2003. In that case, we might expect that policy-neutral revenue change in 2002 would be negatively correlated with spending in 2003 or later years. However, one might expect that a state that had a large revenue shock in 2002 would use all its resources (for example, surpluses in ancillary funds might be swept into the general fund) to prop up spending in that year. In future years, the state might try to replenish those funds, resulting in constrained spending. We find that those two effects balance out so that the change in policy-neutral revenue in 2002 has no significant correlation with the spending changes in 2003 through 2005.

It appears that states are replenishing their savings rapidly and may be prepared even if there were another fiscal crisis soon.

Similarly, it is not clear how we should expect the level of savings at the start of 2002 to be related to spending changes in 2003 to 2005. Savings could be positively related to spending if it allowed states to continue spending at a normal pace — or states could have a strong desire to replenish savings at the first opportunity, so that savings before the recession were negatively correlated with spending in later years. The latter scenario has some support in the data. The level of savings at the start of 2002

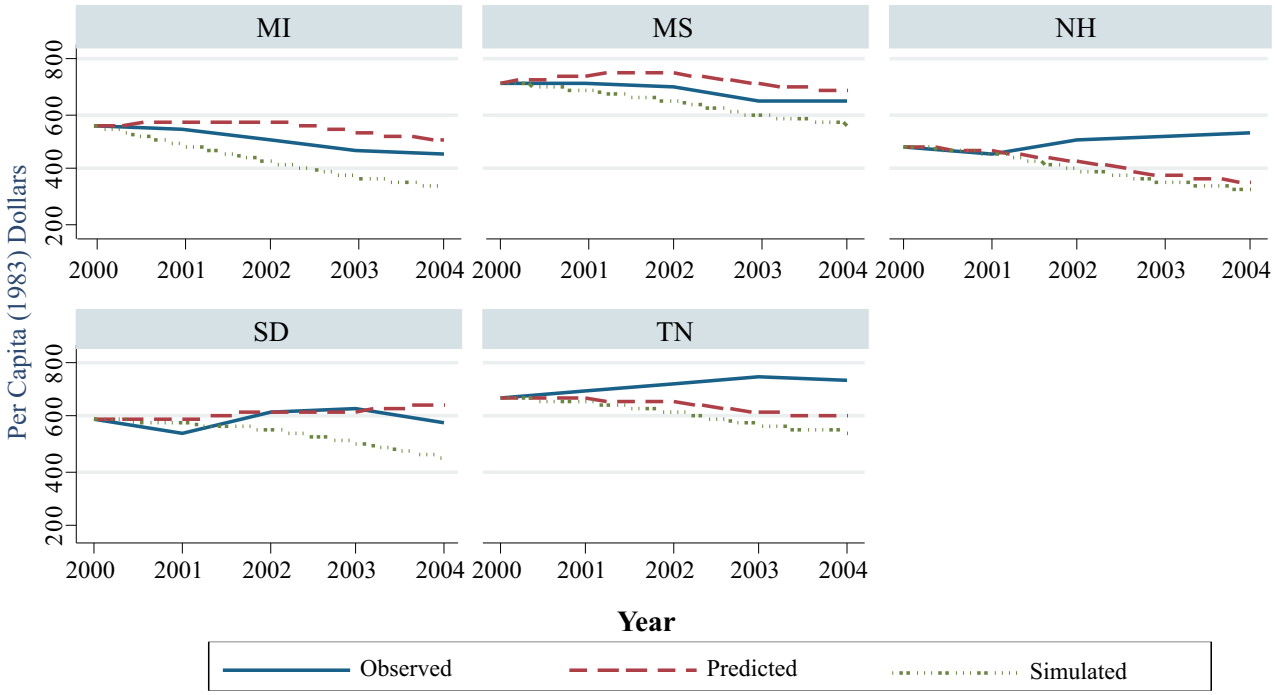
Table 5. Regression on Yearly Spending Change (2002 to 2005)
Dependent Variable Is Change in Real Capita General Fund Spending

Variable	2002	2003	2004	2005
Change in real per capita policy neutral revenue in 2002	0.23	-0.16	0.00	-0.04
	0.11	0.15	0.11	0.13
	0.05	0.29	0.97	0.79
Real per capita savings end of 2001	0.61	0.00	-0.44	0.17
	0.16	0.21	0.16	0.19
	0.00	0.99	0.01	0.37
Legend: b/se/p				
Adjusted r-squared	0.25	-0.02	0.15	-0.02
N	39	39	39	39
Excluded states (in addition to AK)	NM and biennial states	NM and biennial states	NM and biennial states	NM and biennial states

Note: Biennial states are AR, ME, MT, NV, NC, ND, OR, TX, WI.
For each independent variable, we show estimated coefficient, standard error, and p value. Shaded coefficients have a p value of less than 0.1.

Figure 8. Selected States With Low Spending

Observed, Predicted, and Simulated Spending

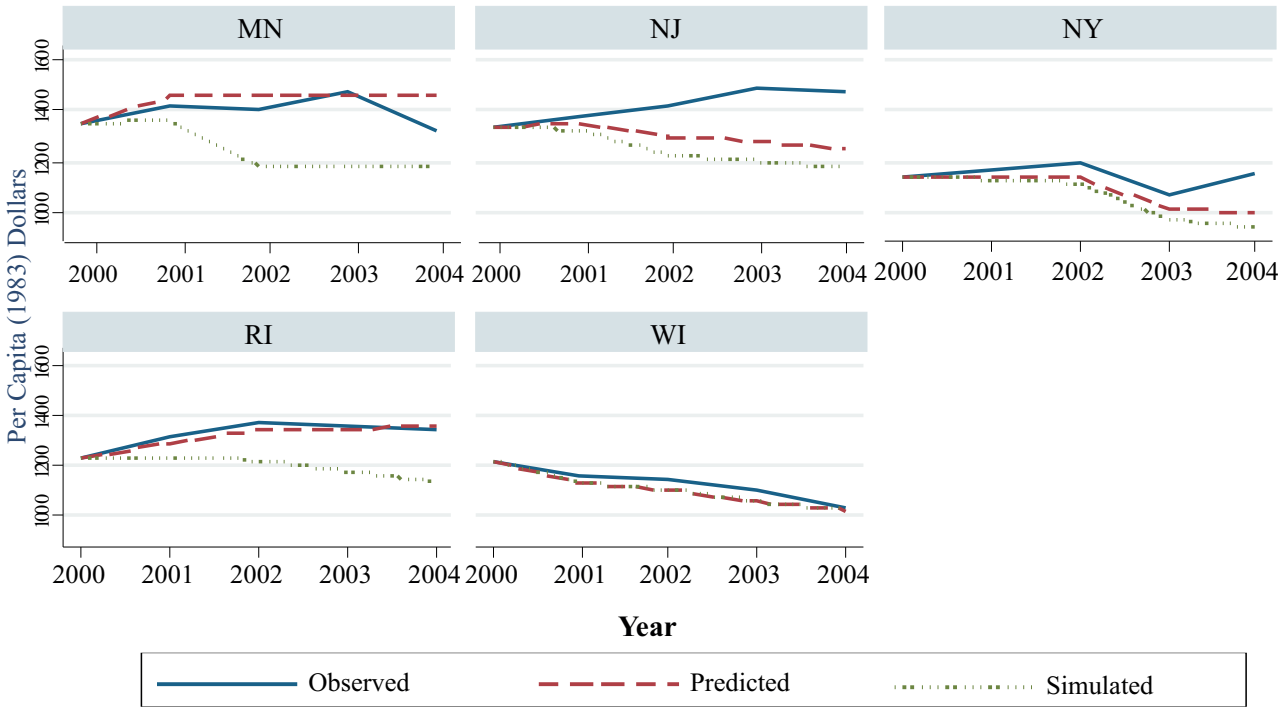


Note: Simulations assume savings are zero at start of 2001 and thereafter.

does nothing to explain spending changes from 2002 to 2003, when revenue was growing very slowly, it is significantly negatively correlated with spending growth between 2003 and 2004, suggesting states may have been trying to compensate for savings that they expended during the two previous years. With limited data, we cannot fully explore the potential impact of other control variables (for example, the level of policy-neutral revenue change in 2003, 2004, and so forth) but there is at least weak evidence that postrecession spending increases are diminished as states try to right their fiscal houses.

Figure 9. Selected States With High Spending

Observed, Predicted, and Simulated Spending



Note: Simulations assume savings are zero at start of 2001 and thereafter.

Conclusion

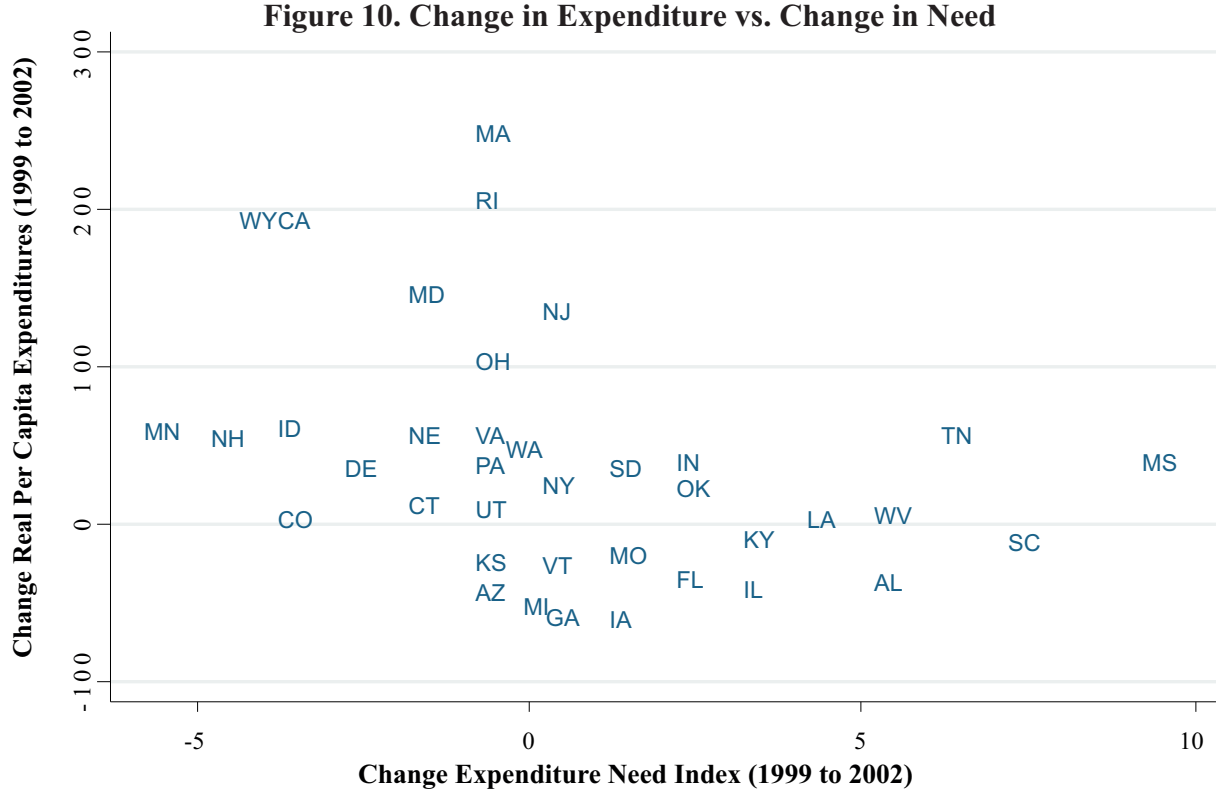
Nearly universal state balanced budget requirements mean that when revenue declines, as they did following the recession starting in March 2001, states must either act to increase those revenue or cut spending. Starting in the second quarter of 2002, tax revenues fell precipitously for the states — yet, somewhat miraculously, nominal expenditures remained roughly constant despite the almost absence of tax policy change. When considering only policy-neutral revenue, the revenue a state would have received absent tax changes, 37 states experienced declines in 2002 compared with the previous year. Despite that rather extreme stress, prerecession savings allowed states (in the aggregate) to avoid significant cuts in nominal expenditure during that time.

Between 2001 and 2003, states drained three-quarters of their savings, about $30 billion. At the same time, nominal total expenditures remained roughly constant. In 2002 revenue dropped substantially. During that time of falling revenues, state savings in general funds and rainy day funds played a significant role in propping up spending. We find that states have a significantly increased propensity to spend out of both current revenue and savings during times of fiscal stress. Our simulations suggest that if states did not have savings when they entered the recession, real per capita spending would have fallen about 21 percent by 2004.

> ***Despite the healthy level of savings in most states, the most vulnerable people in the poorest states may bear the biggest burden during fiscal crises.***

State spending during the recession increased with savings and other available resources (policy-neutral revenue and tax capacity) but appears almost unresponsive to state need. In fact, there is some evidence that states with the biggest increase in need during the fiscal crisis did the least to maintain expenditures. We find that the fiscal crisis had a relatively transitory effect on expenditures. The change in policy-neutral revenue in 2002 does not help explain state expenditures in later years. The level of savings entering the fiscal crisis (at the start of 2002) does not help explain spending changes in 2003 but is *negatively* correlated with spending increases in 2004. That might be because states that had low levels of savings entering the

Figure 10. Change in Expenditure vs. Change in Need



recession were forced to curtail spending in 2002 and 2003 and so had high levels of pent-up demand for spending in 2004.

As states climbed out of the recession, spending began to increase, as did savings. At the start of 2007, balances in rainy day funds equaled those at their peak in 2001 — and when added with general fund savings, those balances exceeded the balances of 2001, when state savings last peaked.

Our analysis of state fiscal data suggests that states weathered the last recession without severe budget cuts or substantial tax increases because they had accumulated substantial savings that they drew on to keep nominal spending almost constant between 2001 and 2003. We find little evidence that that three-year hiatus in spending growth has caused a postrecession spending surge. In fact, it appears that states are replenishing their savings rapidly and may be prepared even if there were another fiscal crisis soon. That generally positive picture is marred by the lack of evidence that growth in state spending rises with growth in an index of state need. We fear that, despite the healthy level of savings in most states, the most vulnerable people in the poorest states may bear the biggest burden during fiscal crises.

Appendix

As explained in the body of the report, most of the data used in our analysis come from NASBO's "The Fiscal Survey of States," (Table A1, various years) and describes the states' general funds. The data for 2006 are the most recent available but are preliminary. Each state defines its own general fund according to the accounting rules adopted in that state. The general fund is usually the biggest state government fund but readers should be cautioned that some major expenditures (such as Medicaid) or revenue may be in the general fund of some states but not others. Also, within a particular state expenditures or revenue recorded in the general fund in one year may be moved to a different fund in another year.

This appendix describes the adjustments we have made to the data so that they represent the conceptual variables we seek to describe. First, we put all monetary variables in real (1982-1984 dollars) per capita terms.

We use the following notation:

EB = ending balance, BB = beginning balance, REV = revenue, RAJ = revenue adjustments, EXP = expenditures, EA = expenditure adjustment, RDF = rainy day fund at year-end

An accounting identity assures that:

(1) $EB_t = BB_t + REV_t + REJ_t - EXP_t - EA_t$

That implies

(2) $EXP_t = (BB_t - EB_t) + REV_t + RAJ_t - EA_t$

According to the notes from Table A1 of "The Fiscal Survey of the States," fall 2005, "For all states, unless otherwise noted, transfers into budget stabilization funds are counted as expenditures and transfers from budget stabilization funds are counted as revenues."

Because we want to measure government expenditures on goods and services, we adjust expenditures and revenue as follows:

(3) Adjusted expenditure = $AEXP_t = EXP_t - (RDF_t - RDF_{t-1})$ if $RDF_t > RDF_{t-1}$ else $AEXP_t = EXP_t$

(4) Adjusted revenue = $AREV_t = REV_t + (RDF_t - RDF_{t-1})$ if $RDF_t \leq RDF_{t-1}$ else $AREV_t = REV_t$

We use NASBO data (Table A10 various years) to calculate dollar value of 1. Tax increases = TXINC and 2. Tax cuts = TXCUT.

We calculate policy-neutral revenue (5) $PNREV_t = AREV_t - TXINC_t + TXCUT_t$

We calculate savings (6) $SAV_t = RDF_t + EB_t$

We estimate the following regression:

(7) $\Delta AEXP_t = \beta_1 \Delta PNREV_t + \beta_2 SAV_{t-1} + \alpha_i + \gamma_t + \mu_{it}$

where $\Delta X_t = X_t - X_{t-1}$

α_i is a state-specific fixed effect and γ_t is a time-specific fixed effect.

We define a state as having a fiscal crisis (crisis dummy equals 1) when (nominal) policy-neutral revenues fall below (nominal) actual revenues (as adjusted) in the previous year.[7]

(8) $CRISIS\_DUM_t = 1$ $PNREV_t - AREV_{t-1} < 0$ else $CRISIS\_DUM_t = 0$

Throughout the statistical analyses, we drop Alaska from the sample because it had extraordinary high saving (due to revenues from oil extraction) and may use a different process than other states for making budgetary choices. We also omit Hawaii in 2000 and Wyoming in 2005 and 2006 because of suspicious data about policy-neutral revenue changes or savings. We omit other states and years either because they budget biennially (as explained in the paper) or because of missing data.

We treat Colorado and Illinois as having a zero rainy day fund balance in each year because we view their special funds (which NASBO classifies as rainy day fund) as being inaccessible during recessionary times. We also treat North Dakota's 2000 rainy day fund as zero for similar reasons.

The method for our simulations (figures 6 and 7) assumes that at the start of 2001 through 2004 states had zero savings. States might have accomplished this, for example by enacting a tax cut in 2000 to distribute their savings. We then simulate what spending would have been in each year with the observed (base case) level of saving and with zero savings.

[7]For equation (8) only, we use observed rather than real per capita values because we believe this best represents a fiscal crisis.

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