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STATE RESPONSES TO  
FISCAL CRISES: THE EFFECTS OF  
BUDGETARY INSTITUTIONS AND POLITICS

James M. Poterba

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ABSTRACT

This paper explores how state fiscal institutions and political circumstances affect the dynamics of state taxes and spending during periods of fiscal stress. The analysis focuses on the late 1980s, when sharp economic downturns in several regions, coupled with increased expenditure demands, led to substantial state budget deficits. State fiscal institutions, such as "no deficit carryover" rules and tax and expenditure limitations, appear to have real effects on the speed and nature of fiscal adjustment to unexpected deficits. Political factors are also important. When a single party controls the state house and the governorship, the reaction to state deficits is much faster than when party control is divided. In gubernatorial election years, tax increases and spending cuts are both significantly smaller than at other times.

James M. Poterba  
Department of Economics  
MIT  
Room E52-350  
Cambridge MA 02139  
(617) 253-6673  
and NBER

The early 1990s have been a period of fiscal stress for state governments. Although the states in aggregate ran substantial budget surpluses in the mid-1980s, weakening state economies and a variety of pressures for higher spending have recently transformed surpluses to deficits. In fiscal 1991, twenty-two states reported revenues below their initial expectations, and twenty states faced expenditures in excess of their budgetary projections. Unlike the federal government, most states are constitutionally prohibited from deficit finance over any prolonged period. State fiscal crises therefore require politicians to make hard choices, raising taxes or reducing outlays to restore fiscal balance.

The states provide a laboratory for studying how fiscal institutions and political factors affect taxes and spending. Previous studies have exploited the cross-state variation in line-item veto provisions, no-deficit carryover provisions, constitutional debt limits, and capital budgeting rules to assess the effects of these institutions on government spending. These studies have focused on long-term patterns in state spending and revenues, rather than short-term changes in state fiscal position.

State fiscal crises provide a unique opportunity for studying how fiscal institutions and political factors affect fiscal decision-making. If institutions such as balanced budget amendments restrict the flexibility of political actors, then states with and without these laws should respond differently to revenue shortfalls and outlay overruns. Studying state reactions to fiscal shocks also offers a way to avoid an important endogeneity problem in earlier cross-sectional studies of the impact of fiscal institutions on government spending. While the budgetary

institutions and political climate in a state may be determined by the same factors that influence the long-run choice of spending level, these factors may have less impact on the way states respond to fiscal stress than on the level of spending.

This paper is divided into five sections. The first presents background information on the state fiscal crisis of the early 1990s, focusing on the cross-sectional variation in the budgetary shocks confronting various states. Section two explores the simple dynamics of state budgetary adjustment, testing whether states actually adjust outlays and taxes in response to deficits. This section in effect tests the extent to which statutory and constitutional rules prohibiting state deficits actually bind. The third section considers how various budgetary institutions besides a no-deficit carryover rule, for example tax and expenditure limits, affect the dynamics of state revenue and expenditure adjustment. Section four focuses on political circumstances, testing the hypotheses that when one political party controls decision making in a state, adjustment to fiscal shocks is faster than when the governorship and legislature are controlled by different parties. It also explores the link between gubernatorial election cycles and the use of tax increases or spending cuts to address revenue shortfalls. A brief concluding section suggests several directions for future work.

### 1. State Fiscal Conditions

The fiscal condition of states and localities has varied dramatically in the last decade. In the early 1980s, states and localities were near fiscal balance. On a

national income accounts basis, and excluding social insurance funds, the state and local sector reported small deficits and surpluses.<sup>1</sup> During the mid-1980s, states and localities ran large surpluses. In 1984, for example, the surplus excluding social insurance funds was \$19.8 billion. Fiscal conditions changed again by the late 1980s. In 1987, the sector reported a deficit of -\$14.7 billion. The deficit trebled over the next five years. Sullivan (1993) reports deficits of -\$43.1 billion and -\$42 billion for 1991 and 1992, respectively.

Most of the deterioration in the fiscal position of states and localities has been concentrated at the state level. Recent state deficits are the result of many forces.<sup>2</sup> One clear influence is the 1990-92 recession, which was concentrated in a few regions and slowed revenue growth sharply for many states. There have also been reductions in real federal grants to states and localities. These grants, which accounted for 25% of state revenue at the beginning of the 1980s, were only 20% of the total in the early 1990s. Unrestricted block grants have largely disappeared, in some cases replaced by federal matching grants for particular activities.

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<sup>1</sup>The National Income and Product Accounts (NIPA) report a surplus for states and localities throughout the 1980s, but that combines a large surplus in social insurance funds with a varying position from other operations. Gramlich (1991) and Levin (1986) discuss various corrections to the NIPA measures.

<sup>2</sup>Studies of why state fiscal fortunes have turned so sharply include Blackley and Deboer (1993), Dye and McGuire (1992), Gold (1990), and Gramlich (1991), and Moore (1991).

These reductions in revenue coincided with rising state spending needs. The growing elderly population, combined with real increases in health care costs of several percent each year, substantially raised outlays for health care and related services. Rising crime rates and sentencing reforms, particularly the spread of mandatory sentencing laws, swelled the need for prison space. In California, for example, real prison outlays have grown 250% since 1980. Fiscal problems in large cities have also shunted responsibility for some traditionally local services on to the states.

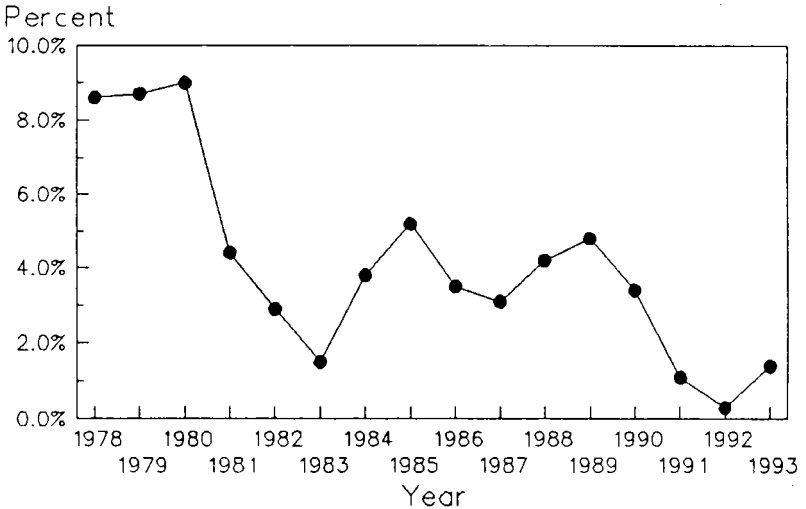
Fiscal stress resulted in historic state tax increases in fiscal years 1991 and 1992. The combined tax increase in these two years, \$26.6 billion (1992 dollars), is substantially larger than the tax increase in any previous two-year period.<sup>3</sup> The \$15.5 billion increase in fiscal 1991 alone is only slightly smaller than the largest previous one-year change, \$15.6 billion in FY1972, when state fiscal stress prompted the introduction of federal revenue sharing.

Figure 1 shows aggregate state "rainy day fund" balances as a share of state spending. These funds expand after states experience unexpected surpluses, and can be drawn down to cover unexpected deficits. They provide another measure of the fiscal condition of the states, and it indicates unusually weakness in the early 1990s. The balance at the end of fiscal 1992, 0.3% of total expenditures, is lower than at any time since the National Association of State Budget Officers

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<sup>3</sup>Data on tax increases are drawn from various issues of ACIR, Significant Features of Fiscal Federalism, and National Association of State Budget Officers publications.

Figure 1: Total Year-End Balances As A Percent of Expenditures, 1979 - 1993



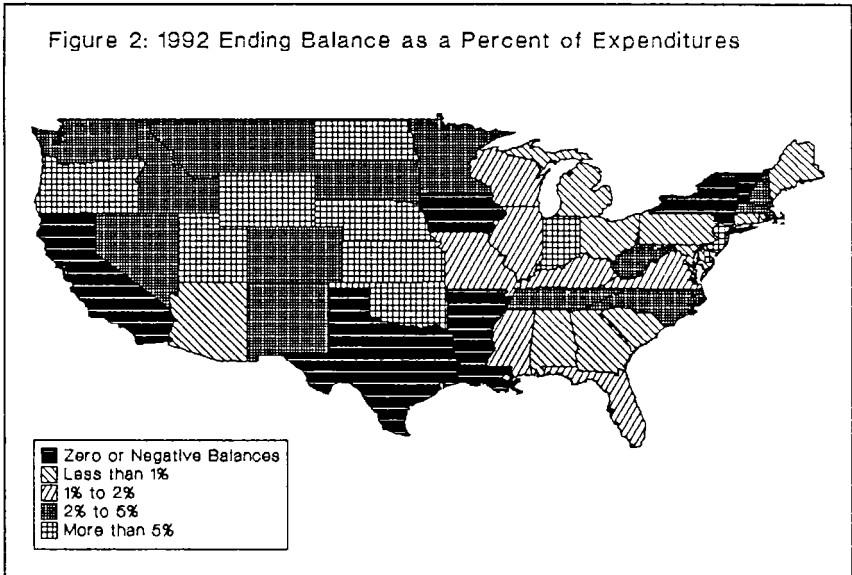
Source: NASBO "Fiscal Survey of the States 1992"

began collecting these data in the late 1970s.

The aggregate pattern in Figure 1 conceals substantial dispersion in fiscal conditions across states. In fiscal 1992, for example, ten states reported deficits of more than one billion dollars, while others such as Oregon and West Virginia had large surpluses. Table 1 provides more detail on the distribution of state general fund balances as a share of expenditures in each fiscal year since 1989. At the end of fiscal 1989, only five states had general fund balances below 1% of expenditures. Twenty-one states were in this position at the end of fiscal 1993.

The number of states with general fund balances of more than five percent fell from 29 to 7 during this period.

Figure 2 displays the geographical pattern of state surpluses in fiscal 1992.



The states on the two coasts, where the economic downturn of the early 1990s was most severe, were most likely to face fiscal stress. This contrasts with the mid-1980s, when states in the Midwest and oil-producing Southwest faced an economic downturn while the coastal states were in better economic and fiscal health. Cross-state heterogeneity in fiscal condition provides an important basis for the empirical analysis in later sections.



## 2. The Dynamics of State Deficit Adjustment

Most state constitutions prevent state governments from running deficits for any substantial length of time.<sup>4</sup> Anti-deficit provisions take two forms: limitations on projected deficits, and limitations on actual deficits. In all but five states, the governor must submit a balanced budget. Thirty-nine states have constitutional or statutory provisions requiring the legislature to pass a balanced budget. After the budget has passed, however, revenues and expenditures may diverge from expectations and lead to an unexpected deficit. States vary in the speed with which they require such deficits to be eradicated. Only nine states allow actual deficits to be carried forward to the next fiscal year. Only six do not require the deficit to be eliminated in the following fiscal year.

States also vary in the policies that can be used to eliminate a deficit and satisfy the balanced-budget rules. In most states with no-deficit rules, borrowing can be used to close a current budget gap. Some states require such borrowing to be repaid in the next fiscal year, and prevent the use of long-term debt to cover deficits. Other states have constitutional limits requiring a referendum on new issues of long-term debt; this makes it relatively more costly to use debt to cover unexpected deficits.<sup>5</sup>

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<sup>4</sup>Even states with explicit anti-deficit rules do run deficits. As noted below, borrowing is often defined as a way to close the "deficit." This is why the national income accounts can show substantial state deficits, even though most states have anti-deficit rules.

<sup>5</sup>Marlow and Joulfaiian (1989), Bunche (1991), and Kiewiet and Szakaly (1992) analyze how state borrowing limitations affect general obligation and revenue

States can sometimes employ "creative accounting" to satisfy balanced-budget rules. Gold (1983) explains that "a state ... usually has considerable latitude to accelerate tax collections, defer outlays, and adopt accounting practices which avert a deficit." For example, a state might change the actuarial assumptions in its pension plan to reduce the required contribution, or delay payment of some invoices until after the fiscal year ends. While this approach may be successful in transforming deficits in one year into deficits in some subsequent year, it does not address the underlying state fiscal problem. States also can draw down their general funds and "rainy day funds" to cover shortfalls. Some reactions to unexpected deficits, such as tax increases, are much more likely to represent real changes in fiscal stance. Recent state fiscal experience can provide evidence on the amount of flexibility states face in covering deficits.

## 2.1 Measuring State Fiscal Surprises

Each year, the National Association of State Budget Officers (NASBO) surveys its members and obtains information on actual revenues and expenditures in the last and current fiscal year, projected revenues and expenditures when the budget was enacted for the following fiscal year, and any budget cuts or tax changes that have been enacted. Virtually all states respond to these surveys. Information on budget cuts is available since the mid-1980s, but data on state tax increases has only been collected since 1988. This study will focus on the period

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authority borrowing.

when both types of data are available (1988-1992). The survey responses can be used to construct measures of state fiscal shocks and to study how expenditure cuts or tax changes are enacted in response to these problems.

The construction of fiscal shock variables proceeds as follows. The unexpected component of revenues, REVSHOCK, is defined as:

$$(1) \quad \text{REVSHOCK}_{it} = \text{Actual Revenues}_{it} - \text{Forecast Revenues}_{it} - \Delta \text{TAX}_{it}.$$

The subscript  $i$  refers to the state, and  $t$  to the fiscal year. All state fiscal variables are measured in 1988 dollars per capita.  $\Delta \text{TAX}_{it}$  refers to tax changes enacted during fiscal year  $t$  that raise tax revenue in that fiscal year. The expenditure shock is similarly defined as:

$$(2) \quad \text{EXPSHOCK}_{it} = \text{Actual Outlays}_{it} - \text{Forecast Outlays}_{it} - \Delta \text{SPEND}_{it}.$$

$\Delta \text{SPEND}_{it}$  measures any spending cuts enacted after the initial budget but during fiscal year  $t$ .<sup>6</sup> If increased expenditure needs within the fiscal year seem likely to raise outlays in a given year, but the state enacts program cuts so that total outlays for the fiscal year are precisely equal to projected outlays,  $\Delta \text{SPEND}_{it}$  will be negative and  $\text{EXPSHOCK}_{it}$  will be positive. Combining REVSHOCK and EXPSHOCK yields a measure of the unexpected component of the state budget deficit in a given fiscal year:

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<sup>6</sup>NASBO only collects data on budget cuts. Although within-fiscal year additional appropriations are less common than budget cuts, this data problem contaminates the estimates of spending changes.

$$(3) \quad \text{DEFSHOCK}_t = \text{EXPSHOCK}_t - \text{REVSHOCK}_t.$$

Since the null hypothesis of equal and opposite-signed reactions to revenue and expenditure shocks was never rejected in the empirical analysis reported below, the presentation focuses on the impact of DEFSHOCK on tax increases and expenditure cuts.<sup>7</sup>

States can respond to fiscal shocks by cutting spending or raising taxes. The conventional view, reported for example in Fisher (1988), is that most changes within a fiscal year are achieved through spending changes rather than new taxes. Some states enact legislation that raises taxes in the same fiscal year; this is theoretically what  $\Delta\text{TAX}$  in (1) describes. While NASBO collects information on within-year spending changes, it does not collect comparable information on tax revisions. The NASBO survey instead asks about the change in the next fiscal year's taxes that is attributable to tax legislation enacted during this fiscal year (denote this as  $\Delta\text{TAXNEXT}$ ). The survey also reports the date when the new tax legislation takes effect. I measure  $\Delta\text{TAX}$  for the current fiscal year as the product of  $\Delta\text{TAXNEXT}$  and the fraction of the current fiscal year remaining after the tax bill's effective date.<sup>8</sup>

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<sup>7</sup>In some but not all states, forecast revenues equal forecast expenditures, so DEFSHOCK is measured relative to an expected deficit of zero. When the expected deficit is not zero, states project adding to, or subtracting from, the balance in the state general fund.

<sup>8</sup>This procedure probably overstates the change in tax revenue in the current fiscal year, since some provisions may not take effect until the next fiscal year. I explored the sensitivity of my findings to this problem by considering the extreme

Table 2 summarizes the fiscal surprises that states have faced in the last five fiscal years. In fiscal 1991, for example, three quarters of the states faced positive deficit shocks, meaning that deficits were larger than expected. Only two years earlier, this fraction was just over one third. The table also shows that the source of state fiscal stress has varied during the 1988-1992 period. While expenditure over-runs occurred throughout the period, states experienced both expenditure overruns and revenue shortfalls in the early 1990s. While the mean expenditure overruns were larger in FY1988 and FY1989 than in the early 1990s, the average deficit shock was larger in the later years. This is the result of a dramatic shift in the unexpected revenues accruing to states. In both FY1988 and FY1989, the revenue surprises for most states were favorable. By FY1991 and FY1992, however, the average revenue shocks were negative, and the number of states with shortfalls exceeded the number with unexpected favorable shocks.

Table 2 also provides descriptive information on the way states have adjusted to fiscal shocks. In fiscal 1992, for example, more than three-fifths of the states cut their budgets after they were enacted. The last two panels of the table show that many more states enact tax increases that take effect in the next fiscal year than change their tax laws in the current fiscal year. The table also shows that

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case in which no tax changes take effect in the current fiscal year, and found results quite similar to those reported below.

while the average within-year tax change was negative in FY1988, in subsequent years states raised taxes after enacting their budgets.<sup>9</sup>

The data in Table 2 illustrate the substantial heterogeneity in the experiences of different states. In fiscal 1992, for example, expenditure shocks ranged from a shortfall of \$230 per capita (Rhode Island) to an unexpected windfall of \$60 per capita (Minnesota). Similar disparities are clear with respect to revenue shocks: the range is from +215 (Rhode Island) to -116 (California) per capita. The lower panels of the table show that even during fiscal 1991 and 1992, when most states were experiencing fiscal trouble, there were some states that cut taxes.

The previous discussion emphasized that recent state deficits are the result of many compounding forces. Some factors affecting the deficit, for example an unexpectedly weak state economy, affect both revenues and expenditures. The degree to which revenue and expenditure shocks reflect different underlying forces can be measured by computing the correlation between REVSHOCK and EXPSHOCK. For the fiscal years 1988-92, the correlation for the 48 continental states is .68, suggesting that the two shocks share important common factors.

Identifying these common factors is more difficult, however. A regression of the unexpected component of expenditures on the change in the state unemployment rate between the current and last fiscal year has an adjusted  $R^2$  of

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<sup>9</sup>The last two panels of Table 2 show that the average value of  $\Delta TAXNEXT$  is roughly six times the average size of  $\Delta TAX$ . Assuming effective tax dates are uniformly distributed throughout the fiscal year, this would imply that roughly one third of tax changes take effect in the current fiscal year.

only .014. The analogous value from the regression of the revenue shock on this measure of economic conditions is .168. These findings suggest that state economic conditions are not the only factor determining the magnitude of fiscal shocks.

## 2.2 State Adjustment to Fiscal Surprises

To analyze how expenditure and revenue shocks affect state spending and taxes, I estimate regression equations of the form

$$(4a) \quad \Delta SPEND_{it} = \alpha_0 + \alpha_1 * DEFSHOCK_{it} + \epsilon_{it}$$

$$(4b) \quad \Delta TAX_{it} = \beta_0 + \beta_1 * DEFSHOCK_{it} + v_{it}$$

DEFSHOCK is positive when the deficit is larger than expected.<sup>10</sup> Estimates of equations (4a) and (4b) can provide insight on two issues. First, how flexible are state budgeting rules? Do deficit shocks force dollar-for-dollar changes in the level of taxes and spending, or can creative accounting be used to avoid real changes? The hypothesis that states must balance their budgets on an annual basis corresponds to  $\alpha_1 - \beta_1 = -1$ . Second, the relative magnitudes of the coefficients in the two equations provide information on the relative use of higher taxes, and

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<sup>10</sup>This analysis does not correct for the censoring of  $\Delta SPEND$ : NASBO only collects data on budget increases within the fiscal year. This is likely to bias the estimates of  $\alpha_1$  toward zero. Rueben and Poterba (1993) estimate (5a) using several different methods to correct for this problem. The substantive empirical findings are similar to those reported below.

spending cuts, in reducing state deficits.<sup>11</sup> Table 3 reports estimates of equations (4a-b). The estimates are for the subset of states with annual budget cycles. These states pass budgets for a single year and have legislative sessions to approve budgets each year. Other states (19 in total) have two-year budget cycles; some of them conduct budget deliberations every other year, while others have some budgetary review in each year. The "natural experiment" provided by fiscal shocks seems to apply most clearly to annual budget states, so the remainder of my analysis focuses on this group. Summary statistics analogous to those in Table 2, but limited to the annual budget states, are reported in Appendix Table A-1.

The first two rows in Table 3 show the outlay revision and tax increase for annual budget states. A \$100 per capita increase in the deficit induces an outlay reduction of \$22, and a tax increase in the next fiscal year of \$45. The within-fiscal year tax response is less than one quarter of the next year's change. The net amount of adjustment in response to an expenditure shock,  $\alpha_1 - \beta_1$ , is  $-.67$  (.19). I explored the source of the identifying variation in the deficit shocks by including both time and state effects, and found very little change in the estimated coefficients. I also estimated a weighted least squares regression, assigning weights to states based on population, and tried estimating equations (4a) and (4b)

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<sup>11</sup>There is a substantial literature on when state and local governments enact tax increases. Bloom and Ladd (1982) and Ladd (1991) provide evidence on when local governments decide to increase property taxes; Berry and Berry (1992) consider the political factors that are associated with state tax increases.



for the set of states with biannual budget cycles. In both cases, the results were again very similar to those in Table 3.

Table 3 also presents results that separate the adjustment coefficient on positive and negative deficit shocks. This distinction is important. A one dollar unexpected deficit, a revenue shortfall or expenditure over-run, leads to a forty cent reduction in outlays. A one dollar unexpected surplus (deficit  $< 0$ ) leads to only a three cent increase in spending. The pattern of strong reactions to unexpected deficits and virtually no adjustment to unexpected surpluses persists throughout the analysis. This result potentially bears on the long-standing debate on how federal grants affect state and local spending. The estimates suggest that an unexpected lump-sum increase in federal grants, which generates an unexpected state surplus, might simply increase state rainy-day funds rather than increase actual outlays.<sup>12</sup>

One potential problem in estimating the tax and spending adjustment equations is that the deficit shock variable may be endogenous. If forecasts of revenues and expenditures are biased by political pressures and state economic prospects, the results in Table 3 may simply reflect the correlation between tax and spending changes and the bias in deficit forecasts. The limited prior evidence on the rationality of revenue and spending projections, summarized and extended in Feenberg et al. (1989), suggests some inefficiency in the way revenue forecasts

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<sup>12</sup>These results contrast with findings in Holtz-Eakin and Rosen (1989), which suggest that local governments increase construction spending by six cents per dollar of unexpected revenue flow.

incorporate historical information on the state economy and related variables. This study nevertheless found little evidence of any systematic biases in state revenue projections, which supports the estimation strategy above.

An alternative method to correct for the endogeneity of the deficit shock variable is to construct an econometric forecast of state revenue and expenditure, and to use this forecast variable in place of the reported NASBO forecast. I estimated time series models for state spending and revenues, using lagged spending, lagged expenditures, and lagged state personal income as explanatory variables, and labelled the differences between actual outcomes and the forecasts from these models REVSHOCK' and EXPSHOCK', respectively. This yielded an alternative estimate of the fiscal shock, DEFSHOCK', which I used as an instrumental variable for DEFSHOCK in equation (4).

The results of this instrumental variable estimation are also shown in Table 3. They suggest that spurious endogeneity cannot account for the results described above. The estimated adjustment parameters,  $\alpha_1$  and  $\beta_1$ , are both larger in absolute value in this case. The estimates suggest that each dollar of unexpected deficit leads to a sixty-one cent spending cut and a twenty-three cent tax increase within the fiscal year, and a tax increase of \$1.01 in the next fiscal year. These point estimates imply that the total deficit reduction is larger than the deficit shock, although the standard errors are large and the hypothesis that  $\alpha_1 - \beta_1 = -1.0$  cannot be rejected at standard confidence levels.

Both the OLS and instrumental variables results suggest that states react to unexpected deficits with real changes in fiscal position. Approximately two thirds of a shortfall is made up with tax and expenditure changes within the fiscal year.<sup>13</sup> Tax increases within the fiscal year make a relatively small contribution to deficit reduction, but tax changes that take effect the next fiscal year are more important than spending cuts in reducing the deficit.

### 3. Fiscal Institutions and State Deficit Correction

The previous section reported average state responses to unexpected deficits. Since there are important institutional differences across states, this section tests whether there are identifiable differences in short-run state fiscal dynamics that are related to fiscal institutions. Studying responses to fiscal shocks is a novel method for assessing the effect of fiscal institutions on fiscal outcomes. Most previous work on this question has estimated a modified Borcharding-Deacon (1972) or Bergstrom-Goodman (1973) equation for state or local spending. Per capita spending is regressed on per capita income, the tax price of state expenditures, and various measures of state voter attributes that may reflect preferences. Indicator variables for the presence of particular fiscal institutions are then added to the equation to test whether these institutions affect spending levels.

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<sup>13</sup>Some expenditure changes may be "creative accounting," so the finding that deficits induce lower spending does not necessarily indicate changes in real fiscal stance.

The difficulty with this approach is that fiscal institutions are endogenous. The same factors which induce voters to approve a tax or expenditure limit may lead them to demand relatively little public expenditure. This potential endogeneity makes it difficult to evaluate the findings of many previous studies of fiscal institutions and spending outcomes, such as Abrams and Dougan (1986), Crain and Miller (1990), and von Hagen (1991) on tax and expenditure limitations, Holtz-Eakin (1988), Carter and Schap (1990), and Alm and Evers (1991) on line item vetoes, or Poterba (1993) on capital budgets.<sup>14</sup> The findings from these studies may not predict the tax and spending effects if other states, with different political tastes, began operating with these budgetary institutions.

My analysis considers how the change in spending and taxes in the aftermath of a deficit shock differs in states with and without various institutions. I interact an indicator variable for various institutions with  $DEFSHOCK_k$  and then analyze the resulting patterns of deficit adjustment. To illustrate this approach, consider the effect of state balanced budget requirements. While all states have some form of balanced budget requirements, these rules differ substantially across states. In most states, deficits can be "eliminated" by borrowing. Some of these states require that any such borrowing be repaid in the next fiscal year, while others

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<sup>14</sup>Elder (1992) studies the effect of tax and expenditure limitations on the growth of state spending. This procedure is also subject to the endogeneity critique, since the polity's taste for expenditure limitation laws is likely to be correlated with the taste for increasing spending. Rogers and Rogers (1993) use a particularly long panel of state government expenditure data to study these effects, and they also explore the effects of fiscal conditions on the adoption of anti-deficit laws.

impose much weaker rules. The Advisory Commission on Intergovernmental Relations (ACIR) catalogues these rules and also assigns an overall score (between 1 and 10) to the stringency of state balanced-budget provisions.<sup>15</sup>

To study whether anti-deficit rules have any effect, I divided states into two categories based on whether they had scores of 5 and below (4 states) or 6 and above (23 states). I defined an indicator variable for "weak anti-deficit rules" in state  $i$ ,  $WKDEF_i$ , and then interacted this indicator variable with the expenditure shock and revenue shock variables defined above.<sup>16</sup> This yields estimating equations of the form:

$$(5a) \quad \Delta SPEND_{it} = \alpha_0 + \alpha_1 * DEFSHOCK_{it} + \alpha_2 * WKDEF_i * DEFSHOCK_{it} + \epsilon_{it}$$

$$(5b) \quad \Delta TAX_{it} = \beta_0 + \beta_1 * DEFSHOCK_{it} + \beta_2 * WKDEF_i * DEFSHOCK_{it} + v_{it}$$

This estimation strategy, interacting measures of the state fiscal environment or political climate with  $DEFSHOCK$ , is used repeatedly below. I continue to allow for different coefficients on positive and negative deficit shocks.<sup>17</sup>

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<sup>15</sup>ACIR (1987) uses cross-section regression analysis to study the association between these measures of fiscal restraint and the level of state government spending.

<sup>16</sup>The anti-deficit rules were adopted prior to my sample period, so there is no within-state variation in these provisions.

<sup>17</sup>I present several sets of results for individual institutions, such as weak anti-deficit rules, interacted with the fiscal shock variable, rather than generalizing this equation to allow for many interactions simultaneously. This is largely driven by the discrete nature of the institutional variables, and the fact that including many such variables simultaneously, in a small data set such as mine, yields very small effective "cell" sizes for different institutional permutations.

Estimation results for (5a) and (5b) are shown in the first and second columns of Table 4. The first column shows estimates with  $\Delta\text{SPEND}$  as the dependent variable, while in the second column,  $\Delta\text{TAXNEXT}$  is the dependent variable. The analysis focuses on states with annual budget cycles to avoid the substantial heterogeneity, and potentially different adjustment dynamics, in the biennial budget states. The results suggest that states with weak anti-deficit rules adjust spending much less in response to positive deficit shocks than do their counterparts with strict anti-deficit rules. A one dollar deficit overrun leads to only a 17 cent expenditure cut in a state with a weak anti-deficit law, while it leads to a 44 cent spending cut in other states. There is no strong evidence that deficit rules affect tax adjustments.

In a state with strong anti-deficit provisions, budget cuts and tax increases make up more than the full amount of the deficit -- \$1.20 per dollar of deficit, according to the point estimates -- while in states with weak anti-deficit rules, the analogous deficit reduction is only 79 cents. These results are consistent with Alt and Lowry's (1992) findings using Census of Governments data for an earlier period.<sup>18</sup>

While anti-deficit rules are the most relevant institution for short-run fiscal dynamics, the approach in equations (5a-b) can also be applied to study the effects of other institutions. The third and fourth columns of Table 4 show the effect of

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<sup>18</sup>There are minor differences in the identification of weak anti-deficit states in Alt and Lowry and the current paper. The empirical findings do not depend on which set of state identifiers are used in the regression equations.

tax and expenditure limitations on deficit adjustment. States with tax limitations are less likely to respond to a positive deficit shock by raising taxes. While states without tax/expenditure limits are predicted to raise taxes by \$1.03 in response to each one dollar deficit overrun, the analogous adjustment for states with tax limitations is only 47 cents. The puzzling feature of these results is that while the limitation variable is estimated to have an important effect on the adjustment of taxes in the aftermath of a deficit shock, there is no evidence that spending cuts are any larger in this case.

The last two columns in Table 4 study whether a state's response to a deficit shock is affected by its fiscal condition, particularly its general fund balance. Since these balances can be used to offset deficits, one would expect to find more pronounced fiscal adjustments in states with low balances. The indicator in this case is set equal to one if the end-of-year general fund balance predicted at the beginning of the fiscal year is less than two percent of total spending. The results suggest that states with low expected general fund balances make larger spending cuts in response to positive deficit shocks. For a state with a predicted balance of more than 2% of spending, the spending cut is 25 cents per dollar of deficit; for states with lower predicted balances, the spending cut is estimated at 55 cents per deficit dollar. There is also weak evidence for larger tax increases in states with low expected balances.

The findings in this section suggest that fiscal institutions affect the short-run patterns of taxes and expenditures when states experience unexpected fiscal

shocks.<sup>19</sup> These results may bear on the larger question of whether fiscal institutions affect the level of government spending; the level of spending is essentially the integral of all prior changes. The relatively short time span of the current data set, however, does not permit any inferences about the longer-run effects of these fiscal institutions.

#### 4. Divided Government, Politics, and Deficit Correction

Whether political factors are important determinants of fiscal policy is a long-standing subject of debate in macroeconomics and political economy.<sup>20</sup> One issue in this debate is whether divided governments function differently than governments with a single party in power.<sup>21</sup> Roubini and Sachs (1989) find that nations with divided government have higher budget deficits, and McCubbins (1990) tries to explain the pattern of U.S. budget deficits by appealing to the role of divided government. The wide array of state variation in political control provides a natural opportunity to obtain further evidence on the importance of

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<sup>19</sup>Following the previous discussion of the endogeneity of DEFSHOCK, I estimated regressions of DEFSHOCK on various fiscal institutions to determine whether the presence of some institutions systematically affected expenditure or revenue forecasts. There was no evidence of statistically significant links between the institutions and fiscal shocks.

<sup>20</sup>Alesina and Sachs (1988) show that Democratic and Republican administrations display differences in their tendency to expand the economy early in their terms of office. Nordhaus (1989) surveys the voluminous literature on political determinants of macroeconomic policy. Inman and Fitts (1990) provide a general overview on the link between political institutions and fiscal policy.

<sup>21</sup>Alesina and Rosenthal (1992) develop a theory of divided government and discuss possible effects on policy outcomes.



party differences. Alt and Lowry (1992) find that states with divided party control, where the governor is from a different party than the legislature, are more likely to run budget deficits than are single-party states.

Table 5 shows the results of adding a variable for divided state government to the previous equations for tax and expenditure adjustment. The new variable is an indicator for a governor and lower house in the legislature from the same party.<sup>22</sup> The estimates suggest that single-party states raise taxes, and cut spending, by greater amounts in response to deficit shocks. I disaggregated one-party states into those controlled by Democrats and those controlled by Republicans, and could not reject the null hypothesis of no difference in fiscal adjustment patterns across parties. This is a weak test, however, because there are only 5 Republican-controlled single-party states, compared with 14 Democrat-controlled states.

The next two columns in Table 5 explore the link between weak anti-deficit rules, divided party government, and fiscal adjustment. The findings suggest that there is an interaction between weak anti-deficit rules and the impact of divided government. In states with weak anti-deficit rules, the estimates suggest that divided government does not affect the amount of outlay reduction in response to a positive deficit shock. There is evidence, however, that in states with strict anti-

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<sup>22</sup>This variable is set equal to zero if the governor or legislature is an independent, and in Nebraska, which has a single chamber of forty-nine members, all elected without party affiliation.

deficit rules, the presence of single-party control has an important effect on deficit adjustment.

The final two columns in Table 5 address a different issue about politics and deficit adjustment: does the position in the electoral cycle affect tax increases or spending cuts? I proxy position in the cycle with an indicator variable for the fiscal years prior to gubernatorial elections. The findings suggest, at nearly-conventional levels of statistical significance, that spending cuts are muted, and tax increases are smaller, in the years before governors stand for election. This provides further evidence of the importance of political considerations in determining fiscal adjustment. Besley and Case's (1993) findings confirm these results, suggesting that unexpected disaster relief is more likely to be tax-financed when a governor does not face re-election in the next year than in election years.

The results in this section suggest that politics matters for fiscal adjustment. The findings should not be viewed as tests of any particular model of the political process, but rather imply directions for future modelling to proceed. They also suggest that changes in political institutions, for example term limits, could affect the short-run dynamics of taxes and expenditures.

## 5. Conclusion

The results in this paper suggest that fiscal institutions and political factors matter for short-run deficit dynamics. States that impose relatively tight constitutional or statutory rules on their legislative and executive branches, rules

that make it more difficult to run fiscal deficits, experience more rapid fiscal adjustment when there are deficit shocks. Political factors also matter: states where one party controls both the governorship and the house are more likely to respond quickly to higher expenditure demands than are their divided-government counterparts.

One of the important issues that this paper does not consider is whether state reactions to fiscal shocks depend on the source of these shocks. A natural hypothesis, for example, is that the response to a transitory revenue shortfall should be smaller than the response to a permanent shock, provided the state general fund balance allowed some smoothing over time. The present analysis could be extended, ideally with longer time series for state spending and revenues to allow identification of the factors that generate revenue and expenditure shocks, to study the adjustments to shocks with different expected persistence.

This paper suggests that state fiscal shocks are "natural experiments" that can be used to learn about government behavior. This approach could be extended by searching for other unexpected shocks to fiscal condition. The fiscal dividends that some states received from the 1986 Tax Reform Act provide another possible "experiment." Since TRA expanded the definition of federal taxable income, more than half of the states received revenue windfalls. California and New York, for example, were estimated to collect more than a billion dollars in additional revenue as a result of these changes. Ladd (1993) explores the state response to these

Besley and Case (1993) consider a different sort of fiscal shock, natural disasters that increase required state spending, and find that institutions such as gubernatorial term limits are correlated with the state policy response to these shocks. These findings suggest the potential returns to searching for plausibly exogenous shocks to state fiscal condition, and studying how fiscal and political institutions influence state responses.

## REFERENCES

- Abrams, Burton A., and William R. Dougan, 1986, "The Effects of Constitutional Restraints on Governmental Spending," Public Choice 49 (1986), 101-116.
- Advisory Council on Intergovernmental Relations, Fiscal Discipline in the Federal System: National Reform and the Experience of the States (Washington: ACIR, 1987).
- Alesina, Alberto, and Howard Rosenthal, 1991, "A Theory of Divided Government," mimeo, Harvard University.
- Alesina, Alberto, and Jeffrey Sachs, 1988, "Political Parties and the Business Cycle in the United States," Journal of Money Credit & Banking 20, 63-82.
- Alm, James and Mark Evers, "The Item Veto and State Government Expenditures," Public Choice 68 (1991), 1-15.
- Alt, James E. and Robert C. Lowry, "Divided Government and Budget Deficits," mimeo, Harvard Government Department, 1992.
- Bergstrom, Theodore and R. Goodman, 1973, "Private Demands for Public Goods," American Economic Review 63, 280-296.
- Berry, Frances Stokes, and William D. Berry, 1992, "Tax Innovation in the States: Capitalizing on Political Opportunity" American Journal of Political Science 36 (August), 715-742.
- Besley, Timothy, and Anne Case, 1993, "The Tax Consequences of Term Limits: Do Governors Play an End-Game?," mimeo, Princeton University.
- Blackley, Paul R., and Larry DeBoer, 1993, "Explaining State Government Discretionary Revenue Increases in Fiscal Years 1991 and 1992," National Tax Journal 46 (March), 1-12.
- Bloom, H.S., and H. F. Ladd, 1982, "Property Tax Revaluation and Tax Levy Growth," Journal of Urban Economics 11, 73-84.
- Borcherding, T. and R. Deacon, 1972, "The Demand for the Services of Non-Federal Government," American Economic Review 62, 891-901.
- Bunche, Beverly S., 1991, "The Effect of Constitutional Debt Limits on State Governments' Use of Public Authorities," Public Choice 68, 57-69.
- Carter, John R., and David Schap, 1990, "Line Item Veto: Where Is Thy Sting?," Journal of Economic Perspectives 4 (Spring 1990), 103-118.

- Crain, W. Mark, and James C. Miller III, 1990, "Budget Process and Spending Growth," William and Mary Law Review 31 (Spring), 1021-1046.
- Dye, Richard F., and Therese J. McGuire, 1992, "Sorting Out State Expenditure Pressures," National Tax Journal 45 (September), 315-330.
- Elder, Harold W., 1992, "Exploring the Tax Revolt: An Analysis of the Effect of State Tax and Expenditure Limitation Laws," Public Finance Quarterly 20 (1992), 47-63.
- Feenberg, Daniel, William Gentry, David Gilroy, and Harvey Rosen, 1989, "Testing the Rationality of State Revenue Forecasts," Review of Economics and Statistics 71, 300-308.
- Fisher, Ronald C., 1988, State and Local Public Finance (Glenview, IL: Scott Foresman & Company).
- Gold, Steven D., 1983, "Recent Developments in State Finances," National Tax Journal 36 (March), 1-30.
- Gold, Steven D. 1990. The State Fiscal Agenda for the 1990s (Denver: National Conference of State Legislatures).
- Gramlich, Edward M., 1991, "The 1991 State and Local Fiscal Crisis," Brookings Papers on Economic Activity 1991:2, 249-285.
- Holtz-Eakin, Douglas, 1988, "The Line Item Veto and Public Sector Budgets: Evidence from the States," Journal of Public Economics 36 (August 1988), 269-292.
- Holtz-Eakin, Douglas, and Harvey S. Rosen, 1989, "Municipal Construction Spending: An Empirical Examination," NBER Working Paper 2989.
- Inman, Robert P., and Michael A. Fitts, 1990, "Political Institutions and Fiscal Policy: Evidence from the U.S. Historical Record," Journal of Law, Economics, and Organization 6 (1990), 79-166.
- Kiewiet, D. Roderick, and Kristin Szakaly, 1992, "The Efficacy of Constitutional Restrictions on Borrowing, Taxing, and Spending: An Analysis of State Bonded Indebtedness, 1961-1990," California Institute of Technology, mimeo.
- Ladd, Helen F., 1991, "Property Tax Revaluation and Tax Levy Growth Revisited," Journal of Urban Economics 30, 83-99.

- Ladd, Helen F., 1993, "State Responses to the TRA86 Revenue Windfalls: A New Test of the Flypaper Effect," Journal of Policy Analysis and Management 12 (Winter), 82-103.
- Levin, David J., 1986, "Alternative Measure of the State and Local Government Fiscal Position: Revised and Updated Estimates," Survey of Current Business 66 (April), 36-7.
- Marlow, Michael and David Joulfaian, 1989, "The Determinants of Off-Budget Activity of States and Local Governments," Public Choice 63 (1989), 113-123.
- McCubbins, Matthew, 1991, "Party Governance and U.S. Budget Deficits: Divided Government and Fiscal Stalemate," in A. Alesina and G. Carliner, eds., Politics and Economics in the Eighties (Chicago: University of Chicago Press), 83-120.
- Moore, Stephen, 1991, "State Spending Splurge: The Real Story Behind the Fiscal Crisis in State Government," Cato Institute working paper, Washington DC.
- Nordhaus, William, 1989, "Alternative Models of Political Business Cycles," Brookings Papers on Economic Activity 1989:2, 1-68.
- Poterba, James, 1993, "Capital Budgets, Borrowing Rules, and State Capital Spending," National Bureau of Economic Research Working Paper 4235.
- Rogers, Diane Lim, and John H. Rogers, 1993, "An Empirical Examination of State Government Budgets," Pennsylvania State University, mimeo.
- Roubini, Nouriel and Jeffrey Sachs, 1989, "Political and Economic Determinants of Budget Deficits in Industrial Democracies," European Economic Review 33 (May), 903-33.
- Rueben, Kim S. and James M. Poterba, 1993, "Correcting for Censored Data in the Presence of Heteroskedasticity: An Application to State Fiscal Adjustment," mimeo. MIT.
- Sullivan, David F., 1993, "State and Local Government Fiscal Position in 1992," Survey of Current Business 73 (March), 42-46.
- von Hagen, Jurgen, 1991, "A Note on the Empirical Effectiveness of Formal Fiscal Restraints," Journal of Public Economics 44, 199-210.

Table 1: State Fiscal Balances (% of Expenditures), FY1988-1993

	1988	1989	1990	1991	1992	1993
< 1%	5	5	9	21	18	21
1 - 3%	9	7	11	7	13	12
3 - 5%	6	9	7	5	6	10
> 5%	30	29	23	17	13	7

Source: National Association of State Budget Officers, Fiscal Survey of the States, September 1990, October 1991, October 1992.



Table 2: Summary Statistics on State Revenue &amp; Expenditure Shocks, FY1988-92

	FY1988	FY1989	FY1990	FY1991	FY1992
<b>Deficit Shock</b>					
Mean	-7.3	-14.7	3.0	31.7	15.5
Standard Deviation	46.4	59.4	38.6	53.9	35.1
Maximum	176.3	192.5	199.2	164.7	107.0
Minimum	-95.6	-258.8	-89.1	-91.7	-85.7
Positive/Negative	16/28	16/31	21/23	36/10	35/11
<b>Expenditure Shock</b>					
Mean	33.2	30.7	1.8	9.0	14.1
Standard Deviation	71.1	61.8	57.1	41.9	41.8
Maximum	335.2	207.6	145.5	130.3	229.6
Minimum	-106.6	-199.3	-189.7	-153.0	-60.5
Positive/Negative	34/11	37/9	26/21	35/12	36/9
<b>Revenue Shock</b>					
Mean	40.5	45.4	-1.2	-22.7	-1.5
Standard Deviation	65.6	68.4	56.1	58.9	50.1
Maximum	204.2	260.4	156.1	123.1	214.6
Minimum	-113.4	-180.3	-185.9	-171.7	-116.6
Positive/Negative	34/11	39/8	28/19	17/30	19/27
<b>Outlay Revision</b>					
Mean	-3.1	-2.6	-9.5	-24.4	-15.4
Standard Deviation	10.2	7.2	21.5	33.4	17.5
Maximum	0.0	0.0	0.0	0.0	0.0
Minimum	-49.9	-31.3	-128.2	-128.7	-68.4
Negative	10	11	19	29	34
<b>Within-FY Tax Increase (<math>\Delta</math>TAX)</b>					
Mean	-0.6	3.3	4.7	5.7	3.0
Standard Deviation	4.1	12.9	11.8	11.1	8.0
Maximum	5.8	55.7	57.1	43.3	41.7
Minimum	-20.1	-19.7	-0.8	-0.7	-1.0
Postive/Negative	7/12	18/4	18/2	20/3	11/3
<b>Next-FY Tax Increase (<math>\Delta</math>TAXNEXT)</b>					
Mean	1.8	21.2	27.1	34.4	14.5
Standard Deviation	13.9	48.0	51.8	51.3	33.9
Maximum	43.3	233.8	266.8	220.1	121.5
Minimum	-40.2	-40.3	-10.4	-3.4	-60.5
Positive/Negative	14/11	29/7	26/6	30/4	27/2

Source: National Association of State Budget Officers, Fiscal Survey of the States, various issues. The data are measured in 1988 dollars per capita, and apply to all continental states with the exception of Alabama (1988), Louisiana (1988), California (1990), Connecticut (1991), and Massachusetts (all years, expenditure and revenue shocks).

Table 3: Fiscal Responses to Deficit Shocks, FY1988-92

Dependent Variable	Constant	Unexpected Deficit	Deficit If > 0	Deficit If < 0	Adjusted R <sup>2</sup>
Outlay Revision	-9.53 (1.30)	-0.22 (0.07)	---	---	.303
Outlay Revision	-3.23 (1.68)	---	-0.41 (0.11)	-0.03 (0.03)	.432
Outlay Revision (IV)	1.99 (3.14)	---	-0.61 (0.13)	0.06 (0.05)	---
Tax Increase Within FY	2.27 (0.69)	0.09 (0.03)	---	---	.177
Tax Increase Within FY	-0.06 (0.69)	---	0.15 (0.04)	0.01 (0.02)	.240
Tax Increase Within FY (IV)	-1.84 (2.14)	---	0.23 (0.10)	-0.01 (0.03)	---
Tax Increase Next FY	17.74 (3.28)	0.45 (0.12)	---	---	.205
Tax Increase Next FY	7.56 (3.26)	---	0.75 (0.21)	0.13 (0.05)	.252
Tax Increase Next FY (IV)	2.04 (9.04)	---	1.01 (0.39)	0.11 (0.13)	---

Notes: Data on outlay revisions, tax increases, and the fiscal shocks are drawn from the National Association of State Budget Officers, Fiscal Survey of the States, various years. Heteroscedastic-consistent standard errors are shown in parentheses. Data on state financial flows are measured in FY88 constant dollars per capita.

Table 4: Anti-Deficit Policies and State Reactions to Fiscal Shocks

	Weak Anti-Deficit Rules		Tax Limitation		Low E(General Fund Balance)	
	$\Delta$ SPEND	$\Delta$ TAXNEXT	$\Delta$ SPEND	$\Delta$ TAXNEXT	$\Delta$ SPEND	$\Delta$ TAXNEXT
Constant	-3.96 (1.76)	8.51 (3.79)	-3.54 (1.59)	6.49 (3.53)	-3.14 (1.27)	7.86 (3.58)
DEFSHOCK If > 0	-0.44 (0.11)	0.76 (0.22)	-0.37 (0.10)	1.03 (0.33)	-0.25 (0.10)	0.66 (0.30)
DEFSHOCK If > 0	-0.07 (0.04)	0.20 (0.13)	-0.05 (0.04)	0.12 (0.13)	-0.02 (0.02)	0.11 (0.04)
(Weak Rules)* DEFSHOCK > 0	0.27 (0.14)	-0.14 (0.52)	---	---	---	---
(Weak Rules)* DEFSHOCK < 0	0.06 (0.03)	-0.10 (0.12)	---	---	---	---
(Tax Limit)* DEFSHOCK > 0	---	---	-0.06 (0.17)	-0.56 (0.33)	---	---
(Tax Limit)* DEFSHOCK < 0	---	---	0.03 (0.03)	-0.01 (0.12)	---	---
(Low Balance)* DEFSHOCK > 0	---	---	---	---	-0.30 (0.14)	0.16 (0.37)
(Low Balance)* DEFSHOCK < 0	---	---	---	---	-0.04 (0.02)	0.11 (0.18)
Adjusted R <sup>2</sup>	.45	.24	.42	.29	.49	.25

Notes: Heteroscedastic-consistent standard errors are shown in parentheses. All equations are estimated on the set of states with annual budget cycles (N = 131). Data on state financial flows are measured in FY88 constant dollars per capita.

Table 5: Political Factors and State Reactions to Fiscal Shocks

	Unified Government		Weak Rules & Unified Gov't		Gubernatorial Election Year	
	$\Delta$ SPEND	$\Delta$ TAXNEXT	$\Delta$ SPEND	$\Delta$ TAXNEXT	$\Delta$ SPEND	$\Delta$ TAXNEXT
Constant	-3.49 (1.36)	7.09 (3.76)	-4.22 (1.34)	8.29 (4.05)	-3.63 (1.61)	9.57 (3.37)
DEFSHOCK If > 0	-0.23 (0.12)	0.42 (0.22)	-0.23 (0.12)	0.41 (0.22)	-0.43 (0.11)	0.78 (0.22)
DEFSHOCK If > 0	-0.07 (0.03)	-0.02 (0.11)	-0.09 (0.03)	0.01 (0.12)	-0.03 (0.03)	0.13 (0.05)
(Same Party)* DEFSHOCK > 0	-0.28 (0.14)	0.54 (0.35)	-0.33 (0.14)	0.55 (0.37)	---	---
(Same Party)* DEFSHOCK < 0	0.05 (0.02)	0.18 (0.10)	0.02 (0.02)	0.28 (0.15)	---	---
(Same Party & Weak Rules)* DEFSHOCK > 0	---	---	0.37 (0.15)	-0.09 (0.70)	---	---
(Same Party & Weak Rules)* DEFSHOCK < 0	---	---	0.05 (0.03)	-0.17 (0.14)	---	---
(Gubernatorial Election)* DEFSHOCK > 0	---	---	---	---	0.27 (0.15)	-0.52 (0.32)
(Gubernatorial Election)* DEFSHOCK < 0	---	---	---	---	0.03 (0.09)	0.54 (0.18)
Adjusted R <sup>2</sup>	.47	.28	.51	.27	.44	.26

Notes: Heteroscedastic-consistent standard errors are shown in parentheses. All equations are estimated on the set of states with annual budget cycles (N = 131). Data on state financial flows are measured in FY88 constant dollars per capita.

Table A1: Summary Statistics on State Revenue &amp; Expenditure Shocks FY1988-92

	FY1988	FY1989	FY1990	FY1991	FY1992
<b>Deficit Shock</b>					
Mean	-9.6	-20.3	10.2	36.7	19.6
Standard Deviation	41.0	60.5	31.6	44.3	35.1
Maximum	85.1	73.7	99.2	164.7	107.0
Minimum	-95.6	-258.8	-36.5	-42.9	-54.4
Positive/Negative	8/17	8/19	13/12	20/6	21/6
<b>Expenditure Shock</b>					
Mean	29.4	24.1	6.8	6.9	21.2
Standard Deviation	52.6	35.9	45.2	41.8	45.9
Maximum	189.4	111.4	85.0	73.7	229.6
Minimum	-106.6	-65.3	-168.5	-153.0	-18.3
Positive/Negative	21/4	24/3	15/12	20/7	23/4
<b>Revenue Shock</b>					
Mean	39.0	44.4	-3.4	-29.8	1.6
Standard Deviation	62.1	64.3	42.9	57.4	54.3
Maximum	204.2	260.4	57.1	58.1	214.6
Minimum	-113.4	-40.3	-165.0	-171.7	-116.6
Positive/Negative	23/2	24/3	17/10	9/18	11/16
<b>Outlay Revision</b>					
Mean	-1.5	-3.3	-7.0	-25.1	-18.6
Standard Deviation	5.5	7.4	12.2	29.1	19.7
Maximum	0.0	0.0	0.0	0.0	0.0
Minimum	-27.1	-26.5	-47.7	-124.9	-68.4
Negative	4	9	11	17	20
<b>Within-FY Tax Increase (<math>\Delta</math>TAX)</b>					
Mean	-0.5	4.8	2.0	5.2	2.8
Standard Deviation	5.0	14.6	5.5	11.6	6.1
Maximum	5.8	55.7	21.4	43.3	26.6
Minimum	-20.1	-14.0	0.0	-0.7	-1.0
Positive/Negative	4/7	9/2	8/0	12/3	6/1
<b>Next-FY Tax Increase (<math>\Delta</math>TAXNEXT)</b>					
Mean	4.4	25.6	26.2	29.4	19.0
Standard Deviation	17.9	56.5	56.6	54.4	36.1
Maximum	43.3	233.8	266.8	220.1	119.0
Minimum	-40.2	-23.6	-10.4	-3.4	-60.5
Positive/Negative	7/6	16/3	16/1	16/4	18/2

Note: Data sources as in Table 2, but limited to states with annual budget cycles.