

# DO DIFFERENCES IN STATE FISCAL STRUCTURES HELP EXPLAIN DIFFERENCES IN STATE FISCAL CRISES? A PRELIMINARY EXAMINATION

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## INTRODUCTION

INSPIRED BY THE OBSERVATION THAT STATE FISCAL outcomes differ greatly in a recession and by a desire to understand why they differ, we provide a set of facts, trends, descriptive statistics, and estimated relationships that paint a picture of the state fiscal situation over the last several decades. We use Census data to calculate an annual measure of fiscal outcome for each state from 1963 to 2010. Our measure of fiscal outcome (surplus/deficit) is total general revenues minus total general expenditures. This is an inclusive measure of the budget situation of a state. Total general expenditures include both current operating expenditures and capital outlay expenditures as well as both direct and intergovernmental expenditures. Total general revenues include taxes, charges, miscellaneous revenues, and intergovernmental revenues. Left out of both sides of the ledger are revenues and expenditures associated with utilities, liquor stores, and insurance trusts. Thus, while our measure does include, somewhat unusually, capital outlays, it does not include revenues and expenditures associated with insurance trusts, such as public retirement systems.

Many previous studies of state budget deficits/surpluses, including Poterba (1994) and Bohn and Inman (1996), focus on the general fund. We chose to define our measure of budget deficit/surplus more broadly than the general fund for a couple of reasons. First, the functions of state government that are covered by the general fund differ from state to state and can differ over time within a state. Second, and related, the share of total general expenditures that is covered by the general fund differs across states and within a state over time. For example, as documented in Dye et al. (2011), in 2009 the share of total general expenditures (as reported by the Census) covered by the general fund (as reported by the National Association of State Budget Officers) ranged from 17 percent in Michigan to 79 percent in Connecticut, and over

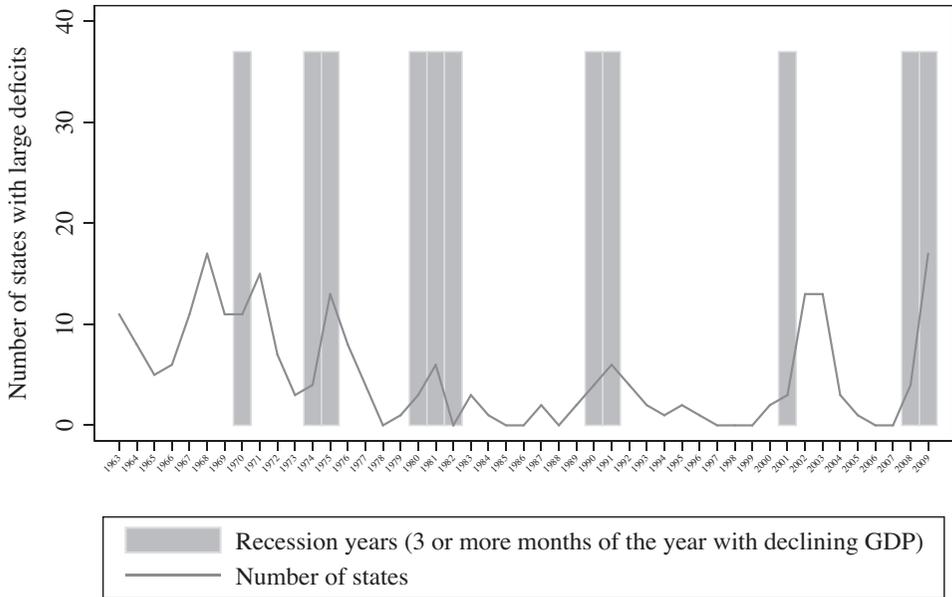
the period 1997-2009 the share in Illinois ranged from 46 percent to 63 percent. In sum, the general fund tends to be a fungible concept within a state and not comparable across states.

We choose to include both current and capital expenditures in our measure because we are interested in a comprehensive view of the fiscal situation. A deficit that arises due to capital investment must be paid back now or in the future with revenues raised by the state in the same way as a deficit that arises from current expenditures exceeding available revenues. Also, although a well-defined measure of current expenditures exists, there is not a corresponding measure of current revenues; thus, it is difficult to define a concept approximating a “current budget.”

## FINDINGS: DIFFERENCES IN STATE FISCAL OUTCOMES

In figure 1 we graph by year the number of states that experienced a large deficit, defined as having a deficit that places in the top quartile of all deficits over the entire period (numerically, this implies a deficit as a share of total general expenditures of 5.43 percent or larger). As expected, the number of states experiencing large deficits was greater during recessionary periods than in years when the nation was not experiencing a contraction. The 1960s differed from other periods in that states were in a large-deficit situation in each year of the decade, even though there was no national recession. While the number of states in deficit is larger when we consider deficits that place in the top half of all deficits over the entire period (deficit as a share of total general expenditures of 1.38 percent or larger), we see the same patterns: more states experienced deficits of small-or-larger size when the nation was in recession than when it was not in recession, and a large number of states experienced deficit during the 1960s even though the nation was not in recession in that decade.

Figure 1: Number of States with Large-Deficits, 1963-2009



Sources: U.S. Census Bureau, U.S. Bureau of Economic Analysis, National Bureau of Economic Research

In table 1 we present the average state deficit experience of each decade in our sample. We present the average over all the states of the proportion of the years in any decade spent in deficit situation. For example, from 1963 to 1969 the mean proportion of years spent by the states in a large-deficit situation (defined to be deficit as a share of total general expenditures greater than or equal to 5.43 percent) was 20 percent. We note that whether one

looks at large-deficits (panel A) or small-and-larger deficits (panel B), the decades of the 1970s and 2000s look quite similar in terms of mean proportion of years spent in deficit situation.

In tables 2 and 3 we display the deficit experiences of a handpicked selection of states. The last row of each table presents the same all-states mean as presented in table 1. It is clear from these tables that there is great variability across the states in

Table 1  
Mean Time Spent in Deficit by Decade

Panel A: Mean proportion of years spent in large deficit, by decade

	1963-1969	1970-1979	1980-1989	1990-1999	2000-2009	1963-2009
mean	0.20	0.13	0.03	0.04	0.11	0.10
sd	(0.26)	(0.18)	(0.07)	(0.08)	(0.15)	(0.09)

Panel B: Mean proportion of years spent in small or larger deficit, by decade

	1963-1969	1970-1979	1980-1989	1990-1999	2000-2009	1963-2009
mean	0.45	0.31	0.16	0.22	0.36	0.29
sd	(0.29)	(0.23)	(0.19)	(0.24)	(0.27)	(0.14)

*Table 2*  
**Proportion of Years Spent in Large-Deficit by Decade by State, Selected States**

<i>State</i>	<i>1963-1969</i>	<i>1970-1979</i>	<i>1980-1989</i>	<i>1990-1999</i>	<i>2000-2009</i>	<i>1963-2009</i>
AR	0	0	0	0	0	0
CA	0.29	0.10	0.10	0	0.50	0.19
CT	0.43	0.30	0	0.10	0.20	0.19
IL	0	0	0	0	0.20	0.04
IN	0	0	0	0	0	0
MA	0.29	0.30	0.10	0.10	0.10	0.17
MI	0	0.10	0	0	0.10	0.04
NE	0	0	0	0	0	0
NH	1	0.70	0.30	0.10	0	0.38
NY	0.43	0.20	0	0	0	0.11
ND	0	0	0.10	0	0	0.02
OR	0.43	0.30	0	0	0.30	0.19
SC	0	0.20	0	0.10	0.60	0.19
TX	0	0	0	0	0	0
WA	0	0.20	0.10	0.20	0.40	0.19
WY	0.14	0	0	0	0	0.02
mean	0.20	0.13	0.03	0.04	0.11	0.10
sd	(0.26)	(0.18)	(0.07)	(0.08)	(0.15)	(0.09)

their deficit experiences. Looking first at table 2, we see that many states, including Arkansas, Indiana, Nebraska, and Texas, spent zero years with large deficits from 1963 to 2009. Three states spent more than 40 percent of the 1960s in a large-deficit situation, and California and South Carolina often had large deficits in the 2000s. For small-and-larger deficits (table 3), a handful of states (California, New Hampshire, South Carolina, and Washington) were in deficit situation for much of the period, while others (Arkansas, Texas, and Wyoming) were almost never in deficit.

As noted, broadly speaking, the deficit experiences of the states in the decade of the 1970s were similar to the experiences of the states in the decade of the 2000s. Corresponding with each decade's two recessionary periods, both decades had two "peaks" in terms of a large number of states being in deficit situation and the mean proportion of years spent in deficit was very similar (see table 1). While the two decades may look similar, for many states the nature of the deficits they experienced

in the two decades is quite different. To illustrate, in figures 2 and 3 we graph for two representative states – Illinois and South Carolina – our measure of fiscal outcome (the difference between total general revenues and total general expenditures as a share of total general expenditures) and an alternative measure, which is our measure minus (or net of) capital expenditures. Thus, the distance between the two plots is capital expenditures. In the 1970s, using the measure of deficit that does not include capital expenditures, neither state was in a deficit situation, whereas both states dipped into deficit situation by our inclusive measure at least once in the decade. In the 2000s, both states dipped into deficit with both measures, i.e., whether capital expenditures were included or not (Illinois only barely brushed with deficit when capital expenditures are not included). It is also the case that the distance between the two plotted lines was much greater in the 1970s than in the 2000s. These facts together indicate that capital expenditures contributed importantly to the deficit situation

*Table 3*  
**Proportion of Years Spent in Small or Large Deficit, by Decade, by State, Selected States**

<i>State</i>	<i>1963-1969</i>	<i>1970-1979</i>	<i>1980-1989</i>	<i>1990-1999</i>	<i>2000-2009</i>	<i>1963-2009</i>
AR	0.14	0	0	0	0.20	0.06
CA	0.57	0.10	0.40	0.40	0.80	0.45
CT	0.57	0.40	0.10	0.20	0.20	0.28
IL	0.29	0.30	0.20	0.20	0.50	0.30
IN	0.29	0	0.20	0	0.30	0.15
MA	0.43	0.50	0.20	0.30	0.30	0.34
MI	0.14	0.20	0.10	0.10	0.60	0.23
NE	0.29	0.10	0.10	0	0.20	0.13
NH	1	1	0.60	0.70	0.20	0.68
NY	1	0.60	0	0	0.20	0.32
ND	0.43	0	0.30	0.10	0	0.15
OR	0.43	0.30	0.10	0	0.60	0.28
SC	0.29	0.30	0	0.90	0.90	0.49
TX	0	0	0	0	0.10	0.02
WA	0.14	0.20	0.20	0.90	0.90	0.49
WY	0.29	0	0	0	0	0.04
mean	0.45	0.31	0.16	0.22	0.36	0.29
sd	(0.29)	(0.23)	(0.19)	(0.24)	(0.27)	(0.14)

in the 1970s but not to the deficit situation in the 2000s.

We examine this relationship between capital spending and deficit situation more systematically in table 4. Each coefficient represents a comparison of means, so, for example, the first coefficient indicates that capital expenditures as a share of total expenditures was 1.942 percentage points higher in states experiencing deficits during the 1960s. We see in column (1) that deficits in every decade but the 2000s were associated with higher capital expenditures, and that the mean differences were greatest in magnitude in the 1960s and 1970s. In contrast, deficits in the 2000s were associated with lower capital expenditures. A fairly similar pattern appears when we examine differences between the two groups of states in the means of capital expenditures per capita (column (2)), although the means are not statistically different between the two groups of states in the 2000s. These findings confirm that capital outlays contributed to deficits in the 1970s but were not important to, or

perhaps were negatively associated with, deficits in the 2000s.

Summarizing our findings thus far, using a broad measure of fiscal outcome and examining all 50 states over several decades, we document large differences across the states in terms of their deficit experiences, with some states never experiencing large deficits and other states spending nearly 20 percent of the years in our period (1963-2009) in a large deficit situation. In earlier decades, capital spending contributed to deficit spending in many states; in the 2000s, states were in deficit even with capital outlays stripped out.

**FINDINGS: DO DIFFERENCES IN STATE FISCAL  
STRUCTURES HELP EXPLAIN DIFFERENCES  
IN STATE FISCAL OUTCOMES?**

The next step in our examination of state fiscal crises is to attempt to see if differences in state fiscal structures can help explain observed differences in fiscal outcomes across the states. We

Figure 2: Illinois Budget Balances With and Without Capital Expenditures, 1963-2008

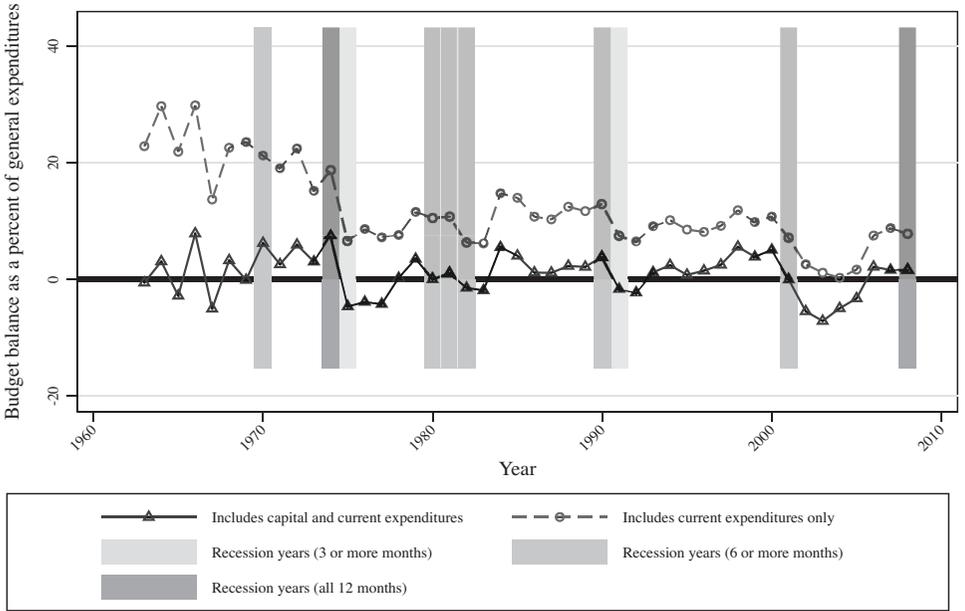
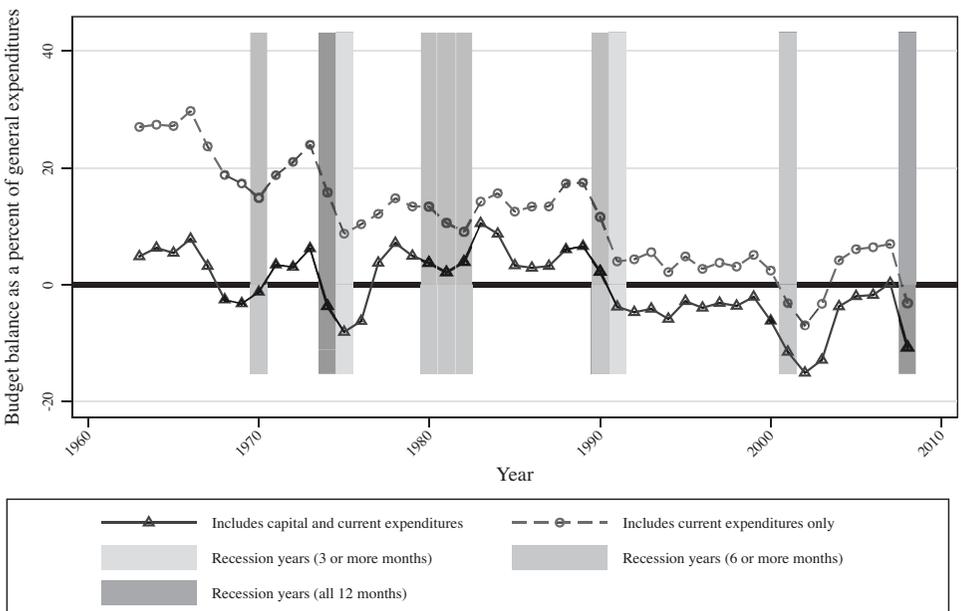


Figure 3: South Carolina Budget Balances With and Without Capital Expenditures, 1963-2008



*Table 4*  
**Difference in Capital Expenditures Between States in Deficit and States Not in Deficit,  
 by Decade**

	<i>(1)</i> <i>Capital expenditures</i> <i>percent of total expenditures</i>	<i>(2)</i> <i>Capital expenditures</i> <i>per capita</i>
1960s: Deficit-state years relative to non-deficit state years	1.942** (0.701)	148.6*** (34.52)
1970s: Deficit-state years relative to non-deficit state years	3.191*** (0.539)	147.7*** (36.79)
1980s: Deficit-state years relative to non-deficit state years	0.909* (0.454)	-17.34 (19.39)
1990s: Deficit-state years relative to non-deficit state years	0.883* (0.353)	30.04 (23.54)
2000s: Deficit-years state relative to non-deficit state years	-0.619** (0.221)	-18.16 (20.26)
N	2300	2300
R <sup>2</sup>	0.64	0.54

Standard errors in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Coefficients are relative to non-deficit state years in same decade.

Deficits are at least 1.38% as a share of total general expenditures.

examine differences across the states in the degree of revenue decentralization, differences in the reliance on various revenue sources, and differences in the share of total expenditures allocated to various spending categories. We control for the economic condition of the state by including the annual growth rate in real gross state product (GSP). As indicated above, we use data from the Bureau of the Census to create the fiscal measures. The data on GSP are from the Bureau of Economic Analysis.

To explore in a systematic way the relationship between state fiscal outcomes and characteristics of the states' fiscal structures, we estimate regressions using panel data for the 50 states over the period 1963-2010. Rather than a causal relationship, in this preliminary examination we seek to identify if there are some systematic interrelationships between state fiscal outcomes and a number of variables of interest.

Our dependent variable, what we call budget balance, is the surplus/deficit of a state as a share of total general expenditures in a given year. The

first explanatory variable we consider is the real growth rate of the state economy as measured by annual growth in gross state product (GSP) on the rationale that faster growing states will have better fiscal outcomes, independent of all other characteristics. We also explore how the degree of decentralization of the states, measured as the local share of total state and local own-source revenues, and potential changes in the degree of decentralization over time affect the fiscal performances of the states. The rationale for this variable is that, in states in which a greater share of revenues has been devolved, states might have a greater or lesser ability to respond to economic shocks. To explore how the revenue structure might influence the state budget balance, we consider the relative reliance on the main revenue sources – individual income tax, general sales tax, and intergovernmental revenues from the federal government – with a remaining share category that includes all other sources of revenue. On the expenditure side, we consider the shares of total spending devoted to the

most relevant state expenditures – capital outlays, welfare expenditures, higher education expenditures, and intergovernmental expenditures – with a remaining share category that includes all other expenditures.

If we denominate by *BB* for the budget balance, *GR* for the state's real GSP growth rate, *Dec* for the degree of revenue decentralization (local own-source revenues divided by total state and local own-source revenues), *RS1* through *RS4* for the shares of the four different revenue sources, and *RE1* through *RE5* for the shares of the five groups of expenditures, the basic equation we estimate is as follows:

$$\begin{aligned} BB_{st} = & \beta_0 + \beta_1 GR_{st} + \beta_2 Dec_{st} + \beta_{R1} RS1_{st} \\ & + \beta_{R2} RS2_{st} + \beta_{R3} RS3_{st} + \beta_{R4} RS4_{st} \\ & + \beta_{E1} ES1_{st} + \beta_{E2} ES2_{st} + \beta_{E3} ES3_{st} \\ & + \beta_{E4} ES4_{st} + \beta_{E5} ES5_{st} + \varepsilon_{st} \end{aligned}$$

Given that we have two sets of explanatory variables that sum up to one – the revenue share variables and the expenditure share variables – we need to introduce two identifying restrictions to avoid multicollinearity. We impose the two following identifying restrictions:

$$\begin{aligned} \beta_{R1} USRS1 + \beta_{R2} USRS2 + \beta_{R3} USRS3 \\ + \beta_{R4} USRS4 = 0 \\ \beta_{E1} USES1 + \beta_{E2} USES2 + \beta_{E3} USES3 \\ + \beta_{E4} USES4 + \beta_{E5} USES5 = 0 \end{aligned}$$

Where, for example, *USRS1* is the average value of the income tax share across states and over time, and the other variables are defined similarly. By imposing these restrictions we can interpret the estimated coefficients as the effect on the budget balance of increasing the share of one type of revenue (expenditure) at the expense of reducing the other revenues (expenditures) in proportion to their importance in the average of the revenues (expenditures) of all states over the sample period.

In all our estimates we include time dummies to control for the U.S. business cycle or any other time-dependent characteristic common to all states.

We also include state fixed effects to control for unmeasured, time-invariant differences across the states.

In table 5, we present our first set of results. We find that the GSP growth rate has a positive impact on the budget balance, which fits well with the notion that states whose economies are growing, all else equal, tend to have more sound finances. Turn-

Table 5  
Relationships of Factors  
to State Budget Balances

GSP growth rate	0.0030*** (0.0005)
decentralization	-0.4859*** (0.0485)
income tax share	-0.0449 (0.0459)
sales tax share	-0.0798 (0.0444)
IG revenue share	-0.3477*** (0.0391)
all other revenue share	0.2878*** (0.0210)
capital outlays share	-0.2573*** (0.0563)
public welfare share	0.1102* (0.0444)
higher education share	0.4986*** (0.0812)
IG expenditure share	-0.2952*** (0.0345)
all other expenditure share	0.1166** (0.0402)
constant	0.1712*** (0.0230)
N	2150

Standard errors in parentheses.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Time and state fixed effects are included.

Dependent variable: (total general revenues-total general expenditures)/total general expenditures

*Table 6*  
**Relationships of Factors to State Budget Balances**

	<i>Baseline</i>	<i>Non-recession differential</i>
GSP growth rate	0.0025** (0.0008)	0.0007 (0.0010)
decentralization	-0.4962*** (0.0618)	0.0311 (0.0490)
income tax share	-0.0940 (0.0577)	0.0671 (0.0447)
sales tax share	-0.0651 (0.0573)	-0.0121 (0.0424)
IG revenue share	-0.4240*** (0.0588)	0.0942 (0.0565)
all other revenue share	0.3508*** (0.0308)	-0.0824** (0.0293)
capital outlays share	-0.4973*** (0.1012)	0.1781 (0.1067)
public welfare share	0.1086 (0.0720)	-0.0027 (0.0691)
higher education share	0.5332*** (0.1072)	-0.0545 (0.0879)
IG expenditure share	-0.2794*** (0.0445)	-0.0112 (0.0356)
all other expenditure share	0.1537** (0.0564)	-0.0427 (0.0517)
constant		0.1726*** (0.0274)
N		2150

Standard errors in parentheses.

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001

Time and state fixed effects are included.

Dependent variable: (total general revenues-total general expenditures)/total general expenditures

Non-recession differential coefficient captures the added effect of the variable in non-recession years.

ing to the variables characterizing fiscal structure, we find that the higher the degree of decentralization, the more likely that states have larger deficits or smaller surpluses. One possible explanation for this result is that states that control a smaller portion of state and local revenues may have less room to adjust. Consistent with the general belief that a

high reliance on relatively volatile income and sales taxes may make for problematic budgeting for the states, states with a greater reliance on both the income tax and the sales tax tend to have a more negative budget balance, although the estimates are not statistically significant. A higher share of intergovernmental revenues, that is a higher

dependence on federal transfers, is linked with worse budget outcomes, while a greater reliance on the residual category of all other revenues tends to be associated with better budget outcomes. Two of the expenditure share variables – the share of total expenditures devoted to capital outlays and inter-governmental expenditures – are linked with worse budget outcomes, while the other expenditure share variables are associated with more positive budget outcomes.

Although we have controlled for the general condition of the U.S. economy by including time fixed effects, we next explore whether, when the country is in recession, the relationship of a state's fiscal outcome to any of our fiscal structure variables changes. Table 6 displays the results. For all but one of the variables there is no statistically significant difference between recession and non-recession years (all but one of the estimated coefficients in the second column are statistically insignificant), and the qualitative results are identical in the two types of periods.

### CONCLUSIONS

By our broad measure, deficits are common throughout the last five decades. Interestingly, they are the least common in the 1980s, a decade with a severe double-dip recession. There are large differences across the states in terms of their deficit experiences, with some states never experiencing large deficits and other states spending nearly 20 percent of the years in our period in a large-deficit situation. In earlier decades, capital spending contributed to deficit spending in many states; in the

2000s, states were in deficit even without accounting for capital outlays.

We find that differences in the fiscal structures of the states are associated with different budget balance experiences. In particular, states with a greater degree of decentralization appear to experience worse fiscal outcomes, states with a greater reliance on all other revenues (which is equivalent to reduced reliance on the individual income tax, the general sales tax, and intergovernmental revenues combined) appear to experience better fiscal outcomes, and states with a greater share of expenditures devoted to capital outlays and inter-governmental expenditures appear to experience worse fiscal outcomes.

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### References

- Bohn, Henning, and Robert P. Inman. Balanced-budget Rules and Public Deficits: Evidence from the U.S. States. *Carnegie-Rochester Conference Series on Public Policy* 45 (1996): 13-76.
- Dye, Richard F., Nancy W. Hudspeth, and David F. Merriam. *Transparency in State Budgets: A Search for Best Practices*. Urbana-Champaign, IL: Institute of Government and Public Affairs, 2011.
- Poterba, James M. State Responses to Fiscal Crises: The Effects of Budgetary Institutions and Politics. *Journal of Political Economy* 102 (August 1994): 799-821.