BALANCED BUDGET RULES AND PUBLIC DEFICITS: EVIDENCE FROM THE U.S. STATES

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Henning Bohn
Robert P. Inman

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RODNEY L. WHITE CENTER FOR FINANCIAL RESEARCH
The Wharton School
University of Pennsylvania
3254 Steinberg Hall-Dietrich Hall
Philadelphia, PA 19104-6367
(215) 898-7616

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ABSTRACT

Most states (Vermont is the exception) have constitutional or statutory limitations restricting their ability to run deficits in the state's general fund. Balanced budget limitations may be either prospective (beginning-of-the-year) requirements or retrospective (end-of-the-year) requirements. Importantly, the state limits apply only to the general fund, leaving other funds (capital, pensions, social insurance) as potential sources for deficit financing. Do these general fund balanced budget requirements limit deficit financing? If so, which balanced budget rules are most effective in constraining state deficit financing? Finally, how are state spending and taxation decisions affected by balanced budget rules? Using budget data from a panel of 47 U.S. states for the period 1970-1991, the analysis finds that state end-of-the-year (not prospective) balance requirements do have significant positive effects on a state's general fund surplus. The surplus is accumulated through cuts in spending, not through tax increases. It is saved in a state "rainy day" fund in anticipation of possible future general fund deficits. We find little evidence here that the constraints "force" deficits into other fiscal accounts.

* Associate Professor of Economics, University of California at Santa Barbara, Santa Barbara, CA 93106.

** Professor of Finance and Economics, Wharton School, University of Pennsylvania, Philadelphia, PA 19104 and Research Associate of the National Bureau of Economic Research, Cambridge, MA, 02138. Inman acknowledges with thanks the financial support of the National Science Foundation (SES 87-18768) and the Rodney L. White Center for Financial Research.

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1. Introduction

The propensity to finance public services with government debt has become an issue of growing public, and academic, concern in recent years. Both in Europe and in the United States, the size and future path of public debt play a central role in the political dramas now shaping all economic policies. Membership in the new European Monetary Union will be decided in large measure by a country's deficit policies. Fiscal policy making in the United States has in recent years been overshadowed by periodic disputes between the President and Congress about how to reduce the Federal budget deficit.

The pivotal role of deficit policies is not surprising. For all but the staunchest of Ricardians, deficits will have real allocative and distributive effects.[1] Through government borrowings, resources can be transferred from future to current generations. To the extent such transfers constitute a subsidy for the consumption of public services by current residents, a misallocation between public and private resource uses in the current budget can occur.[2] Annual pleas for governments to save more and to borrow less -- "sinner heal thyself" -- typically fall upon deaf ears. If true reform in public sector deficit behavior is to be forthcoming, more careful consideration must be given to the borrowing

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[1] It is fitting that this paper appears in a symposium honoring Carl Christ, for Carl Christ's own work (1968, 1979) on the macro-economic effects of the government's budget constraint -- what he chose to call (hopefully perhaps) the government's budget restraint -- was an important contribution to this literature. Christ's work showed that the government's budget re(con)straint equating government expenditures including interest payments to taxes plus borrowing plus the issue of high-powered money plus depletion of foreign reserves logically links the economic consequences of fiscal and monetary policies. This identity suggests in Christ's words "that changes in the money stock, the debt, government purchases, transfers, and taxes all have effects (on the economy), depending on which variables are fixed and which are allowed to vary endogenously" (Christ, 1979, p. 538).

[2] See Inman (1982) and Sjoblum (1985).

incentives, and constraints on those incentives, of those who set government fiscal policies.

Amidst this general concern for growing government deficits, however, one public sector has shown significant deficit restraint: the United States state and local public sector. Table 1 provides evidence of the ability of this public sector to save. Over the years 1972-90, the real net worth of the U.S. state and large city public sectors grew by 1.4% per annum. Over roughly the same period (1972-1989) the real net worth of the U.S. federal government declined by 6.3% per year.[3] A large fraction of the decline in the federal government's net worth can be attributed to the growth in government debt outstanding. The level of real U.S. federal debt outstanding has risen an additional 3.1% per annum since 1989.[4] Other national public sectors, OECD countries and elsewhere, have experienced similar increases in government borrowing in the past decade.[5] Clearly, something is different about public savings behavior in the U.S. state and local public sector.

While there are several alternative economic and political hypotheses as to why the U.S. state and local public sectors seem to save more than governments elsewhere, one hypothesis has captured widespread attention. U.S. state and local governments face constitutional and statutory limitations on their ability to run public deficits; it is this constraint which many have argued provides the true protection for the state and local public purse.[6] In this paper, we shall examine the validity of this claim.

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[3] These calculations exclude social security. The social security system also shows a rapid increase in unfunded obligations; see Bohn (1992) and Auerbach (1994).

[4] See Congressional Budget Office, The Economic and Budget Outlook: Fiscal Years 1996-2000, Table E-2. The future long-run debt position of the U.S. government is only likely to worsen, even if current deficit reduction proposals are approved; see Auerbach (1994).

[5] See Roubini and Sachs (1989) for some evidence.

[6] For recent scholarly evidence that the constraint might matter see ACIR (1987), Poterba (1994), Alt and Lowry (1994), and Bayoumi and Eichengreen (1995). Popular interest in the

Almost all U.S. states -- all except Vermont -- operate under some kind of balanced budget requirement. In this paper, we shall compare the behavior of U.S. states that operate under a range of fiscal rules that differ in the degree of restrictiveness. Our main conclusion -- that more stringent balance rules have a measurable and intuitively plausible impact on budget deficits -- provides strong evidence that the form of a balanced budget rule matters. Unfortunately, since we have only one observation (Vermont) without a balanced budget rule, we cannot directly test the further hypothesis that the mere presence of a balance rule -- whatever its form -- affects deficit behavior. Soft balance constraints may still be better than no constraints. The safe conclusion is this: If one adopts a balanced budget rule, more stringent rules with outside enforcement work best.

Previous studies have examined the impact of statutory and constitutional limitations on deficit behavior in the state and local public sectors, all finding the constraint did reduce government borrowings. Each of these studies was significantly limited by the available data, however. Either an inappropriate measure of the deficit was used or, where an appropriate measure was available, the sample was limited to only a few years.[7] Our study examines the effects of statutory and

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use of the constraint is evident in Republican Party's successful 1994 congressional campaign based upon its "Contract with America" and the cornerstone role of a federal balanced budget amendment.

[7] The first study to systematically explore the effects of state balanced budget rules on state budgets was the single year cross-section study by the ACIR (1987). In that study, deficits were measured by a general fund deficit (the appropriate dependent variable) and an index of the stringency of the state's balanced budget requirements was found to significantly reduce state deficits. The weakness of a single cross-section regression is revealed, however, when the effects of the balanced budget constraint is tested on own revenues and own source expenditures. The constraint is shown to have implausibly large negative effects on revenues and spending, suggesting potentially serious omitted variable bias. The most likely omitted variables are those which measure the political conservatism of the state.

Von Hagen (1991) extends the ACIR analysis by examining average deficit behavior over the period 1975-85. Using the ACIR measure of tightness in the balanced budget constraint, von Hagen finds that the constraint does not affect the average deficit

constitutional deficit constraints on government borrowing using as a measure of borrowing new estimates of the general fund deficit for state governments, the deficit to which the limitations directly apply. Further, we use a panel data base of 22 years of general fund state government deficits for each of 47 sample states.[8] Finally, and perhaps most importantly, we test explicitly for the separate effects of each type of fiscal limitation to see if some fiscal rules are more effective in controlling deficits than others. Previous research has typically used an index of "fiscal stringency" aggregating the effects of separate rules. For

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behavior of U.S. states over his sample period, 1975-1985. Like the ACIR study, von Hagen does not control for the independent effects of state politics on deficit behavior, making his results difficult to interpret.

This problem is corrected in the study by Alt and Lowery (1994) who carefully explore the effects of political and economic variables on government spending and revenue behavior using a panel data set from 1968-87. From this two equation model they simulate the likely path of deficits following various economic shocks, where deficits are defined as general expenditure minus general revenue. Republican states facing a "no carry-over" balanced budget constraint are found to close more of the deficit gap than republican states without the "no carry-over" constraint. Democratic states with and without the "no carry-over" constraint behave similarly, closing the same deficit gap as the republican "no carry-over" states. In all cases, deficits are closed by increasing revenues. They estimate spending cuts to be used only rarely. The central weakness of the study as an analysis of the effects of balanced budget constraints is its use of an overly inclusive measure of state deficits. Legal constraints bind not on all revenues less expenditures but only on the state's general fund revenues and expenditures; see section 2 below. We cannot be sure the estimated effects are because the constraint really binds on the general fund account or because of continued omitted variable problems.

Poterba (1994) corrects both problems. He uses the correct general fund account measure of state deficits and includes both economic and political variables along with the balanced budget constraint in his spending, revenue, and deficit equations. He finds states facing "tight" balanced budget constraints respond to a deficit shock by reducing spending and by increasing taxes more than do states with "soft" balanced budget constraints. In Poterba's sample, revenue increases are the main vehicle for adjusting to deficits. The only weakness of the Poterba study is its limited sample size: 50 states for only the period 1988-92.

Bayoumi and Eichengreen (1995) is the latest study to explore the effects of balanced budget limitations on state fiscal policy. Using a large cross-section, time-series panel (50 states for 1971-1990), they estimate the responsiveness of state deficits to changes in state income. They find that deficits in states with strong balanced budget requirements are less responsive to changes in income than states with weak requirements. In contrast to Alt and Lowery and Poterba, Bayoumi and Eichengreen find that most of the change in state deficits in tight constraint states comes from adjustments in spending, not revenues. Like Alt-Lowery, however, Bayoumi-Eichengreen uses an overly inclusive measure of state deficits.

[8] Alaska and Wyoming are excluded from this study because of their extraordinarily large general fund surpluses per capita made possible from their severance taxes on oil. Hawaii is excluded from the analysis because of its unique full state responsibility for public education. Exploratory regressions with these states suggest that the inclusion of Alaska and Wyoming would produce large outliers in many of our regressions; the inclusion or exclusion of Hawaii did not significantly affect our results.

policy, however, we must know the influence of each rule on deficits; for the rules -- not an index -- are the true instruments for fiscal control.

After controlling for other possible economic and political determinants of state deficit behavior, our analysis concludes that "tight" end-of-year statutory and constitutional balanced budget requirements act as a significant constraint on state general fund deficits. "Soft" limitations -- those that require only a prospective or beginning-of-year balance -- are not effective constraints on state deficit behavior. States facing tight balanced budget constraints run general fund surpluses which are, on average, about $100 per capita larger than surpluses found in states facing only soft constraints. Further, replacing a soft constraint by a tight constraint reduces the average annual probability of running a deficit in a sample state from 0.26 to 0.11. When we examine the composition of state budgets, we find that the increased surpluses induced by tight constraints are associated with reduced current spending rather than increased taxes. The surpluses are saved as an increase in states' "rainy day" reserve funds. Capital investments and the states' capital stocks are also increased.

We find some tentative evidence that other budget rules -- notably, giving the governor a line item veto -- also limit general fund deficits. Restrictions on debt issues -- requiring long-term general obligation debt to seek voter approval -- tend to reduce the outstanding debt, but at the expense of capital investment rather than general spending.

Finally, how the constraints and budget rules are enforced also matters. Statutory constraints demand only a simple majority to overrule; constitutional constraints typically require a 2/3's super-majority or separate voter approval to overturn. Our empirical analysis suggests that

statutory constraints have a smaller effect than similarly stringent constitutional constraints. But this result is qualified by the fact that only a small number of states have tight statutory constraints. We find more significant evidence on the question of enforcement. Constraints enforced by a popularly elected state supreme court are associated with significantly larger general fund surpluses than those enforced by a governor-appointed or legislatively elected state supreme court. We take this result as evidence that "outsider" rather than "insider" enforcement is preferred.

Our central empirical conclusion is that stringent balanced budget rules can limit state general fund deficits. It raises a natural next question: At what cost? Binding constraints remove the flexibility of state officials to set budget policies. To explore this loss of fiscal flexibility -- whether for purposes of short-run economic stabilization or long-term tax smoothing -- we have estimated the sensitivity of state deficits, state revenues, and state expenditures to changes in state income and unemployment for states with and without tight budget balance rules. The evidence of the consequences of rules for stabilization policy is mixed. Using state personal income as a cyclical indicator, we find that a stringent balance requirement reduces the cyclical sensitivity of state general fund surpluses by about one-half. However, if state unemployment is used as the cyclical indicator, stringent balance requirements have only a small and often statistically insignificant effect. We also examine the time series properties of the ratio of tax revenues to state income to obtain direct evidence of the effects of rules on tax smoothing. The average autocorrelation coefficient of this tax ratio across our sample states is only about 0.5, far from the unit coefficient that one would

expect to find in case of complete tax smoothing. Further, the states' autocorrelation coefficients were not affected by whether they had "soft" or "tight" balanced budget rules.

The mixed results on fiscal flexibility may be related to our finding that states with stringent balance requirements maintain higher rainy day funds than other states. Constrained state governments can reduce the chance that their constraint might bind in the future by maintaining a buffer stock of precautionary savings -- much like prudent, borrowing-constrained consumers. With sufficient rainy day funds (government savings), states' balance constraints may bind so rarely that not much cyclical flexibility is lost.

The paper is organized as follows. Section 2 lays out the structure of state budgets and explains our data set. Section 3 examines the determinants of the general fund surplus. In Section 4, we examine which components of state budgets are most affected by fiscal rules. Section 5 discusses extensions and shows that our main results are robust against a number of objections. Section 6 examines whether fiscal rules affect the fiscal responses to cyclical fluctuations. Section 8 concludes with some comments on the implications for the federal balanced budget debate.

2. Balanced Budget Constraints and General Fund Deficits

Table 2 details the balanced budget rules in force over the period of our analysis, 1970-1991. All rules were directly approved by the state's citizens (if a constitutional constraint and denoted by a C in Table 2) or by the state's legislature (if a statutory constraint and denoted by an S in Table 2) prior to 1970, in most cases at the date of the state's

admission to the union.[9] Five different balanced budget constraints are listed. The first, and perhaps the weakest of the limitations, only requires the governor to submit a balanced budget at the start of budget deliberations. The second constraint requires the state legislature to pass a balanced budget. Importantly, neither of these two prospective constraints alone imposes any fiscal discipline at the end of the fiscal year. Therefore, states with just these prospective constraints -- Illinois, Louisiana, Massachusetts, New Hampshire, New York, and Nevada -- are legally allowed to run deficits at the end of a fiscal year.

States facing the third constraint are allowed to run a deficit at the end of the year, but they are required to explicitly budget for that deficit in the next fiscal year. These states may carry-over a deficit from one year to the next. For example, if Connecticut runs a deficit, then the governor and the legislature must include funds to repay that deficit when they submit and then pass their prospective budget for the next fiscal year. Importantly, however, this constraint never requires the deficit to be actually eliminated. States with this "may carry-over" constraint and prospective budget balance rules -- Alaska, California, Connecticut, Maryland, Michigan, Pennsylvania, and Wisconsin -- can simply roll their deficits into next fiscal years indefinitely. Here again, there is no effective end of the year fiscal balance requirement.

An effective end of the year balance requirement occurs only in those states which cannot carry-over a deficit from one budget period to the

[9] The summary of statutory and constitutional provisions detailed in Table 2 are from two sources: Council of State Governments, Limitations on State Deficits, 1976, and the Advisory Commission of Intergovernmental Relations (ACIR), Fiscal Discipline in the Federal System: National Reform and the Experience of the States, 1987. To confirm that these laws were in place prior to 1970, we examined all state statutes on budget regulations from 1970 to 1994 and found no significant changes in the balanced budget requirements summarized in Table 2. For a history of these limitations -- many of which were included in the original state constitution -- see Ratchford (1941), Chapter 17, and Savage (1988), Chapter 4.

next. In these states, having a C or an S in columns 4 and 5 of Table 2, deficits materializing during the budget period must be reduced to zero by the end of the period. This may be accomplished by raising taxes, by collecting additional federal aid, by cutting spending, or by some combination of these fiscal options. Fiscal gimmicks also known as "adjustments" -- for example, collecting next fiscal year's taxes or grants early or postponing payment for services into the next fiscal year -- may also be used to balance the budget. The aggregate amount of dollars actually available to the state through these bookkeeping gimmicks appears to be limited, however; see U.S. GAO (1993). Rather real spending and tax adjustments are used to close a deficit gap in the no carry-over states. If a deficit does remain at the end of a fiscal year after all spending and revenue adjustments are made, it must be carried into the next fiscal year where it again faces the end of the year no deficit constraint. States with biennial budget periods may impose the no carry-over constraint on either a yearly or on a biennial basis; see column 4, Table 2. States with a budget period of only one year must meet the no carry-over constraint within that single fiscal year; see column 5, Table 2.[10]

Enforcement of these balanced budget rules is by the state's courts, with the state supreme court the ultimate arbiter. If the state supreme court is appointed by the governor or by the state legislature (i.e., by those accountable for the deficit), it is possible that enforcement of

[10] Also shown in Table 2 as a column Exhibit is the ACIR "degree of stringency" index for balanced budget rules. The index awards points for whether the rule is: governor must submit (1 point), legislature must pass (2 points), the state may carry a deficit into the next year (4 points), the state cannot carry a deficit into the next biennium budget (6 points), and finally the state cannot carry a deficit into the next fiscal year (8 points). The index of stringency is the points from the "highest" ranked requirement plus one point if the rule is statutory or two points if the rule is constitutional. The maximum index value is 10 (e.g., Delaware). The minimum index value is 0 (Vermont).

The index has been used by all previous studies of the effects of balanced budget rules on state expenditures, revenues, and deficits; see footnote 5 above. While our work will focus on the effects of the individual rules, we will show results using the index for comparisons.

balanced budget rules will be less strenuous. Appointed supreme courts may behave more like a government agency than a truly independent monitor of fiscal performance. Independently elected supreme courts, on the other hand, are free of direct gubernatorial or legislative influences and therefore hypothesized to be tougher monitors of fiscal policy. We shall test this proposition in Section 5 below. Table 2, column 6 indicates whether the state supreme court is appointed or elected.

The balanced budget rules listed in Table 2 only apply to the general fund account of the state budgets, but states perform fiscal activities through a variety of other accounts as well. In additional to the general fund account, states have capital budgets and bond fund accounts to receive and allocate capital borrowings, sinking fund accounts to collect funds for debt repayments, public employee pension fund accounts to save and disburse funds for employee retirements, insurance trust accounts to save and disburse funds for disability and workmen's compensation, and "rainy day" fund accounts to save general fund surpluses and to cushion general fund deficits. Each of these accounts is legally entitled to receive funds from the general fund and to allocate funds to the general fund. Constraints on these funds may therefore have implications for the general fund deficit. We shall test the additional effects of one of these constraints on the general fund deficit: the inability of states to borrow through general obligation long-term debt without prior referendum approval of the voters. If this constraint is binding, then capital projects must be financed either through (revenue) bonds which do not face the referendum constraint or through a surplus transfer from the general fund account to the capital account. States with a referendum borrowing constraint on the use of long-term general obligation debt are listed in Table 2, column 7.

Peltzman's (1992) argument that voters are fiscal conservatives and hold governors responsible for marginal expansions of state budgets suggests that governors seeking re-election should seek to control spending and taxes. If voters recognize that state deficits represent future taxes, then deficits should be controlled too. One potential weapon in a governor's budget arsenal is the line item veto. If this veto is an effective instrument for a fiscally conservative governor, then governors with the item veto are likely to have smaller deficits --particularly in states with no carry-over rules -- than governors without an item veto. In his study of the item veto, Holtz-Eakin (1988) finds that when government power is divided between two parties -- one controlling the executive and the other the legislature -- the item veto does help governors reduce spending and raise taxes. The item veto may be a useful tool for controlling general fund deficits as well. We shall test this proposition directly. States whose governor can use an item veto are listed in Table 2, column 8.

Importantly, our analysis of the effectiveness of balanced budget rules in controlling deficit financing tests for the effects of the rules using that budget deficit -- the general fund deficit -- directly constrained by the rules themselves. With the exception of Poterba (1994), all previous studies have used total revenues minus total expenditures to approximate state surpluses and deficits. Since states raise and spend money in a variety of separately budgeted accounts, only one of which is the general fund account, a total revenue minus total expenditure measure of surplus or deficit may fail to reveal the true ability of a balanced budget constraint to control deficits. In addition to a general fund account, other accounts within a state's budget include: 1) a capital fund

to keep the proceeds of capital borrowing and general fund allocations for capital spending; 2) an insurance trust fund to keep the proceeds of general fund allocations and employer/employee allocations for state disability and workmen's compensation payments;[11] 3) a public employee retirement fund to keep the proceeds of general fund allocations and employee allocations for employee retirement payments; 4) a "rainy day" fund to save surpluses from the general fund account in anticipation of possible deficits; and 5) a short-term debt "rollover" fund where short-term debt obligations are temporarily "stored" in anticipation of future repayments.[12]

The accounting relationship which connects the general fund account to these five additional accounts is:

$$[TAF + I - WBTOM - GCTF - GCPF - (IntSD + IntLD) - PrnLD] = SURGF = [NDCAP + NDTF + NDPF + NDRF + NDSTD], \quad (1)$$

where general fund revenues minus general fund expenditures are:

TAF = General fund revenues from taxes (T), federal aid (A), and state license and fees (F);

I = Interest income allocated to the general fund (excludes interest earnings in the public employee trust fund which remains in that fund);

WBTOM = General fund expenditures on employee wages and benefits other than pension contributions (WB), transfers to residents other than

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[11] Excluded from our analysis is the state's unemployment trust fund, a separately budgeted account which holds contributions by employers in anticipation of state unemployment benefits. We do not consider this account here because benefits are solely funded by "earmarked taxes" and any deficits in the account are fully insured by the federal government. Because of the obvious moral hazard problem such insurance creates, the fund balances are strictly regulated by the federal government. See Vroman (1986).

[12] Some states will identify an additional sinking fund account in which they hold the proceeds of general fund allocations for the repayment of long-term debt outstanding. Our accounting does not recognize this separate account as we directly expense all contributions to such a fund as part of the general fund account's repayment of interest and principal on long term debt.

for disability and workmen's compensation or for public employee retirement (T), miscellaneous other state spending (O), and maintenance spending for infrastructure (M);

GCTF = General fund contributions to the insurance trust fund for workmen's compensation and disability;

GCPF = General fund contributions to the public employee retirement fund;

IntSD + IntLD = General fund interest expenditures, equal to the sum of interest on the short-term debt (IntSD) and on the long-term debt (IntLD); and,

PrnLD = Principal repayments by the general fund for outstanding long-term debt.

The difference between general fund revenues and general fund expenditures defines the general fund surplus (SURGF > 0) or deficit (SURGF < 0), which is in turn allocated to the five other state accounts as:

NDCAP = Net deposit to (NDCAP > 0) or net withdrawals from (NDCAP < 0) the capital fund;

NDTF = Net deposit to (NDTF > 0) or net withdrawals from (NDTF < 0) the workmen's compensation and disability trust fund;

NDPF = Net deposit to (NDPF > 0) or net withdrawals from (NDPF < 0) the public employees retirement trust fund;

NDRF = Net deposit to (NDRF > 0) or net withdrawals from (NDRF < 0) the "rainy day" fund; and,

NDSTD = Net deposits to or net withdrawals from the short-term debt "rollover" fund, where, if NDSTD>0, repayments of short-term debt exceed new short-term borrowings so that the short term debt outstanding at the beginning of the year is reduced, or if NDSTD<0, current-year short-term borrowings in excess of repayments of short-term debt are added (i.e. "rolled over") into prior years' short term debt.

If a "net deposit" is positive -- as some must be when the general fund runs a surplus -- then the stock of assets held in that account is increased. If a net deposit is negative -- as some must be when the general fund runs a deficit -- then the stock of assets held in that account must be reduced. The general fund account therefore acts as one important access point to the assets being held by the state in its capital fund, in its trust funds, and in its rainy day fund. Requiring the state to run a balanced budget on its general fund (SURGF $\geq$ 0) operates as a potentially important check on the depletion of assets held in these non-general fund accounts.[13]

Table 3 reports the mean and standard deviation of the general fund surplus (SURGF), its components, and its allocation for our sample of 47 states over the 22 year period, 1970-1991. Alaska, Hawaii, and Wyoming have been excluded from the analysis because of their unique fiscal features; see footnote 8 above. On average, our states ran a positive general fund surplus of $123.20 per capita per year in real 1990 dollars, equal to approximately 7.1% of average revenues and about 0.9% of average income. Average general fund revenues (TAF + I) totaled $1743.40 per capita and average general fund expenditures (WBTOM + GCPF + GCRF + IntSD + IntLD + PrnLD) totaled $1620.20 per capita. The difference equals $123.20 and defines the general fund surplus (if positive) or deficit (if negative).

The $123.20 per capita average surplus from the general fund is then allocated by the states to the various asset accounts. For this study we assume that no additional allocations are made by the states to the public

[13] There are, of course, other institutional mechanisms which protect the assets in these state funds. The capital fund is regulated by debt contracts which require that long-term debt be allocated to capital expenditures. The workmen's compensation and disability insurance trust fund is regulated by a board of private employers and employees who make contributions to the fund. The public employee retirement trust fund is similarly regulated, here by working and retired public employees and by taxpayers who have all contributed to the fund.

employee retirement fund and the insurance trust fund beyond that already recorded in GCPF and GCTF -- that is, NDTF = NDPF ≡ 0.[14] Of the remaining three funds, the largest net deposit is made to the capital fund -- NDCAP = $86.60 per capita. The raining day fund receives an annual average contribution of NDRF = $37.10 per capita. The short-term debt rollover account is, on average, a very small drain on the other two net deposits -- NDSTD = -$.40/capita -- implying a small increase in the stock of short term debt outstanding from one fiscal year to the next.

Figure 1 details the path of the sample's average general fund surplus over the period 1970 to 1991. The trend is downward reflecting the overall tightening of state and local budgets over the past twenty years; see Gramlich (1991).[15] The peak surplus year (1973) occurred immediately after the introduction of federal general revenue-sharing. The sharp downturns in state surpluses occur during the recession years of 1974-75, 1981-83, and 1991.

In this study, we shall examine the possible effects of balanced budget rules on the level of the general fund surplus. We do so in the

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[14] As originally specified in equation (1), GCTF and GCPF represent the contributions required of the state to meet its legal obligations to these funds. Importantly, a state's legal obligation to meet statutory or constitutional funding requirements need not equal the fund's true actuarial needs in a given budget year; states can underfund their insurance and pension funds when compared to an economic or actuarial definition of full funding. If the state does make additional contributions above its legal requirements of GCTF and GCPF, then those contributions should be recorded as positive values of NDTF or NDPF under the deficit accounting of equation (1). Similarly, a state could borrow from the insurance and pension funds after meeting its legal contributions; in this case NDTF and NDPF would be negative. The values of NDTF and NDPF cannot be calculated without knowing either the state's legally required contribution or the level of funds balances in the insurance and pension trust funds. We lack this information and for this analysis choose to make the simplifying assumption that NDTF ≡ NDPF ≡ 0. We feel this assumption is reasonable, though it does imply a possible measurement error of our dependent variable SURGF. As long as this measurement error is uncorrelated with all independent variables in our regressions, however, then our parameter estimates remain unbiased.

[15] The time path in our estimates of general fund surpluses based upon state budget data follows exactly the pattern observed in Gramlich's (1991) study of the aggregate "operating surplus" in the state and local sector based upon NIPA budget data. Like us, Gramlich excludes capital spending from his surplus measure. Gramlich excludes pension contributions, however, which we include in general fund spending as an employee expense (GCPF).

context of a reduced form model of the state's surplus/deficit decision. States unconstrained by a balanced budget rule are assumed to set their general fund surplus in response to the state's underlying economic forces, tempered perhaps by the realities of the state's political environment. Barro's (1979) tax-smoothing specification suggests that the general fund surplus/deficit will be responsive to general economic conditions measured by levels of income (INC), unemployment (UNEMP), and intergovernmental (almost all federal) grants-in-aid (AID) as the economic determinants of optimal spending and own revenues, and to changes in income (ΔINC), unemployment (ΔUNEMP), and aid (or lagged aid) to reflect adjustments from the desired path of spending and taxes. The set of economic variables is represented by the vector $\tilde{Y}$ = (INC, ΔINC, UNEMP, ΔUNEMP, AID, AID_{-1}). Sample means and standard deviations of these economic variables are reported in Table 3.

Our analysis of general fund behavior also allows for the possible influence of the stocks of previously accumulated public sector financial assets and liabilities. Financial assets are measured here by the level of the states' rainy day funds (RAIN) and by the value of assets held as offsets to outstanding long-term debt in bond and sinking funds (LDOFF). In particular, rainy day funds may be a rational, "precautionary savings" response for states facing binding budget constraints. If there are political or legal costs to deviating from a desired surplus target, politicians in constrained states might find it optimal to implement an upward adjustment in their budget surplus all the time, not just in the years in which the budget is potentially in deficit. The rainy day fund holds these precautionary savings. The stock of outstanding financial liabilities are measured here by the par value of the stock of short-term

(SDOUT) and long-term (LDOUT) debt outstanding. Each financial stock is measured at the beginning of each fiscal year. The set of financial assets is represented by the vector $\tilde{W}$ = (RAIN, LDOFF, SDOUT, LDOUT). Sample means and standard deviations for these financial wealth controls are reported in Table 3.

Recent models of deficit behavior by political scientists -- notably Alt and Lowry (1994) and McCubbins (1991) -- have suggested that divided governments -- governments where one party controls the executive and the other party controls the legislature (or the legislature itself is divided) -- will find budget agreement more difficult and thus deficit financing more attractive. We control for these possible political forces on deficit financing by including in our analysis a sequence of indicator variables representing whether the democratic party controls both branches of government at the time the deficit is decided (DEMALL = 1, 0 otherwise), whether the republican party controls both branches (REPALL = 1, 0 otherwise), whether control is divided between a governor of one party and a legislature controlled by the other party (DIVGOV = 1, 0 otherwise), whether the legislature itself is divided between parties (DIVLEG = 1, 0 otherwise), and finally a residual category for those cases not covered above (OTHERGOV = 1, 0 otherwise; e.g. unicameral legislatures (Nebraska) and independent governors). We usually omit the DIVGOV category because our regressions include either state dummies or a constant. In addition, we control separately for the party affiliation of the governor (REPGOV = 1, if Republican, 0 otherwise). The set of political variables is represented by the vector $\tilde{P}$ = (DEMALL, REPALL, DIVLEG, OTHERGOV, REPGOV). Table 3 reports the sample means and standard deviations for these controls.

Finally, there are a number of state-specific controls that might be introduced into our analysis to capture time-invariant differences between states in their deficit behaviors. One must be parsimonious with such controls as the degrees of freedom are much smaller in a cross section than in a panel. Hence, we only include a dummy variables for the southern states, SOUTH, throughout the analysis. However, in Section 5, we document the robustness of our main results on budget rules by including additional political environment variables to possibly explain observed across-state differences in deficit behavior. For the general specification, let $\tilde{Z}$ be a vector of these time-invariant controls. For now, $\tilde{Z}$ = (SOUTH).

Overall, the surplus/deficit decision of state s in year t can then be specified as:

$$SURGF^*_{st} = \alpha^* + \beta \cdot \tilde{Y}_{st} + \theta \cdot \tilde{W}_{st} + \rho \cdot \tilde{P}_{st} + \gamma \cdot \tilde{Z}_s + \lambda \cdot t + u^*_{st} \qquad (2)$$

where $SURGF^*_{st}$ is now the desired level of the state surplus/deficit as a function of $\tilde{Y}$, $\tilde{W}$, $\tilde{P}$, $\tilde{Z}$, and time (t), and where u^*_{st} is an error term capturing all unobservable components of the surplus/deficit decision. We assume that u^*_{st} has mean zero and is independent of the controls $\tilde{Y}$, $\tilde{W}$, $\tilde{P}$, $\tilde{Z}$, and time. However, u^*_{st} may be autocorrelated through time.[16]

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[16] We should note that our specification of the SURGF equation does not include a state-specific interest rate, though one might plausibly argue that such a variable should be included in the vector of economic variables $\tilde{Y}$. Lower interest rates might increase deficit financing. Unfortunately, individual state borrowing rates are not available to us for our sample period. We do not feel this omission creates a serious problem for our analysis, however. First, by including the major state-specific, economic and fiscal wealth determinants of state interest rates in our analysis, we adequately controls for these sources of variation in the state interest rate; see Bayoumi, Goldstein, and Woglom (1995). Second, as Bayoumi, Goldstein, and Woglom (1995) discovered, the state interest rate is itself dependent upon fiscal balance rules, where more stringent rules lead to lower interest rates. This implies that introducing more stringent balanced budget rules might have two equilibrium effects on the level of state surpluses: a positive direct effect from meeting the rule itself and then an offsetting indirect effect as the presence of the rule lowers short-term rates inducing a financial incentive to lower surpluses. Since we cannot directly control for short-term interest rates in our analysis, our estimates of the effect of balance budget rules will necessarily measure the combined -- the direct plus indirect -- effect of the rules on deficits. However, for purposes of

Without a binding balanced budget requirement, the desired surplus/deficit decision is implemented. The realized general fund surplus will be:

$$SURGF_{st} = SURGF^*_{st} + \varepsilon_{st} \qquad (3)$$

where ε_{st} is an error term reflecting unexpected changes in revenues and spending over the fiscal year. Because of such unexpected changes, states may realize a deficit even if they planned to run a surplus.

States in which a balanced budget constraint binds are not allowed to implement the desired surplus/deficit decision, if the economic and political realities are such that the desired decision would be to run a deficit. The desired level of the surplus/deficit in the constrained states is assumed to be specified by the same behavioral forces which set the surplus/deficit in the unconstrained states -- that is, equation (2) above. When a balanced budget constraint binds, however, states must adjust the planned surplus upward to meet the balance constraint. They may even have to implement additional adjustments as the year progresses if they receive signals indicating unexpectedly low revenues or unexpectedly high outlays.

We specify this adjustment as an average required increase of Φ dollars in the years in which the desired $SURGF^*_{st}$ is negative. If there is less than perfect enforcement of the constraint, then in some years when $SURGF^*_{st} < 0$ occurs, it may be allowed to stand. If π is the exogenous probability of enforcement, then in those states and years in which the balanced budget constraint binds and is enforced with probability π, the observed $SURGF^*_{st}$ becomes:

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evaluating the overall efficacy of fiscal rules when states can borrow (the interesting case), it is the combined effect of rules on surpluses which is appropriate.

$$SURGF_{st} = \pi \cdot (SURGF^{*}_{st} + \Phi + \varepsilon_{st}) + (1-\pi) \cdot (SURGF^{*}_{st} + \varepsilon_{st})$$

or,

$$SURGF_{st} = SURGF^{*}_{st} + \pi \cdot \Phi + \varepsilon_{st} \qquad (4)$$

If we define an indicator variable C_s as $C_s = 1$, if state s is subject to a balanced budget rule, and $C_s = 0$ otherwise, we can combine equations (2) and (4) to obtain the overall deficit equation:

$$SURGF_{st} = \alpha^{*} + \beta \cdot \tilde{Y}_{st} + \theta \cdot \tilde{W}_{st} + \rho \cdot \tilde{P}_{st} + \gamma \cdot \tilde{Z}_{s} + \pi \cdot \Phi \cdot C_s + \lambda \cdot t + u_{st}, \qquad (5)$$

where $u_{st} = u^{*}_{st} + \varepsilon_{st}$ is the overall error term.

Equation (5) reveals that the central difference between otherwise identical unconstrained and constrained states will be the average upward shift of $\pi \cdot \Phi$ in the level of $SURGF_{st}$. If a fiscal rule has an enforceable and binding effect on state deficit behavior, then the overall average effect $\pi \cdot \Phi$ should be reflected in a positive coefficient on C_s.[17]

This specification can also be used to test the effects of other fiscal rules on state deficits. For example, one might interpret the line item veto as a fiscal rule that allows the governor to cut spending by some amount (Φ) relative to the amount that would be budgeted otherwise. If the line item veto power is invoked with some probability (π), it also leads to the specification (5). Similarly, a fiscal rule requiring all capital borrowings to be approved by a voter referendum might add, on average, $\pi\Phi$ dollars to revenues and therefore to the current accounts surplus, where Φ

[17] More generally, one might consider the possibility that the size of the adjustment induced by a fiscal rule might have a time-varying component. We cannot rule out this possibility. Our estimates of $\pi\Phi$ are an estimate of the average effect over our sample period of budget rules on deficits. The "precautionary savings" argument outlined above suggests, however, that constrained states have an incentive to make adjustments smoothly over time, i.e., not just in years in which $SURGF^{*}_{st}$ is negative.

dollars are to be invested and π is the probability the needed bond issue will be defeated.

The appropriate methods for estimating equation (5) depend on the specification for the error term u_{st}. We assume that the error consists of a state-specific component v_s and an idiosyncratic component ξ_{st}, $u_{st} = v_s + \xi_{st}$, both of which are assumed to be uncorrelated with the regressors. If the errors are independent and homoskedastic, the GLS random-effect estimator would be Best Linear Unbiased. For reasons of computational convenience -- we will be testing for the effects of many alternative fiscal rules -- we adopt a statistically less efficient but nonetheless consistent two stage procedure. In stage one we regress the realized surplus on the time-varying control variables and on a set of dummy variables for each state, i.e.,

$$SURGF_{st} = \alpha_s + \beta \cdot \tilde{Y}_{st} + \theta \cdot \tilde{W}_{st} + \rho \cdot \tilde{P}_{st} + \lambda \cdot t + \xi_{st}, \qquad (6)$$

where α_s now denotes individual state fixed effects. A stage two regression the regresses the estimated fixed effects $\hat{\alpha}_s$ on alternative fiscal rules, C_s, and on the time-invariant controls as:

$$\hat{\alpha}_s = \alpha^* + \gamma \cdot \tilde{Z}_s + (\pi \cdot \Phi) \cdot C_s + \hat{v}_s. \qquad (7)$$

If OLS is used in stage two, the two-step procedure will be somewhat less efficient than the GLS random-effects estimator, but it does yield consistent estimates. Sections 3-6 report our results, mostly in terms of the two-step procedure.[18]

[18] We examined the robustness of our main results by re-estimating the most critical regressions with the random effects method. The results were essentially unchanged; see Section 3.2.

3. The determinants of the general fund surplus

3.1. A first look at the data

Table 4 provides a first impression of how the fiscal constraints influence the general fund surplus. Though we will use more sophisticated methods below, a few simple regressions illustrate the basic features of the data. The indicator variables SUBMIT, PASS, CARRY, and NOCARRY refer to the rules requiring the governor to submit a balanced budget (SUBMIT=1, 0 otherwise), the legislature to pass a balanced budget (PASS=1, 0 otherwise), the requirement that a carried-over deficit must be corrected in the subsequent year (CARRY=1, 0 otherwise), and the requirement to balance the budget within each fiscal year without carryovers (NOCARRY=1, 0 otherwise), respectively. The variables LINEITEM, DEBTREST, and ACIR-Index refer to the availability of a gubernatorial line-item veto (LINEITEM=1, 0 otherwise), referendum restrictions for the issue of debt (DEBTREST=1, 0 otherwise), and the value of the ACIR index for the stringency of balanced budgets, respectively; see Table 2.

Table 4 regression set 1 presents the simple univariate regressions of the general fund surplus on each fiscal rule.[19] Regression set 2 is analogous, but the dependent variable is an indicator variable that takes a unit value whenever a state runs a deficit (SURGF<0), and zero otherwise. Columns 5 and 6 display the probability of deficits conditional on the respective fiscal rule being in effect or not being in effect. The results show that the no-carryover requirement, the line item veto, and the presence of debt restrictions are highly positively correlated with the level and the frequency of general fund surpluses. In contrast,

[19] Throughout the paper, we display slope coefficients and their t-values; constants are included in each regression but not displayed to save space.

requirements to SUBMIT or PASS a balanced budget or to correct a deficit in the next year (CARRY) are negatively correlated with the level and frequency of general fund surpluses. Since most of the states with SUBMIT, PASS, and CARRY requirements lack the more stringent NOCARRY rule, SUBMIT, PASS, and CARRY signal a relatively weak balance requirement.

The evidence in Table 4 is of course preliminary. It omits a number of variables that have an independent impact on fiscal policy and may be correlated with the fiscal rules.

3.2. Adding economic, balance sheet, and political controls

As explained in Section 2, we use a two-step procedure to control for the economic and political determinants of state budget surpluses. First, we estimate a fixed-effects model regressing the general fund budget surplus on economic, balance sheet, and political control variables. We then regress the estimated state fixed effects on the alternative budget rules. The stage-1 panel regressions are summarized in Table 5. The stage-2 cross-sectional regressions are presented in Table 6.

Table 5, panel A reports the results of regressing the general fund surplus on a number of economic and political variables. The economic variables are the level (INC) and change (ΔINC) in state personal income, the level (UNEMP) and change (ΔUNEMP) in the state unemployment rate, and the current (AID) and lagged (AID(-1)) levels of federal aid. The political variables measure the party alignments of the governor and the legislature within a state. The variables for party alignments are full Republican and Democratic control of the governorship and the legislature (REPALL and DEMALL, respectively), a divided legislature (DIVLEG), a legislature and governorship controlled by different parties (omitted to prevent perfect collinearity in the regressors), and finally, the governorship or at least

one house controlled by neither Republicans nor Democrats (OTHERGOV). In addition, we measure explicitly whether the governor is a Republican (REPGOV) without regard to the composition of the legislature.[20] Finally, we include a time trend and a full set of state fixed effects. Since the residuals from the OLS regression show significant autocorrelation, we also estimate the regression using an AR1 correction.

Columns (1) and (3) of Table 5, panel A shows that income, unemployment, and federal aid have, respectively, a positive, negative, and positive effect on the general fund surplus. Of these variables, the state unemployment rate and its first difference are statistically and quantitatively the most important.

In contrast to previous work examining the role of divided governments on deficit funding, we find no evidence that divided government or party labels have a significant effect on deficit behaviors, controlling for state fixed effects. The political control variables are individually and jointly insignificant in our regressions. Further, and again controlling for state fixed effects, there is no evidence that electing a Republican governor rather than a Democrat has any independent effect on deficit funding. At least, <u>within a state</u> party labels or party organizations do not appear to have an independent effect on deficit behaviors during our sample period.[21]

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[20] Cross-section political variables meant to approximate the fiscal preferences of the citizens and political leaders are added to the analysis in section 5 below.

[21] We repeated our analysis in Table 5, panel A, omitting the state fixed effects but including the political control variables. When the state fixed effects are omitted, the politically variables are individual and jointly significant, largely replicating the results of Alt and Lowry (1994). Does divided government then matter for state deficit policies? It may, but the contrasting results from including and then excluding the state fixed effect does not allow us to reach any conclusions on the question. A third variable -- e.g., the presence of a historically stable and significant liberal constituency in each state -- may be causing both divided governments and deficits suggesting a spurious rather than a causal connection between this political structure and deficit outcomes. More careful work on this question is clearly needed.

Table 5, panel B, reports the results for our basic deficit regression adding balance sheet controls -- "rainy day" funds (RAIN), financial offsets to long-term debt in bond and sinking funds (LDOFF), short-term debt outstanding (SDOUT), and long-term debt outstanding (LDOUT) -- to the economic and political controls of panel A. For the economic and political controls variables the results in the two panels are virtually identical. Among the balance sheet controls, holding more money as financial assets in rainy day and offset accounts at the start of the fiscal year (RAIN and LDOFF) tends to reduce the general fund surplus, that is, to increase deficits. Interestingly, there is no corresponding effort to increase surpluses when the stock of debt outstanding at the beginning of the year is high.

Table 6, panel A shows the cross-section stage two results using the estimated fixed effects from the AR1-specification from Table 5, panel A as the dependent variable. Column (1) shows the slope coefficients for a set of univariate regressions of the state fixed effects on each fiscal rule. Column (3) shows the slope coefficients on each fiscal rule in a set of cross-section regressions that also all include SOUTH, a dummy variable selecting all southern states. This variable controls for the possibility that southern states are more "fiscally-conservative" than the other states.

In the univariate regressions and the regressions conditional on SOUTH, states with the no-carryover restriction, with referendum debt restrictions and with a governor line item veto have significantly higher surpluses than states without these fiscal rules. States that only require the governor to submit a balanced budget or that allow a deficit to be carried over to the next fiscal year have significantly lower surpluses.

The control SOUTH is itself significantly positively related to the budget surplus.

Since the no-carryover rule is statistically and quantitatively the most significant variable in Column (3), we examine next to what extent the other fiscal rules matter once we control for NOCARRY and for SOUTH. Columns (5)-(8) show that the other controls generally become statistically insignificant in the presence of the no-carryover requirement (see Columns 5-6), while the no-carryover requirement itself remains significant (see Columns 7-8). The two exceptions are PASS and LINEITEM which remain positive with a significance level close to 10 percent.

To allay possible concerns about the statistical efficiency of the two-stage estimation procedure and the validity of the OLS standard errors, we used the random effects (GLS) procedure to re-estimate the most important of above regressions, namely the regressions that include NOCARRY and SOUTH. (The results are displayed in Appendix Table A.1, panel A.) The random-effects estimators yield similar point estimates as those shown in Table 6, Panel A, though in all cases as expected the standard errors are smaller with GLS. In the following, again for computational convenience, we continue to use the two-stage OLS procedure.

Table 6, panel B displays the cross-section, stage two regressions using the estimated fixed effects from the AR1 specification of Table 5, panel B as the dependent variable. The results for the fiscal rules are very similar to Table 6, panel A.[22] The no-carryover fiscal rule is again the most significant variable. If it is included, none of the other fiscal rules has a significant effect (see Columns 5-6), while NOCARRY itself

[22] The similarity of panels A and B is somewhat deceptive, however. We will show below that the conditioning on balance sheet variables matters for other budget items and for the interpretation of why NOCARRY affects SURGF; see section 4 below.

remains significant (see Columns 7-8). As in Table 6, panel A, the point estimates in column 5 suggest that the line item veto and the requirement for the legislature to PASS a balanced budget may have incremental effects, but they are statistically insignificant. Again, we re-estimated the regressions that include NOCARRY and SOUTH using the random effects (GLS) procedure. (The results are displayed in Appendix Table A.1, panel B.) The NOCARRY provision remains highly significant in all regressions, though the point estimates tend to be slightly smaller.[23]

One final technical issue remains for the results in Table 6, panel B. Since asset accumulation and debt repayment are common uses of a budget surplus, the balance sheet controls used as regressors in the first stage regressions (reported in Table 5, panel B, on which Table 6, panel B, is based) are lagged endogenous variables. Lagged endogenous variables may result in biased and inconsistent coefficients in a "short" panel as the lagged endogenous variables may have fixed effects that are correlated with the fixed effects determinants of the dependent variable (see Hsiao, 1986). To obtain estimates that are robust against such objections, we re-estimated the model of Panel 5B in first differences and used twice-lagged instruments for the endogenous variables, as suggested by Hsiao (1986). We also include the lagged surplus (properly instrumented) as an alternative to the AR1 correction. The first stage estimates for the balance sheet and the lagged surplus coefficients are unfortunately rather imprecise and statistically insignificant. This may be due to the poor quality of the

[23] Using the GLS estimates, PASS remains significant at the 5 percent level even when NOCARRY is included, too, and LINEITEM is significant at the 10 percent level. These findings for PASS and LINEITEM suggest that constraints on the legislature are more important for fiscal balance than constraints on the governor (executive). Governors are constrained by voters; see Peltzman (1992). The question of how different fiscal rules affect the balance of power between executive and legislative branches deserves further study.

instruments.[24] We nonetheless estimated the second stage regressions and found that our results remained qualitatively unchanged: The no-carryover requirement remains generally significant and no other variable is significant at the 5 percent level when NOCARRY is in the regression.[25] The results for the differenced specification are documented in Appendix Tables A.2 and A.3.

Finally, Table 6, panel C presents estimates of how fiscal rules are likely to affect the probability of budget deficits. Panel C's results are based upon a stage one OLS regression regressing the zero-one indicator variable for the presence of a deficit (SURGF<0) against our set of economic, political, and balance sheet controls. Coefficient estimates for these stage one regressions are reported in Appendix Table A.4. The linear probability specification was used here rather than a probit specification because eleven of our 47 states had budget surpluses for the each year of our sample period. A probit specification would require state fixed effects of minus infinity for these states, undermining our stage two estimation. Giving our use of a two stage estimation procedure, a linear specification was therefore preferred. It is noteworthy, however, that the eleven states that never had a general fund deficit are all, without exception, states with the no carry-over fiscal rule.[26]

The second stage estimates using the estimated state fixed effects from the stage one estimation of the linear probability model as a

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[24] We used the twice-lagged levels and the twice-lagged differences of all endogenous variables. In the reduced form regressions, the instruments explain 59% of the variance of SURGF(-1) and 25% of SDOUT, but only 6.5% of RAIN, 11.4% of LDNET, and 8.5% of LDOFF.

[25] The differenced regression is consistent, because the differencing removes the state fixed effects. Given the estimated β, θ, and ρ coefficients, one can infer the state fixed effects from equation (6). (The λt part can be ignored because it does not vary across states.)

[26] In principle, OLS might produce probability estimates outside the unit interval, which would also be difficult to interpret. Fortunately, this problem did not arise with our data set.

dependent variable are reported in Table 6, panel C. Again, the NOCARRY rule is the important fiscal constraint. When SOUTH and NOCARRY are included in the stage two regressions, no other fiscal rule has a statistically significant effect on the probability of deficits. The addition of a NOCARRY rule is estimated to reduce the probability of a deficit by 0.12 to 0.17 in a typical state.[27]

3.3. An Overview: Which Fiscal Rules Work?

On balance, we find that states with a no-carryover rule (NOCARRY) restricting the ability of states to pass deficits from one fiscal year to the next have significantly higher general fund surpluses in the long-run, and a significantly lower probability of running a deficit in any fiscal year, than do states that lack such a rule. Prospective budget constraints which only require governors to submit (SUBMIT) or the legislature to pass (PASS) a balanced budget are at best weak inducements to fiscal discipline. So too are rules which require the state to acknowledge its deficit but which then allow the state to pass that deficit into the next budget with no consequences (CARRY). These prospective rules -- SUBMIT, PASS, AND CARRY -- are no substitutes for a retrospective requirement such as NOCARRY.

Table 7 provides a summary of our findings on a state-by-state basis. Column (1) reports each state's average general fund surplus for the sample period 1970-1991. Column (2) summarizes the fraction of fiscal years in the sample that each state had a general fund deficit. Column (3) reports each state's relative fixed effect -- its estimated α_s less the sample mean value over all states α_s's -- from the estimation of equation (6) as

[27] We did estimate a probit-based fixed effects for the 36 states which did run at least one year of a fiscal deficit; 23 of these states had a NOCARRY requirement. Even in this adversely selected sample, the stage two regressions still showed that the no-carryover rule is associated with a significantly lower frequency of deficits.

reported in Table 5, panel B. A high, positive (or negative) value of α_s implies the state has systematically run larger surpluses (or deficits) than an average state, even after controlling for plausible economic, political party, and balance sheet determinants of surpluses and deficits. If Massachusetts had had the same economic, political, and balance sheet history as the average U.S. state, would the state still have had a larger than average history of annual deficits? The value of α_s = -$176.7 tells us the answer is yes. Importantly, column (4) shows that of the 21 states with positive values of the relative fixed effect in Table 7 -- the large surplus states -- 19 of those states had the NOCARRY provision.[28] We conclude that while a NOCARRY constraint is not by itself sufficient to guarantee a fiscal surplus, the constraint does make a positive contribution to that goal.[29]

4. Fiscal Rules and the Composition of State Budgets

When balanced budget rules, in particular the no-carryover rule, have a significant positive impact on the general fund surplus, it is important to know exactly how this surplus constraint is met. Does public service and income security spending fall? Do taxes and fees rise? Are contributions to other trust funds or to debt servicing reduced? We explore this important question here, focusing upon the effects of NOCARRY on state spending, revenues, and the stock of funds held in various state financial asset and liability accounts.

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[28] Of the forty-seven states in our sample, 23 states had an estimated value of α_s which was statistically different from the cross-state average over all the α_s's at the 5 percent level of significance. These states are indicated by an ** in Table 7. All 10 of the states with a significantly above average state fixed effect have the NOCARRY provision, while 8 of the 13 state with significantly below average state fixed effect do not have the NOCARRY provision.

[29] We thank the many readers and seminar participants who encouraged us to explain their own state's story. Table 7 provides an overview of these individual fiscal histories.

We estimate the impact of fiscal rules on the components of the state general fund budget with the same two-stage procedure that we used to estimate effects on the general fund surplus. Table 8 documents the second stage estimates of the effects of the no-carryover requirement (NOCARRY) on individual budget items. The underlying first stage regressions include the same controls for economic, political, and balance sheet variables used in Table 5, panel B, without and with AR1 adjustments. Table 8, panel A reports second stage estimates of NOCARRY's budgetary effects based upon stage one estimates without an AR1 adjustment. Table 8, panel B provides second stage estimates after a stage one AR1 adjustment.[30] Because of the AR1-adjustments, the estimates in Table 8, panel B should be more efficient than the OLS estimates in panel A. But since the AR1-corrections vary across equations, the coefficients in panel B do not respect the budget's adding-up restrictions. The results of Table 8, panel A do satisfy the adding-up restrictions, and we focus on these more easily interpretable OLS estimates. Table 8, panel B estimates are presented to show robustness.

Table 8, panel A, column 3 shows that conditional on the economic, political, and balance sheet variables in the stage one regressions and conditional on SOUTH, the no-carryover requirement is associated with a $92 per capita increase in the general fund surplus. (The results without SOUTH shown in column (1) are similar.) The bulk of the $92 per capita increase is due to a reduction in current accounts government spending of about $115 per capita ($100 following an AR1 adjustment; see panel B). The NOCARRY

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[30] The full stage one estimation results paralleling those in Table 5 for each fiscal variable are available upon request. We should note, however, that the NDRF and NDCAP data for Rhode Island 1979-81 might be distorted by data problems. We therefore dummy-out these three observations in all stage-1 regressions. This explains why the point estimates for SURGF in Table 8 are not numerically identical to the estimates in Table 6, panel B. We did not exclude the Rhode Island observations in Section 3, because the data problem only affects NDRF and NDCAP. We include the Rhode Island dummies for all variables to maintain comparability across the rows in Table 8.

rule has no statistically significant nor a quantitatively important effect on taxes, fees, or aid (TAF) or interest earnings (I). The negative effects on revenues (TAF) is $34 per capita with OLS and only $11 per capita with the AR1 adjustment. We conclude that the estimated no-carryover effect on spending is substantially larger than the impact on revenues. The net effect of the no-carryover rule on trust fund contributions (GCPG and GCTF) and on debt service (DEBTSERV) is also small. The overall effect of NOCARRY on the general fund surplus is roughly equal to its effect on current accounts spending.

The results in Table 8 show that the increased general fund surplus of $92 per capita is used mainly to augment rainy-day reserve balances (NDRF, $69 per capita) and to a lesser extent to repay short term debt (NDSTD, $13 per capita) and to fund capital investment (NDCAP, $10 per capita).

The fact that the general fund surpluses are used for asset accumulation and debt reduction suggests that the no-carryover restriction may have important longer-run, dynamic effects. Table 9 shows cross-sectional regressions of the twenty-two year average level of state assets and liabilities regressed on the NOCARRY rule. We interpret these regressions as indicating the "steady-state," long-run differences in the level of assets and financial liabilities for states that either have or do not have the no-carryover restriction. Table 9 reports the coefficient on NOCARRY in univariate regressions (columns (1) and (2)), in regressions with SOUTH (columns (3) and (4)), and in regressions including SOUTH, average income and average aid levels as controls (columns (5) and (6)).

We find that the no-carryover restriction is associated with substantially higher long-run reserve balances (RAIN). This relationship is

significant at about the 10 percent level or better in all three regressions, and it is consistent with the positive effect of NOCARRY on the net contributions to the rainy day fund (NDRF) in Table 8. In addition, NOCARRY may be associated with lower short term debt (SDOUT) and with less long-term debt outstanding (LDOUT), though a comparison of the coefficients in columns (3) and (5) suggests that much of these lower debt levels may be due to higher levels of income and federal aid. Nonetheless, the point estimates for SDOUT are consistent with the positive coefficients on NDSTD in Table 8.

Other regressions not reported here show some tentative evidence that the NOCARRY rule may also be associated with larger state capital stocks and lower unfunded pension liabilities. These results are preliminary. It is noteworthy, however, that we do <u>not</u> find a negative effect of the NOCARRY rule on capital investment, nor a significantly negative effect on pension contributions.

The fact that the long-run asset and liability position of states is potentially affected by a NOCARRY rule suggests that one should distinguish between the effects of NOCARRY on taxes and spending with and without controls for balance sheet positions. The estimated stage two effects conditional on stage one balance sheet controls are documented in Table 8, panels A and B. Since the current state fiscal rules have almost all been in place for a long time, the unconditional "steady state" impact of NOCARRY can be estimated by leaving out the balance sheet controls in the stage one estimation of the components of the general fund surplus. The stage two results for these unconditional regressions are shown in Table 8, panel C. The effect of the no-carryover rules on general spending (WBTOM) is now much smaller than in Table 8, panels A and B -- only about -$55 per

capita after controlling for SOUTH (see column 3) rather than the conditional effect of -$115 per capita. The general fund surplus now rises by about $95 per capita, i.e., by about the same amount as in the conditional regressions. The bulk of this higher general fund surplus is now due to reduced debt service for interest and principal repayment, which is down by about $50 per capita. In addition, interest earnings are increased by $12 per capita. The long-run impact of the NOCARRY restriction on public services and transfers (WBTOM) is therefore much less negative than one might have suspected based on the conditional estimates in Table 8, panels A and B.

Tables 8 and 9 together suggest that the introduction of a no-carryover restriction sets in motion the following dynamics. Initially, starting from the balance sheet position of a typical state without the restriction, current accounts spending (WBTOM) is reduced substantially. The resulting general fund surplus is used to accumulate interest-bearing reserve funds and to pay down the debt. Over time, net interest payments and debt redemptions fall, until the state reaches a new steady-state with substantially higher reserves, and with a spending level that is at least half-way back to its initial value.[31]

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[31] Appendix Table A.5 provides additional evidence on how the balance sheet and other controls affect taxes, spending, and other budget variables. The coefficients are from the stage one estimates underlying Table 8, panel B. We find that most fiscal variables depend on one or more of the balance sheet controls. According to Table A.5, panel A, a high level of reserve funds (RAIN; Column 1) triggers a substantial increase current accounts spending (WBTOM) and capital savings (NDCAP). The increased spending is financed through reduced contributions to reserves (lower NDRF). Conversely, high short term debt (SDOUT; Column 3) triggers a substantial (though statistically not quite significant) spending reduction. A much bigger response shows up in the capital account, however. The coefficient of -0.62 in the equation for NDCAP (Column 3) suggests that states with short term debt tend to pay off the short term debt very quickly, through reduced contributions to the capital account, if necessary. This is economically sensible. The spending responses to RAIN and SDOUT explain much of why the conditional estimates for WTBOM in Table 8 panels A and B are larger than the unconditional estimates in Tables 8, panel C.

The effects of long-term debt must be interpreted carefully, because of states' substantial arbitrage operations. (Federally tax-exempt state bonds can be issued at low interest rates and the proceeds invested in higher yielding Treasury securities.) As shown in Table 2, the average per-capita state debt of $917 per capita is offset by security holdings of about $430 per capita. Hence, Table A.5 distinguishes between net debt

5. Looking Behind the NOCARRY Rule

A full understanding of the impact of the no-carryover rule for state deficit funding requires us to explore four additional questions. First, have we adequately controlled for the fiscal preferences of the state when estimating the effects of NOCARRY on surplus/deficit behaviors or might a heretofore omitted measure of state fiscal conservatism be a joint cause of surpluses and the NOCARRY rule? Second, how is the deficit rule enforced and does the selection of the enforcer matter for the effectiveness of the NOCARRY rule? Third, in some states the NOCARRY rule is based upon statutory provisions requiring only a simple majority to overturn; other states use a constitutional rule requiring a two-thirds majority to replace. Does the constitutional basis of the NOCARRY rule matter for its enforcement? Finally, several states in our sample use biennial budgets, a budget innovation often proposed to lower the transaction costs of fiscal

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(LDNET=LDOUT-LDOFF; Column 5) and debt offsets (LDOFF; Column 7), which is the amount of gross debt matched by offsetting assets. The effects of LDOFF show that taxes are slightly reduced and spending is slightly increased. Higher debt-offsets raise interest earnings, but the general fund surplus is reduced. LDOFF appears to create a false sense of fiscal security in our sample states. Net long-term debt (LDNET), the amount of long-term debt not offset by investments, has a positive effects on taxes and interest earnings, a negative effect on spending, and a positive effect on debt service, all as one might expect.

Table A.5, panel B shows that the economic controls have reasonable effects, too. Federal aid, which is included in taxes-aid-fees (TAF), obviously raises TAF (see Column 9). Most of the aid is passed on as spending, but part of it is channeled into the rainy day fund; see Gramlich (1978). The level of state personal income (Column 1) increases taxes, general spending, pension fund contributions, and capital outlays; see Inman (1978). Changes in income (Column 3) also affect spending and taxes in the same direction. High unemployment, in levels or first differences, is associated with lower taxes, higher current spending and a lower surplus (see Columns 5 and 7).

Most of the state budget variables have a significant time trend; see column 9 in Table A.5, panel A. The trend in the general fund surplus is negative, due to a significantly higher positive time trend in spending (WBTOM) than in taxes and aid (TAF); see Figure 1. Interest income and interest expenses show positive trends, indicating growing use of arbitrage operations over most of our sample period; see Metcalf (1990). Net contributions to the capital account and the contributions to the rainy day fund show negative trends.

The overall plausibility of these fiscal patterns for familiar tax and spending variables and the fact they conform to most previous studies of state budgeting gives us additional confidence that our new results for state deficits, assets, and liabilities and the role of fiscal rules are themselves plausible and well estimated.

policy-making. Is the NOCARRY rule more or less effective in such settings? We examine each issue in turn.

5.1. Conservative State Politics

The results of section 3 and 4 control for differences in state politics through variables measuring alternative party alignments of the state governor and legislature. These variables were always insignificant once state fixed effects were included. One might worry, however, that party affiliation is too crude a measure of political ideology within a state. This is an important issue here, for the degree of fiscal conservatism of state voters and/or state politicians may have a common effect on both fiscal rules (especially statutory ones) and budget surpluses. If these concerns are justified, our results showing a strong effect of the NOCARRY rule may be spurious. If so, then adding controls for fiscal conservatism should reduce the statistical and quantitative significance of NOCARRY in our surplus/deficit regressions.

Table 10 presents additional tests of the role of NOCARRY on surplus/deficit behavior, now using cross-section measures of state political ideologies presented in Erikson, Wright, and McIver (1993). All the results reported in Table 10 are based upon stage two, cross-section regressions of state fixed effects from the stage one regressions presented in Table 5, panel B (AR1 regression), i.e., including economic, party affiliation, and balance sheet controls. Table 10, panel A directly controls for voter conservatism; state fixed effects are regressed on a constant, NOCARRY, SOUTH, and the average percent of state voters over the period 1976-88 who identify themselves as conservative in a panel of CBS/NYTimes opinion polls (CONSVOT). The variable CONSVOT is seen to have small positive impacts on the general fund surplus and on net contributions

to the rainy day fund and to short-term debt repayment; see panel A, column (3). Importantly, the inclusion of CONSVOT in the stage two regression affects neither the statistical significance nor the quantitative importance of the no-carryover rule for the general fund surplus; see panel A, column (1). Table 10, panels B and C include further controls for state political ideologies. Erikson, Wright and McIver (1993) also measure the conservatism of state party legislators (DEMLEG, REPLEG) and state party activists (DEMACT, REPACT) over our sample period, where the Erikson-Wright-McIver index of party elite ideologies is higher for more liberal elites. After adding these ideological controls (panels B and C), the coefficients on NOCARRY again remain significant and important.[32] We conclude that the estimated impact of the NOCARRY rule on general fund surpluses cannot be attributed to omitted ideological variables.

5.2. The State Supreme Court as Enforcer of the NOCARRY Rule

To be a binding constraint, fiscal rules must be enforced if violated. In the U.S., state budget rules will be enforced by the state supreme court.[33] The court is in turn either appointed by the state's governor or (in a few cases) the state legislature or for 26 of our states elected by the voters in state-wide elections; see Table 2. It is instructive to explore whether an appointed or an elected court appears to be the more credible enforcer (i.e., having a higher value of π as specified in equation (4)).

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[32] Interestingly, it appears the presence of more liberal Republicans shifts the median position in budget negotiations away from conservative Republicans towards liberal Democrats causing an increase in state spending and state taxes.

[33] To our knowledge no court case has yet been brought to the state supreme court challenging a state deficit under the state's no-carryover rule. We interpret this fact not as a weakness, but rather as a strength of the supreme court enforcement mechanism. Perhaps the last place the state legislature and governor want their budget decisions made is in the state court. The threat to take a case to the courts under the no-carryover rule is therefore effective and, as our results seem to show, a balanced budget follows.

Table 11 reports stage two regressions (again, based upon the estimated fixed effects from stage one AR1 regressions reported in Table 5, panel B) that include an interaction of NOCARRY with an indicator variable for a voter elected supreme court (ELVOT). The results are surprisingly strong. In states without voter elected justices, the positive impact of the no-carryover rule on the general fund surplus is reduced from the overall sample average effect of approximately $100 per capita to $59.60 (Table 11, column (1)). In states with an elected supreme court, on the other hand, the no-carryover rule increases state surpluses by nearly $155 per capita (= $59.60 + $96.23); compare columns (1) and (3). Elected courts, it appears, are seen as a far more credible enforcer of fiscal rules than an appointed court, the latter viewed perhaps as equivalent to a government regulatory agency.[34]

5.3. Statutory versus Constitutional Balance Rules

In most states with a no-carryover rule this fiscal restriction is established in the state constitution. However, in three of our sample's 34 no-carryover states -- Arkansas, Maine, and North Carolina -- the rule is statutory. While constitutional rules typically require a two-thirds legislative majority (and perhaps a direct referendum) to overturn, statutory rules are approved and can be overturned by a simple legislative majority. Thus with a statutory rule, the same legislature passing a deficit budget could, if it wished, overturn or temporarily suspend the no-carryover rule. One might expect, therefore, that statutory restrictions would be less constraining than constitutionally based limitations.

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[34] From our specification in equation (4), elected courts are perhaps more than twice as credible: $\Phi \cdot \pi_{ELVOT} / \Phi \cdot \pi_{Not\ ELVOT} = \pi_{ELVOT} / \pi_{Not\ ELVOT}$ = $155/$59 = 2.6.

In Table 12, we re-estimate our stage two regressions (again, based upon the stage one AR1 regressions reported in Table 5, panel B) now with an additional regressor identifying states with only a statutory no-carryover requirement. The variable (NOCARRY*STATUTORY) is expected to have an offsetting negative effect on NOCARRY. The point estimates reported in column (3) show the three states with statutory rules do have lower surpluses, higher spending, and somewhat higher taxes than the states with a constitutional no-carryover rule. Nonetheless the differences are statistically insignificant, most likely because of the sample's limited number of statutory states.[35]

5.4. Biennial Budget Cycles and the NOCARRY Rule

In her AEA Presidential Address Alice Rivlin (1987) outlined seven institutional reforms to make economic policy-making work better. Her first recommendation, to economize on decision-making and to encourage more thoughtful budgetary discourse, was to advocate the adoption of a two-year budget. Seventeen of our sample states in fact have biennial budgets. Eleven of the seventeen states have legislatures which met during the second year of the budget cycle and have the ability to amend the budget in that second year. Six of the biennial states do not meet in a second year; in these states (Arkansas, Kentucky, Missouri, North Dakota, Oregon, Texas) the budget is set for the full two years. Of these six states, three -- North Dakota, Oregon, and Texas -- also have a no carryover rule. What are the effects of biennial budgets on state surplus/deficit behavior and does a no-carryover rule have differential effects in these states?

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[35] We also tested for differences between statutory and constitutional balance rules with respect to all balance rules (SUBMIT, PASS, CARRY, and NOCARRY). Like the results in Table 12, we find higher points estimates for the rules' coefficients on the general funds surplus in states with constitutional rules (of any kind), but since the differences were generally statistically insignificant, we omit the details.

Table 13 provides some first answers. Again, the dependent variable is the state fixed effects from a stage one regression of the fiscal variable on economic, political, and balance sheet controls allowing for an AR1 error correction (Table 5, panel B, AR1 regression). Table 13, panel A shows the NOCARRY provision continues to be significant, controlling for the use of biennial budgeting. Biennial budgeting itself -- whether in states meeting annually or only every other year -- has no statistically significant effect on state deficits. Panel B reports the results allowing for an interaction of a NOCARRY provision and biennial budgeting. Here the results are more dramatic. States with the NOCARRY provision and annual budgeting continue to have larger average annual surpluses equal to about $91 per capita (panel B, column (1)) as before, and as before the money is allocated to rainy day funds or to repay short-term debt outstanding. Biennial states with annual legislative sessions behave (statistically) identically to their NOCARRY counterparts without biennial budgets; see panel B, column (5). Biennial states with biennial legislative sessions and a NOCARRY provision (panel B, column (3)), however, save an additional $121 per capita above the other NOCARRY states; the extra savings are stored in the state's rainy day fund. We take this as additional evidence of the effectiveness of the no-carryover constraint and the need for precautionary savings to ensure that the constraint is not violated.

6. The Dynamics of Tax Rates and Budget Deficits in the Presence of Fiscal Rules

While an effective balanced budget constraint does control deficit spending with its advantages for long-run fiscal sustainability, such rules may mean a loss of short-run fiscal flexibility. Constrained governments

seeking to smooth tax rates, for example, may be forced to sacrifice this objective when spending rises or tax bases decline unexpectedly, while constrained governments hoping to use deficits as a fiscal stimulus may lose a valued policy instrument in times of recession. Here we explore these possible short-run costs of balanced budget rules for our sample states.

Theories of optimal taxation suggest that budget surpluses should be allowed to fluctuate over the business cycle (Barro, 1979). The basic insight from this literature is that the excess burden of taxes is minimized if tax rates are changed as little as possible whenever there are fluctuations in the tax base and in state spending. The welfare-maximizing policy amounts to "tax-smoothing." Since taxable income falls and welfare spending often rises in a typical recession, tax-smoothing implies pro-cyclical budget surpluses. This policy prescription is relevant for the balanced budget debate, as stringent fiscal budget rules may prevent state governments from running "optimal" deficits in a recession.

Is there any evidence of tax-smoothing in our sample states? If state governments minimize the fluctuations in tax rates, changes in tax rates should be unpredictable. In levels, the time series of tax rates should follow a random walk without trend. We do not have direct data on state' marginal tax rates. Instead, we assume a monotone relationship between average and marginal tax rates and adopt as our measure of average rates the ratio of state taxes and fees to state personal income.

To test if the time series of average tax rates follows a random walk, we execute a panel unit root test recently proposed by Im, Pesaran, and Shin (1995). The test procedure calls for separate Dickey-Fuller regressions for all 47 states of the form:

$$(\tau_{st}-\tau_{s,t-1}) = \theta_s \cdot \tau_{s,t-1} + \beta_s + \gamma_s \cdot t + u_{st}, \qquad (8)$$

where we include a constant and a time trend; τ_{it} denotes the tax rate in state s in year t. The test for the unit root hypothesis H_0: "$\theta_s=0$ for all states s" is based on the average t-values on the mean-reversion coefficients θ_s.

We find that the unit root null hypothesis is strongly rejected.[36] The point estimates reveal why: The average of the mean-reversion coefficients θ_s is 0.49, i.e., far from zero. State tax rates might as well be written as autoregressive processes with an average AR coefficient $(1-\theta_s)$ of only 0.51. These AR coefficients are not much higher than the average AR coefficients of 0.38 that we find in analogous regressions for own state spending (WBTOM minus federal aid). We also find a significantly positive time trend in tax rates for 10 of the 47 states, which is another violation of the tax smoothing hypothesis. Finally, and particularly important for our analysis here, cross-sectional regressions of the estimated mean-reversion coefficients θ_s on NOCARRY and on the ACIR stringency index, respectively, reveal virtually no correlation with fiscal rules.

Overall, our state data do not support the unit root hypothesis for tax rates that is implied by a strict application of the tax smoothing model. On the other hand, other results with our data show that states are using rainy day funds to smooth some revenue and spending shocks caused by shocks to unemployment and income (see Appendix Table A.5 and footnote 30). Whether or not this behavior can be rationalized as an imperfect version of tax smoothing remains an open issue. The key finding for the purposes of this paper, however, is that the stringency of fiscal rules is not

[36] The normally-distributed z_2-statistic defined by Im, Pesaran, and Shin (1995) takes a value of -2.608 (for T=20, N=47, p=0, using Table C).

responsible for the statistical rejection of the strict tax smoothing hypothesis.

We now turn to the role of budget deficits as "automatic stabilizers" over the business cycle. In a recent paper, Bayoumi and Eichengreen (1995) have found that stringent budget rules as measured by the ACIR index (Table 2, exhibit) are indeed associated with a reduced responsiveness of budget deficits to changes in state growth rates. We will reexamine their findings with our more detailed data. The objective is to assess factually -- without taking a stand on any normative questions associated with stabilization policy -- to what extent there are measurable differences in the cyclical sensitivity of budget surpluses in states with more or less stringent balanced budget requirements.[37] Following Bayoumi and Eichengreen (1995), we measure the cyclical responsiveness of state budget variables by regressing the change in the surplus-to-income ratio on income growth, a time trend, and lagged values of the dependent variable, separately for each state:

$$SUR_{st}/INC_{st} = \Omega_{s0} + \Omega_{s1}\cdot t + \Omega_{s2}\cdot SUR_{st-1}/INC_{st-1} + \beta_s\cdot\Delta\log(INC_{st}) + u_{st} \qquad (9)$$

for each state s, where SUR_{st} is the surplus measure under review. In some regressions we replace $\Delta\log(INC_{st})$ with changes in the state unemployment rate as an alternative cyclical indicator. We include a time trend in this specification for two reasons: first, time trends in the fiscal variables have been clearly evident in our data, and second, an erroneous omission of

[37] As noted above, pro-cyclical budget surpluses appear naturally in the context of tax-smoothing. But since tax-smoothing is rejected, it does not provide a motivation for studying the cyclicality of budget surpluses. This leaves the Keynesian motivation. Instead of debating the merits of stabilization policy, we will show that even if one conceded the value of stabilization policy, the "cost" of stringent rules for effective policy is smaller than the current literature would suggest.

a time trend in an autoregressive model may bias the lag coefficient towards one (Campbell and Perron, 1991).[38] After estimating equation (9) for each state, the estimated coefficients measuring the cyclical responsiveness of the states' fiscal policies -- the β_s's -- are regressed on state budget rules, in particular, NOCARRY and (for comparison to Bayoumi-Eichengreen) the ACIR index of fiscal stringency.

Table 14, panel A shows the resulting average responsiveness - - the β_s's -- for alternative surplus measures and then shows how the individual state β_s's relate to NOCARRY and the ACIR index. The average cyclical responsiveness of the general fund surplus (SURGF) to changes in rate of growth of state income is 0.0487 and is statistically significant in all states; see panel A, column (1). Responsiveness of the SURGF account is reduced by tighter balanced budget rules (panel A, column (3)), and particularly so by the NOCARRY rule (panel A, column (5)). Panel A, columns (7) and (8) compare the average degree of responsiveness in states without and with NOCARRY; surplus responsiveness to income shocks is reduced by a bit more than half when a NOCARRY rule applies.

While correct for testing the effects of fiscal rules, our use of the general fund surplus may be too narrow a budget measure for examining the effects of fiscal rules on stabilization policies; states spend and raise money outside the general fund. More appropriate then would be the state's total surplus (SURTOT), defined as the difference between all revenues and all expenditures. In the context of cyclical volatility, the most important additional state-run account is state workmen's compensation and disability revenues and spending, defining an insurance trust fund surplus or deficit (SURINS). Panel A, column (1) shows SURTOT is significantly more responsive

[38] We have confirmed that the surplus-to-income ratio does not have a unit root, using the same test as used above for the tax rate series.

to shocks to income growth than is SURGF, largely due to the added responsiveness of SURINS. Interestingly, balanced budget rules generally and NOCARRY in particular restrict the responsiveness SURTOT but not SURINS, again as we would expect if rules really work.

While it appears that an effective balanced budget rule limits the cyclical responsiveness of the state budget when the change in income growth is used as a cyclical indicator, matters are less clear when the change in the state unemployment rate is used to define the responsiveness coefficient. Panel B shows significant responsiveness coefficients -- again, the β_s's -- of SURGF, SURTOT, and SURINS for changes in unemployment. Higher unemployment reduces the states' surpluses. Again, balanced budget rules reduce the responsiveness of surpluses to economic shocks, but in panel B for unemployment the effects are neither as statistically significant nor as big quantitatively -- a loss of responsiveness of only 25% for SURGF and 33% for SURTOT -- as those seen in panel A for changes in the growth of income.[39]

Overall, the evidence on the short-run costs of effective balance budget rules for the states in our sample is mixed. Our sample states do not appear to behave as tax-smoothers; thus they lose little on this policy dimension from the imposition of a tight balanced budget rule. Cyclical responsiveness of state budgets may be constrained through the imposition

[39] Further, we have reasons to think that changes in the state unemployment rate may be a better indicator of fiscal responsiveness than changes in state income growth. When we add changes in unemployment to eq. (9) and regress the surplus to income ratio on changes in unemployment and changes in income growth, we find that changes in income growth become insignificant while changes to unemployment remain highly significant. Finally, efforts to unravel the sources of surplus sensitivity by regressing the state's own contributions to the general fund surplus -- taxes and fees (TF) and own state spending (WBTOM - Aid) -- on changes in personal income and unemployment generally proved uninformative on the point of how rules affect cyclical responsiveness. Fiscal rules generally had no statistically significant effect on the cyclical responsiveness of own spending and own taxes.

of a tight balance rule, but the magnitude of the loss depends upon the cyclical indicator used to impute fiscal responsiveness.

7. Conclusions and Implications for a Federal Balanced Budget Rule

The general lesson learned from this empirical study of state government surplus/deficit behavior is that balanced budget rules, appropriately constructed and enforced, reduce the propensity of states to run deficits. Further, when in danger of violating the constraint, states appear to balance their budgets primarily by reducing current account spending. The increased surpluses are used mainly to accumulate "rainy day" reserve balances -- viewed appropriately as precautionary savings that can later soften the blow of adverse fiscal shocks.

Our analysis leads to four main conclusions. First, balanced budget constraints that apply to an audited, end-of-the-year fiscal balance are significantly more effective than constraints requiring only a beginning-of-the-year balance. Second, all state balanced budget rules are ultimately enforced by a state's supreme court. Those states whose supreme court justices are directly elected by the citizens have "stronger" constraints (i.e., lead to larger average surpluses) than those states whose supreme court justices are direct political appointments of the governor or legislature. Third, there is tentative evidence that constraints grounded in the state's constitution are more effective than constraints based upon statutory provisions. Fourth, and finally, budget surpluses in strong balance rule states are slightly less responsive to cyclical swings in income and unemployment than are surpluses in states with weak requirements.

With regard to other fiscal rules, a governor's line item veto is associated with somewhat higher general fund surpluses, but this relationship is only marginally significant statistically. Rules requiring referendum debt approval for the issue of long-term debt are not associated with changes in the general fund surplus (provided one controls for the balanced budget requirements), but they tend to reduce public debt and public capital investment.

The obvious next question is this: Are these results from the U.S. states likely to transfer to the implementation of a federal government balanced budget rule? Here we can only speculate, though the fact that all of our empirical results are intuitively plausible gives these speculations a bit more credibility. Four observations seem in order.

First, state balanced budget rules apply to a well-defined general fund budget, one which explicitly excludes capital spending and revenues, insurance trust spending and revenues, and employee retirement spending and revenues. The federal government uses a very different accounting framework, a system that includes all federal revenues and expenditures in a single unified budget. Since capital outlays are appropriately financed by public debt, establishing a separate capital account apart from a constrained general fund seems an important step to protecting both rational capital spending and the integrity of the general fund balance rule. The case for separating the current account and the capital account has also been made by Musgrave (1939) and Bohn (1992). Of course, there is always the risk of some budget "gimmickry" if politicians wish to move general fund expenditures into these capital or trust accounts (e.g.,

defining janitors as capital outlays), but the amount of dollars which can be reallocated by such tricks seems limited; see GAO (1993).[40]

The state experience also suggests that separate accounts for social insurance and for employee retirement facilitate actuarially based accounting and thus balanced budget monitoring of these funds. It is crucial, however, that the capital, social insurance, and employee retirement funds have their own balance budget rules and enforcement mechanisms; see Inman (1982) and Vroman (1986). The substantial underfunding of the existing federal pension system suggests that this issue is also important on the federal level; see Bohn (1992).

Second, the evidence from the U.S. states shows clearly that end-of-the-year balance requirements are generally much stronger than prospective balanced budget rules. Balanced budget rules that do not allow a carryover of deficits into the next fiscal year are substantially more effective than rules that permit such a carryover. Conditional on no-carryovers, a rule requiring the legislature to pass a balanced budget is more effective than a rule requiring the executive to submit a balanced budget. These lessons are likely to apply at the federal level as well, as recent experience with Gramm-Rudman-Hollings confirms; see Auerbach (1994). Further, our tentative evidence from the states that constitutional rules are more effective constraints than statutory rules is also likely to transfer to the federal

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[40] That is, the potential for manipulation seems limited within a properly designed accounting framework. If a capital budget were introduced on the federal level, our main concern would be that politicians might try to avoid the accountability imposed by a stricter federal accounting framework by building-in some serious design flaws at the outset, e.g., an excessively loose definition of 'investments'. Like the state-level capital accounts, a federal capital account should include only the physical capital stock owned by the federal government. Although spending for intangible items such as education and health care may be considered investments in the sense that they enhance future national welfare, they do not qualify for the capital account because the benefits they produce are not government property. At most, one might recognize items that would be considered intangible assets under generally accepted private sector accounting principles (e.g. patent rights).

level; again the experience with Gramm-Rudman-Hollings provides evidence on the point.

Third, our finding that states subject to the no-carryover rule maintain higher rainy-day funds than states with weaker balance requirements suggests that provisions for reserve funds are crucial for government operations in a setting with balanced budget rules. State balanced budget rules in effect encourage precautionary government savings to ease the "bite" of tough, retrospective no-carryover rules. A federal balanced budget rule should also allow for similar reserve funds. Such reserve accounts should also reduce concerns that a federal balanced budget requirement might be too inflexible over the business cycle.

Fourth, an independent, end-of-the-year audit will be required, and there must be a mechanism for enforcement if the balanced budget rule is violated. For constitutional reasons of separation of powers, a federal balanced budget rule most likely will assign the audit task to an executive branch agency. The U.S. Supreme Court will assume the enforcement function. Though appointed rather than elected, U.S. Supreme Court justices are generally viewed as independent agents, free of the direct wishes of their appointing presidents and legislatures.

From the evidence from the states, we conclude that a workable and enforceable balanced budget rule for the federal government can be written. A last, and most important, question remains: Should such a general fund balance rule be imposed on the federal government? The answer turns on a weighing of the benefits and costs of such a rule. Assessing the gains requires a careful understanding of the fiscal performance of legislative decision-making. Proponents of a balance rule such as James Buchanan (1995) see legislatures as inefficient exploiters of the national tax base, taxing

citizens beyond the point where the social marginal benefits of spending equal the social marginal costs of raising revenues; see Inman and Fitts (1990) for some evidence on the point. A workable balanced budget rule will limit the access of such inefficient legislatures to future taxes. Opponents of a balanced budget rule such as Charles Schultz (1995) stress the costs in reduced fiscal flexibility, either to respond to unanticipated budget shocks (tax-smoothing) or to deep recessions (stabilization). We did not find strong support for these concerns at the state level, but we cannot rule out their potential importance for the larger national economy.

Finally, we wish to emphasize that whatever the benefits and costs of a balanced budget rule within the current institutional structure of fiscal policy-making, careful consideration must be given to other policy and institutional reforms. The choice to adopt or not adopt a federal balanced budget rule should not be made in a vacuum. There may be other means to facilitate improved static and dynamic efficiency. Other political and institutional reforms -- e.g., stronger political parties; campaign finance reforms; item vetoes -- may enhance the efficiency of fiscal policy without adverse effects on tax-smoothing and short-term stabilization. While we conclude that a balanced budget rule can be an institutional reform for long-run deficit control, we stress that it is only one of many instruments for ensuring improved fiscal performance in our public economies.

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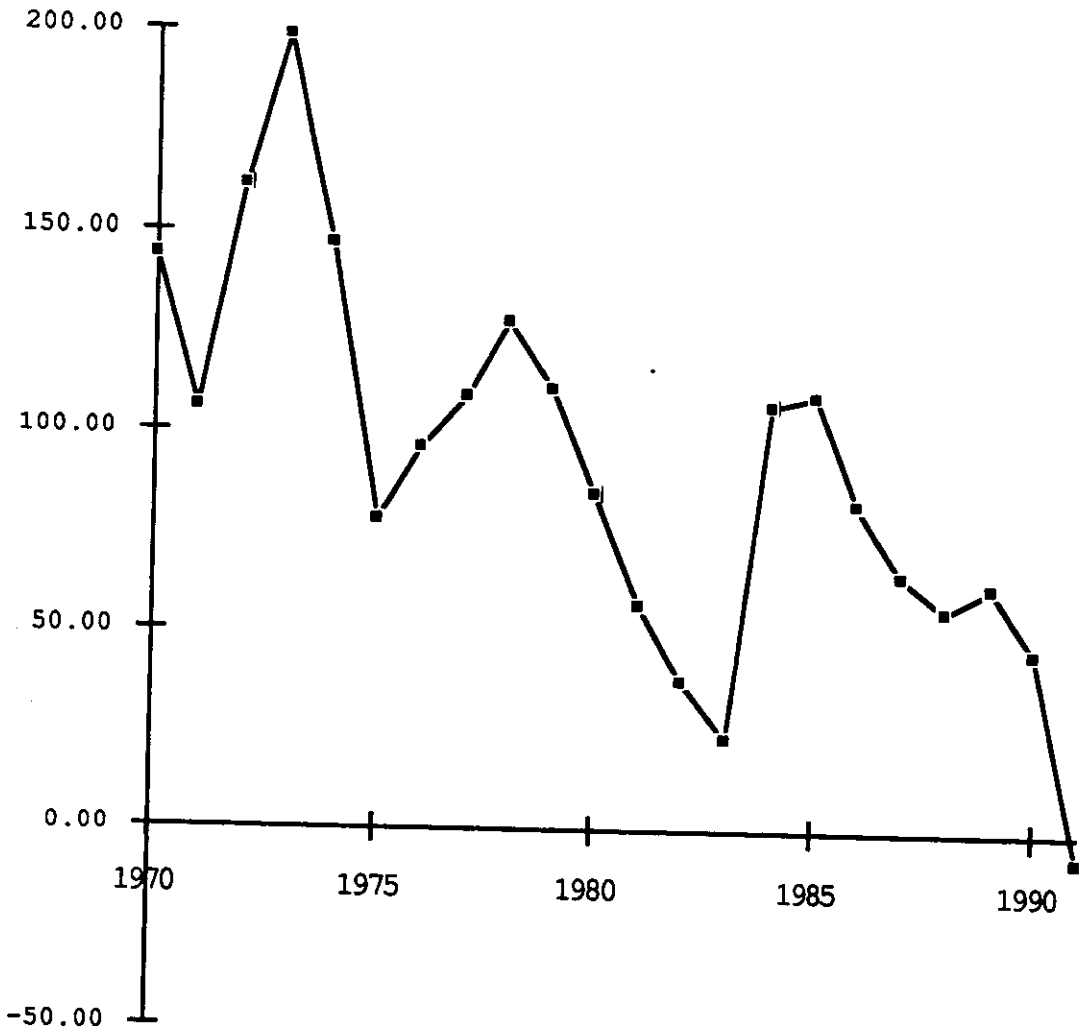
Figure 1: The States' General Fund Surplus
(Real per capita values)



The real per-capita general fund surpluses are computed as weighted averages over all 47 sample states (Price index: PA 1990 = 100). Excluded are Alaska, Hawaii, and Wyoming; see text at footnote 8.

Table 1: Government Net Worth: 1972-1990
(Real 1990 dollars per capita)

	State and City Governments					Federal Government				
Year	Savings (1)	+ Tangible Assets (2)	- Gov't Debt (3)	- Pension Liabilities (4)	= Net Worth (5)	Savings (6)	+ Tangible Assets (7)	- Gov't Debt (8)	- Pens./Other Liabilities (9)	= Net Worth (10)
1972	$2576	$13,720	$3302	$3341	$9651	$1516	$6073	$5027	$4946	- $2384
1973	2714	13,915	3401	4021	9166	1631	6233	4756	5293	- 2185
1974	2826	14,133	3502	4477	8902	1803	6830	4408	5476	- 1251
1975	2815	14,320	3221	4381	9479	1651	6733	4994	5515	- 2125
1976	2755	14,478	3280	4250	9649	1761	6861	5527	5716	- 2621
1977	2561	14,573	3179	4568	9391	1776	7062	5583	5790	- 2535
1978	2765	14,552	3138	4627	9558	1955	7285	5487	5744	- 2171
1979	2785	14,612	2680	4979	9727	2461	7598	5117	6013	- 1071
1980	2897	14,750	2456	5119	10,079	2520	8194	4914	6091	- 291
1981	2708	14,851	2038	4785	10,740	2152	8881	4964	6130	- 61
1982	2717	14,880	1837	4567	11,214	2177	8787	5946	6082	- 1064
1983	2979	14,902	2345	4093	11,469	2138	8637	6599	6193	- 2017
1984	3148	14,926	2474	4537	11,096	2135	8401	7448	5936	- 3028
1985	3296	14,975	2532	4113	11,664	2130	8218	8672	6027	- 4171
1986	3749	15,050	3148	3862	11,840	2424	7488	9784	6126	- 5998
1987	4114	15,169	3638	4261	11,458	2352	7464	9666	5975	- 5825
1988	4395	15,319	3448	4121	12,235	2078	7177	9752	6153	- 6650
1989	4451	15,463	3571	3727	12,701	1937	7224	10,179	6171	- 7169
1990	4537	15,621	3710	3989	12,539	(na)	(na)	(na)	(na)	(na)

Sources:

State and City Governments: Inman (1995). Data are population weighted averages of assets and liabilities in all 50 states plus a population weighted average of assets and liabilities in a sample of 41 large cities. Unfortunately, the Tangible Asset and therefore the final Net Worth columns could only be estimated for a restricted sample of 36 cities. Because of the difference in samples, the Net Worth column will not exactly equal Savings plus Tangible Assets minus Government Debt minus Pension Liabilities.

Federal Government: Bohn (1992). All data are adjusted from Bohn to be in 1990 dollars.

Table 2: Budget Rules and Enforcement

State	Gov. Submits Balanced Budget (1)	Leg. Passes Balanced Budget (2)	May Carry-Over A Deficit (3)	May Not Carry Over into Next Biennium (4)	May Not Carry Over into Next Fiscal Year (5)	ACIR Stringency Index (Exhibit)	Elected State Supreme Court (6)	Referendum Debt Approval (7)	Gov. Has Item Veto (8)
AL	-	-	-	-	C	10	E	R	IV
AK	S	-	C	-	-	6	A	R	IV
AZ	-	-	-	-	C	10	A	R	IV
AR	-	-	-	-	S	9	E	NR	IV
CA	C	-	C	-	-	6	E	R	IV
CO	-	-	-	-	C	10	A	R	IV
CT	S	S	S	-	-	5	A	NR	IV
DE	-	-	-	-	C	10	A	NR	IV
FL	-	-	-	-	C	10	A	NR	IV
GA	-	-	-	-	C	10	E	R	IV
HI	C	-	-	C	C	10	A	NR	IV
ID	-	-	-	-	C	10	E	R	IV
IL	C	C	-	-	-	4	E	NR	IV
IN	-	-	-	-	C	10	A	R	NIV
IA	-	-	-	-	C	10	A	R	IV
KS	-	-	-	-	C	10	A	R	IV
KY	-	-	-	C	S	10	E	R	IV
LA	-	C	-	-	-	4	E	NR	IV
ME	-	-	-	-	S	9	A	R	NIV
MD	C	C	C	-	-	6	A	NR	IV
MA	C	-	-	-	-	3	A	NR	IV
MI	-	-	C	-	-	6	E	NR	IV
MN	-	-	-	C	-	8	E	R	IV
MS	-	-	-	-	S	9	E	R	IV
MO	-	-	-	-	C	10	A	R	IV
MT	-	C	-	C	C	10	E	NR	IV
NE	-	-	-	-	C	10	A	R	IV
NV	S	C	-	-	-	4	E	NR	NIV
NH	S	-	-	-	-	2	A	NR	NIV
NJ	-	-	-	-	C	10	A	R	IV
NM	-	-	-	-	C	10	E	R	IV
NY	C	-	-	-	-	3	A	NR	IV

State	(1)	(2)	(3)	(4)	(5)	(Exhibit)	(6)	(7)	(8)
NC	-	-	-	-	C	10	E	NR	NIV
ND	-	-	-	C	-	8	E	R	IV
OH	-	-	-	-	C	10	E	R	IV
OK	-	-	-	-	C	10	E	NR	IV
OR	-	-	-	C	-	8	E	R	IV
PA	C	S	C	-	-	6	E	NR	IV
RI	-	-	-	-	C	10	A	R	NIV
SC	-	-	C	-	C	10	A	R	IV
SD	-	-	-	-	C	10	E	R	IV
TN	-	-	C	-	C	10	E	NR	IV
TX	-	C	-	C	-	8	E	R	IV
UT	-	-	-	-	C	10	A	R	IV
VT	-	-	-	-	-	0	A	NR	NIV
VA	-	-	-	C	-	8	A	R	IV
WA	-	-	-	C	-	8	E	R	IV
WV	-	-	-	-	C	10	E	R	IV
WI	-	-	C	-	-	6	E	R	IV
WY	-	-	-	C	-	8	A	R	IV

NOTES

Columns 1-5: S = Statutory Regulation; C = Constitutional Regulation. Source: ACIR (1987), Table 3.

Exhibit: Source: ACIR (1987), Table 3.

Column 6: E = Elected by the Voters; A = Appointed by Governor or Legislature. Source: State Statutes, Authors' survey.

Column 7: R = Referendum Required for Debt Approval; NR = Referendum Not Required. Source: ACIR (1987), Table 2.

Column 8: IV = Governor Has Item Veto; NIV = Governor Does Not Have Item Veto. Source: ACIR (1987), Table 2.

Table 3: Summary Statistics of State Budget, Economic, Financial, and Political Data

Symbol	Mean	Standard Deviation	Description
General Fund Revenues and Expenditures:			
*Revenues:**			
TAF	1671.9	332.0	Taxes (T), aid (A), and fees (F).
I	71.5	65.4	Interest income (I).
*Expenditures:**			
WBTOM	1451.6	310.4	Wages (W), benefits (B), transfers (T), "other" (O), and maintenance for infrastructure (M).
GCPF	46.9	31.1	Government contributions to retirement funds.
GCTF	1.3	2.7	Government contributions to other trust funds.
IntSD+IntLD	61.0	55.1	Interest outlays.
PrnLD	59.4	61.4	Long-term debt redemption.
The General Fund Surplus and its Allocation:*,**			
SURGF	123.2	131.4	General fund (accounting) surplus.
NDCAP	86.6	130.5	Net contributions to the capital account.
NDRF	37.1	102.6	Net contributions to rainy day funds.
NDSTD	-0.4	28.3	Net contributions towards repayment of short term debt.
Economic Control Variables:			
AID	462.9	115.9	Federal aid (included in TAF).*
INC	13756.0	2154.2	State personal income.*
UNEMP	6.3	2.1	State unemployment rate.
Balance Sheet Control Variables:*,***			
RAIN	439.0	374.5	Rainy day (reserve) funds.
LDOFF	433.6	504.1	Bond fund and sinking fund balances.
SDOUT	18.3	46.8	Short term debt outstanding.
LDOUT	917.4	728.5	Long term debt outstanding (gross).
Political Control Variables:******			
DEMALL	0.37	0.48	Democratic party controls both branches of government.
REPALL	0.11	0.31	Republican party controls both branches of government.
DIVGOV	0.32	0.47	Control is divided between a governor of one party and a legislature controlled by the other party.
DIVLEG	0.14	0.34	Legislature is divided between parties.
OTHERGOV	0.06	0.24	None of the above; includes unicameral legislatures (Nebraska) and independent governors.
REPGOV	0.40	0.49	Republican governor. No conditions on House or Senate.

Notes to Table 3:

* All budget, financial, and economic data are in real 1990 dollars per capita. (Price index: PA 1990 = 100). Averages and standard deviations are based on the 47 sample states over the period 1970-1991, 1034 observations. Excluded are Alaska, Hawaii, and Wyoming; see text at footnote 8.

** Omitted from the allocation of the general fund surplus (SURGF) are additional allocations or withdrawals from the pension fund (NDPF) and workmen's compensation trust fund (NDTF) above that already allocated to GCPF and GCTF in expenditures. We assume NDPF ≡ NDTF ≡ 0; see text at footnote 14.

*** As measured at the beginning of each fiscal year.

**** Variables take the value 1 if the description is satisfied, and zero otherwise.

Table 4: Univariate OLS regressions of the state general fund surplus on fiscal rules

Rule	Regression Set 1 SURGF on.. Coef. (1)	t-value (2)	Regression Set 2 Frequency of (SURGF<0) on.. Coef. (3)	t-value (4)	Frequency of Deficits If fiscal rule holds: Yes (5)	No (6)
NOCARRY	89.99	10.344**	-0.21	-8.778**	0.09	0.30
SUBMIT	-90.27	-9.418**	0.21	8.193**	0.32	0.10
PASS	-3.20	-0.294	0.10	3.453**	0.23	0.13
CARRY	-79.25	-7.480**	0.16	5.364**	0.28	0.12
LINEITEM	58.98	5.203**	-0.10	-3.218**	0.13	0.23
DEBTREST	45.73	5.517**	-0.10	-4.536**	0.11	0.21
ACIR-Index	12.78	8.566**	-0.03	-7.516**	0.09	0.21
AVERAGE	123.24		0.15			

All regressions are for a panel of 47 states for 1970-1991 (all states except Alaska, Hawaii, Wyoming), 1034 observations.

Col.(1) shows the slope coefficients in regressions of the real per-capita surplus SURGF on each rule separately; col.(2) shows the corresponding t-statistics. Constants have been included in each regression but not displayed to save space. See the text for cautionary comments on the t-values.

Col.(3) shows the slope coefficients in regressions of the 0-1 variable indicating a deficit (SURGF<0) on each rule separately; col.(4) shows the corresponding t-statistics.

Col.(5) shows the frequency of deficits if the respective rule is in force; col.(6) shows the frequency of deficits without the rule.

For the ACIR index, which takes values on a 0-10 scale, cols.5 and 6 show the estimated frequency of deficits at the index values of 10 and 6, respectively. The value 10 is chosen to illustrate a "high" index value because the ACIR index takes its maximum value of 10 in 26 of the 50 states. The value 6 is picked as the illustrative "low" value, because 6 and 10 are about equally far from the index mean (of 8.08) and because 6 is the conditional mean of the index, conditional on observing a value below 10.

Significance levels for all tables (unless indicated otherwise):
** = Significant at 5%.
* = Significant at 10%.

Table 5: Panel regressions of the general fund surplus on economic, balance sheet, and political control variables and on state fixed effects

Panel A: Economic and political controls only

Variable	OLS-Regression Coef.	t-value	AR1-Regression Coef.	t-value
	(1)	(2)	(3)	(4)
INC	0.01	2.26**	0.01	0.90
ΔINC	0.00	0.41	0.01	1.13
UNEMP	-4.72	-2.34**	-8.27	-2.76**
ΔUNEMP	-22.71	-6.26**	-19.08	-5.14**
AID	0.10	1.94*	0.10	1.93*
AID(-1)	0.07	1.39	-0.01	-0.12
REPGOV	-7.87	-0.74	-1.04	-0.08
REPALL	-2.90	-0.22	-6.54	-0.41
DEMALL	-12.25	-1.01	-10.19	-0.73
DIVLEG	-1.61	-0.15	-1.47	-0.12
OTHERGOV	-3.15	-0.18	-3.00	-0.15
TIME	-11.06	-10.58**	-10.96	-7.20**
R-squared:	0.61		0.67	
Durbin-Watson:	1.198		2.104	
AR in residuals:			0.444 (t=14.11)	

Significance level in F-tests for the exclusion of:

State dummies:	0.000	0.000
Income and unemp.:	0.000	0.000
Aid:	0.006	0.155
Politics:	0.919	0.952
Time trend:	0.000	0.000

Panel of 47 states for 1970-1991. Data for 1970 are used to initialize the lagged variables; this leaves 987 observations.

INC = state personal income per capita; ΔINC = change in income.
UNEMP = state unemployment rate; ΔUNEMP = change in the unemployment rate.
AID = federal aid per capita; AID(-1) = lagged federal aid.
REPGOV = Republican governor
REPALL = Republican governor, Republican house, and Republican senate.
DEMALL = Democratic governor, Democratic house, and Democratic senate.
DIVLEG = House and senate controlled by different parties
OTHERGOV = Governor, house, or senate controlled by neither Democrats nor Republicans.
TIME = time trend.

** = Significant at 5%
* = Significant at 10%

Table 5 (cont.):

Panel B: Economic, political, and balance sheet controls

Variable	OLS-Regression Coef.	OLS-Regression t-value	AR1-Regression Coef.	AR1-Regression t-value
	(1)	(2)	(3)	(4)
INC	0.01	1.99**	0.01	1.03
ΔINC	0.01	0.75	0.01	1.19
UNEMP	-8.66	-4.36**	-11.52	-4.00**
ΔUNEMP	-19.14	-5.45**	-16.67	-4.57**
AID	0.12	2.37**	0.11	2.29**
AID(-1)	0.07	1.35	-0.01	-0.12
REPGOV	-3.92	-0.39	-1.20	-0.10
REPALL	-0.47	-0.04	-2.99	-0.19
DEMALL	-10.97	-0.94	-10.61	-0.79
DIVLEG	1.07	0.10	0.79	0.07
OTHERGOV	-3.85	-0.23	-3.78	-0.19
TIME	-6.26	-5.55**	-6.41	-4.06**
RAIN	-0.05	-2.65**	-0.09	-3.90**
LDOFF	-0.07	-4.28**	-0.06	-3.31**
SDOUT	-0.05	-0.66	0.02	0.24
LDOUT	-0.02	-1.27	-0.02	-0.88
R-squared:	0.64		0.69	
Durbin-Watson:	1.290		2.104	
AR in residuals:			0.405 (t=12.03)	

Significance level in F-tests for the exclusion of:

State dummies:	0.000	0.000
Income and unemp.:	0.000	0.000
Aid:	0.002	0.073
Politics:	0.928	0.940
Time trend:	0.000	0.000
Balance sheet:	0.000	0.000

Panel of 47 states for 1970-1991; 1970-71 are used for lags; 940 obs.

RAIN = Rainy day (reserve) funds.
LDOFF = Bond fund and sinking fund balances.
SDOUT = Short term debt outstanding.
LDOUT = Long term debt outstanding (gross).

** = Significant at 5%
* = Significant at 10%

Table 6: Stage-2, cross-sectional regressions of estimated state fixed effects on budget rules.

Panel A: Based on stage-1 regression = AR1 with economic and political controls.

	Rule only Coef.on RULE		With SOUTH Coef.on RULE		With SOUTH and NOCARRY Coef.on RULE		Coef.on NOCARRY	
	Coef. (1)	t-value (2)	Coef. (3)	t-value (4)	Coef. (5)	t-value (6)	Coef. (7)	t-value (8)
NOCARRY	104.49	4.095 **	91.79	3.411 **				
SUBMIT	-103.02	-3.572 **	-87.22	-2.833 **	-33.34	-0.813	71.16	1.921 *
PASS	-13.09	-0.368	-6.09	-0.179	56.44	1.673*	115.97	3.856 **
CARRY	-76.62	-2.274 **	-70.09	-2.173 **	-26.79	-0.775	80.31	2.605 **
LINEITEM	73.74	2.053 **	60.57	1.726 *	51.20	1.610	87.99	3.315 **
DEBTREST	53.99	2.052 **	53.25	2.140 **	6.25	0.208	87.28	2.509 **
ACIR-Index	15.89	3.563 **	13.59	2.939 **	-0.18	-0.018	92.73	1.566

Panel B: Based on stage-1 regression = AR1 with economic, political, and balance sheet controls.

	Rule only Coef.on RULE		With SOUTH Coef.on RULE		With SOUTH and NOCARRY Coef.on RULE		Coef.on NOCARRY	
	Coef. (1)	t-value (2)	Coef. (3)	t-value (4)	Coef. (5)	t-value (6)	Coef. (7)	t-value (8)
NOCARRY	111.26	3.286 **	101.84	2.811 **				
SUBMIT	-98.03	-2.545 **	-84.31	-2.025 **	-13.55	-0.244	93.46	1.861 *
PASS	-8.10	-0.180	-1.69	-0.038	69.21	1.515	131.49	3.230 **
CARRY	-103.40	-2.454 **	-97.71	-2.348 **	-55.66	-1.207	78.00	1.898 *
LINEITEM	70.11	1.518	58.20	1.257	47.74	1.098	98.30	2.709 **
DEBTREST	51.23	1.514	50.56	1.526	-7.01	-0.173	106.89	2.282 **
ACIR-Index	15.12	2.539 **	13.10	2.088 **	-9.58	-0.723	152.72	1.927 *

Panel C: Based on stage-1 regression = (SURGF<0) on economic, political, and balance sheet controls, AR1.

	Rule only Coef.on RULE		With SOUTH Coef.on RULE		With SOUTH and NOCARRY Coef.on RULE		Coef.on NOCARRY	
	Coef. (1)	t-value (2)	Coef. (3)	t-value (4)	Coef. (5)	t-value (6)	Coef. (7)	t-value (8)
NOCARRY	-0.18	-3.840 **	-0.15	-3.102 **				
SUBMIT	0.15	2.832 **	0.12	2.018 **	0.00	0.011	-0.15	-2.229 **
PASS	0.09	1.355	0.07	1.209	-0.01	-0.200	-0.16	-2.787 **
CARRY	0.16	2.620 **	0.14	2.547 **	0.08	1.303	-0.12	-2.116 **
LINEITEM	-0.09	-1.341	-0.06	-0.964	-0.05	-0.777	-0.15	-3.007 **
DEBTREST	-0.07	-1.406	-0.07	-1.468	0.02	0.444	-0.17	-2.681 **
ACIR-Index	-0.02	-2.851 **	-0.02	-2.172 **	0.02	1.037	-0.25	-2.348 **

Cross-sectional regressions for 47 states. All regressions include a constant term. Dependent variable: state fixed effects from stage-1 panel regressions described in Table 5.

** = Significant at 5%
* = Significant at 10%

Table 7: State-by-State Summary of Surpluses, Fixed Effects, and the NOCARRY provision

State	Average SURGF (1)	Fraction of Years with Deficits (2)	Relative Fixed Effect (3)	NOCARRY Provision (4)
ALABAMA	118.2	0.05	4.5	Yes
ALASKA	2014.0	0.27	(excl.)	NO
ARIZONA	145.5	0.05	-2.6	Yes
ARKANSAS	139.3	0.05	7.5	Yes
CALIFORNIA	14.6	0.50	-139.0 **	NO
COLORADO	134.2	0.14	-34.4	Yes
CONNECTICUT	-35.6	0.68	-161.3 **	NO
DELAWARE	131.6	0.14	117.0 **	Yes
FLORIDA	117.6	0.05	-25.0	Yes
GEORGIA	116.8	0.05	-45.3	Yes
HAWAII	246.8	0.05	(excl.)	Yes
IDAHO	217.7	0.00	72.9 **	Yes
ILLINOIS	83.9	0.09	-70.0 **	NO
INDIANA	143.1	0.00	13.6	Yes
IOWA	128.7	0.05	-51.5 *	Yes
KANSAS	173.3	0.00	-7.0	Yes
KENTUCKY	166.5	0.00	78.9 **	Yes
LOUISIANA	97.3	0.32	8.3	NO
MAINE	59.5	0.23	-65.0 **	Yes
MARYLAND	52.0	0.32	-109.8 **	NO
MASSACHUSETTS	-41.3	0.55	-176.7 **	NO
MICHIGAN	76.9	0.18	-46.8	NO
MINNESOTA	165.0	0.05	41.2	Yes
MISSISSIPPI	156.6	0.00	25.2	Yes
MISSOURI	118.6	0.05	-28.5	Yes
MONTANA	348.0	0.09	267.8 **	Yes
NEBRASKA	208.0	0.00	36.2	Yes
NEVADA	161.3	0.14	13.2	NO
NEW HAMPSHIRE	49.8	0.27	-110.0 **	NO
NEW JERSEY	-0.4	0.55	-132.8 **	Yes
NEW MEXICO	364.2	0.00	467.8 **	Yes
NEW YORK	72.7	0.27	-51.1	NO
NORTH CAROLINA	84.0	0.09	-86.6 **	Yes
NORTH DAKOTA	283.9	0.05	186.6 **	Yes
OHIO	52.1	0.18	-87.5 **	Yes
OKLAHOMA	115.7	0.09	19.8	Yes
OREGON	106.1	0.14	126.2 **	Yes
PENNSYLVANIA	58.2	0.23	-93.4 **	NO
RHODE ISLAND	-64.4	0.64	-138.6 **	Yes
SOUTH CAROLINA	84.9	0.23	-43.0	Yes
SOUTH DAKOTA	205.9	0.00	104.4 **	Yes
TENNESSEE	120.9	0.00	-27.6	Yes
TEXAS	199.6	0.00	91.4 **	Yes
UTAH	186.1	0.05	32.9	Yes
VERMONT	78.1	0.27	-44.3	NO
VIRGINIA	173.1	0.00	15.3	Yes
WASHINGTON	116.9	0.09	-20.5	Yes
WEST VIRGINIA	219.4	0.05	133.3 **	Yes
WISCONSIN	87.9	0.09	-65.6 **	NO
WYOMING	755.6	0.00	(excl.)	Yes

Notes to Table 7:

Column (1): Average real per-capital surplus (PA 1990 = 100) for each state over the sample period 1970-91.

Column (2): Fraction of years in the 1970-91 sample period (22 years) in which SURGF<0 was realized.

Column (3): Fixed effects estimated in the AR1 regression shown in Table 5, Panel B, relative to the cross-state mean, $\hat{\alpha}_s - (1/47) \cdot \sum_{i=1}^{47} \hat{\alpha}_i$. Since the fixed effects have a non-zero mean ($229.8), the mean-adjusted values provide a clearer indication to what extent a state's SURGF is unusually high or low.

Column (4): Value of the NOCARRY variable, which indicates the presence of either a C or S restriction in either col.4 or col.5 of Table 2.

** = Significantly different from zero at a 5 percent significance level.
* = Significantly different from zero at a 10 percent significance level.

Table 8: Stage 2 regressions of state fixed effects on NOCARRY

Panel A: Stage 1 = OLS with economic, political, and balance sheet controls

	NOCARRY only			With control for SOUTH		
	Coef. (1)	t-value (2)		Coef. (3)	t-value (4)	
TAF	-33.48	-0.545		-34.29	-0.518	
I	-0.81	-0.200		0.77	0.179	
WBTOM	-128.74	-2.337	**	-115.08	-1.950	*
GCPF	-2.89	-0.371		-8.19	-1.017	
GCTF	0.35	0.558		0.22	0.329	
IntSD+IntLD	0.15	0.062		1.70	0.654	
PrnLD	-3.75	-0.627		-4.19	-0.650	
SURGF	100.58	3.570	**	92.01	3.056	**
NDCAP	5.49	0.326		9.72	0.538	
NDRF	80.42	2.598	**	69.35	2.103	**
NDSTD	14.68	3.468	**	12.94	2.879	**

Panel B: Stage 1 = AR1 with economic, political, and balance sheet controls

	NOCARRY only			With control for SOUTH		
	Coef. (1)	t-value (2)		Coef. (3)	t-value (4)	
TAF	-12.92	-0.176		-11.20	-0.142	
I	10.22	0.884		14.35	1.165	
WBTOM	-118.66	-1.934	*	-100.80	-1.536	
GCPF	-4.51	-0.544		-9.59	-1.109	
GCTF	0.23	0.348		0.13	0.189	
IntSD+IntLD	-18.24	-2.491	**	-11.86	-1.608	
PrnLD	-2.42	-0.389		-3.06	-0.457	
SURGF	113.41	3.226	**	103.52	2.752	**
NDCAP	-1.62	-0.085		3.54	0.173	
NDRF	87.17	2.342	**	74.52	1.877	*
NDSTD	9.94	3.229	**	9.47	2.861	**

Cross-sectional regressions for 47 states. All regressions include a constant term. Dependent variable: state fixed effects from stage-1 panel regressions as specified in Table 5, panel B.

** = Significant at 5%
* = Significant at 10%

Table 8 (cont.):

Panel C: Stage-1 = OLS regressions with economic and political, but without balance sheet controls

	NOCARRY only			With control for SOUTH		
	Coef. (1)	t-value (2)		Coef. (3)	t-value (4)	
TAF	-26.29	-0.397		-29.19	-0.410	
I	8.08	0.496		12.43	0.713	
WBTOM	-64.49	-1.095		-55.45	-0.876	
GCPF	-1.90	-0.253		-6.85	-0.880	
GCTF	0.36	0.630		0.30	0.490	
IntSD+IntLD	-33.60	-2.609	**	-26.86	-1.982	**
PrnLD	-27.62	-1.995	**	-23.74	-1.602	
SURGF	109.03	4.299	**	95.82	3.590	**
NDCAP	76.93	4.023	**	69.40	3.414	**
NDRF	36.86	2.333	**	29.91	1.787	*
NDSTD	-4.76	-3.770	**	-3.49	-2.815	**

Cross-sectional regressions for 47 states. All regressions include a constant term. Dependent variable: state fixed effects from stage-1 panel regressions as specified in Table 5, panel A.

** = Significant at 5%
* = Significant at 10%

Table 9: Effects of the NOCARRY Provision in Steady-State Regressions for State Financial Assets and Liabilities

	Univariate Reg.		With SOUTH		All controls	
	Coef.	t-value	Coef.	t-value	Coef.	t-value
	(1)	(2)	(3)	(4)	(5)	(6)
RAIN	212.09	1.96*	189.32	1.74*	210.91	1.64
LDOFF	-85.82	-0.83	-118.55	-1.17	34.62	0.31
SDOUT	-25.63	-2.88**	-27.06	-3.00**	-7.64	-0.76
LDOUT	-423.98	-2.20**	-453.62	-2.32**	-85.30	-0.40

Cross-sectional regressions for 47 states. The dependent variables are the twenty-two year average values of RAIN, LDOFF, SDOUT, and LDOUT for the sample period 1970-91. Columns (1) and (2) show regressions of the balance sheet variables on NOCARRY and on a constant. Columns (3) and (4) add SOUTH and columns (5) and (6) adds states' average real incomes and aid levels as regressors.

** = Significant at 5%
* = Significant at 10%

Table 10: Stage-2 regressions of fixed effect on restrictions with controls for political orientation

Panel A: Controls for voter conservatism (CONSVOT) and SOUTH

Coef.on:	NOCARRY		CONSVOT		SOUTH	
	Coef.	t-value	Coef.	t-value	Coef.	t-value
	(1)	(2)	(3)	(4)	(5)	(6)
TAF	-18.43	-0.21	2.73	0.30	-21.31	-0.26
I	12.69	0.94	0.94	0.66	-14.98	-1.18
WBTOM	-101.18	-1.43	-2.28	-0.31	-53.15	-0.80
GCPF	-8.62	-0.93	-0.09	-0.09	12.20	1.40
GCTF	0.21	0.28	0.07	0.92	0.12	0.17
IntSD+IntLD	-10.44	-1.31	-0.86	-1.02	-15.68	-2.08**
PrnLD	-4.15	-0.57	-0.03	-0.04	2.23	0.32
SURGF	96.32	2.40**	6.12	1.45	12.00	0.32
NDCAP	8.44	0.38	-2.34	-1.00	-5.10	-0.25
NDRF	67.60	1.58	5.74	1.27	17.69	0.44
NDSTD	7.37	2.32**	1.13	3.38**	-1.44	-0.48

Table 10 (cont.):

Panel B: Controls for voter conservatism (CONSVOT) and ideology scores for Democratic and Republican state legislators.

	NOCARRY		CONSVOT		DEMLEG		REPLEG	
	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TAF	28.99	0.34	15.99	1.34	-6.43	-0.16	105.83	2.34**
I	16.20	1.16	1.76	0.90	-3.57	-0.54	9.56	1.30
WBTOM	-52.72	-0.77	11.55	1.22	-1.40	-0.04	105.27	2.94**
GCPF	-5.21	-0.60	0.44	0.37	-8.30	-2.06**	12.00	2.65**
GCTF	-0.20	-0.27	-0.06	-0.54	-0.19	-0.54	-0.78	-1.97**
IntSD+IntLD	-7.46	-0.98	-0.34	-0.32	-6.17	-1.73*	9.88	2.47**
PrnLD	-5.84	-0.77	-0.84	-0.80	-6.10	-1.73*	-0.21	-0.05
SURGF	94.29	2.20**	5.55	0.93	0.23	0.01	-4.50	-0.20
NDCAP	4.79	0.21	-4.01	-1.24	-11.71	-1.08	-1.29	-0.11
NDRF	69.58	1.53	6.75	1.07	8.17	0.38	-0.31	-0.01
NDSTD	6.50	2.05**	0.99	2.24**	2.00	1.35	-3.00	-1.80*

Panel C: Controls for voter conservatism (CONS_VOT) and ideology scores for Democratic and Republican activists.

	NOCARRY		CONSVOT		DEMACT		REPACT	
	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TAF	4.01	0.05	7.33	0.85	36.52	0.64	108.16	2.89**
I	15.23	1.24	1.81	1.39	0.09	0.01	19.66	3.48**
WBTOM	-79.69	-1.14	-0.26	-0.03	62.63	1.28	52.59	1.63
GCPF	-12.13	-1.35	-0.02	-0.02	-14.95	-2.37**	0.10	0.02
GCTF	0.26	0.36	0.04	0.53	0.57	1.11	-0.64	-1.91*
IntSD+IntLD	-12.42	-1.56	-0.70	-0.83	-9.75	-1.75*	2.53	0.69
PrnLD	-6.15	-0.83	-0.11	-0.14	-7.10	-1.37	-2.53	-0.74
SURGF	103.71	2.84**	8.68	2.24**	-0.10	-0.00	58.01	3.44**
NDCAP	0.38	0.02	-3.66	-1.75*	-16.97	-1.23	-31.70	-3.48**
NDRF	79.95	2.30**	9.22	2.50**	9.14	0.37	79.78	4.97**
NDSTD	8.52	2.78**	1.07	3.30**	5.27	2.45**	-0.78	-0.55

Cross-sectional regressions for 47 states. All regressions include a constant term and SOUTH. Dependent variable: state fixed effects from stage-1 panel regression with AR1 adjustment and balance sheet controls.

Ideology scores of voters, state legislators, and state party activists are from Erikson, Wright, and McIver (1993), Tables 2.2 and 5.3.

** = Significant at 5%
* = Significant at 10%

Table 11: Enforcement by Appointed versus Elected Supreme Courts

	NOCARRY		(NOCARRY * ELVOT)	
	Coef.	t-value	Coef.	t-value
	(1)	(2)	(3)	(4)
TAF	-44.02	-0.502	71.92	0.873
I	3.43	0.259	23.92	1.921 *
WBTOM	-96.74	-1.317	-8.88	-0.128
GCPF	-13.63	-1.422	8.84	0.981
GCTF	-0.26	-0.335	0.86	1.179
IntSD+IntLD	-10.30	-1.250	-3.42	-0.441
PrnLD	4.21	0.599	-15.93	-2.409 **
SURGF	59.60	1.523	96.23	2.614 **
NDCAP	15.99	0.712	-27.29	-1.292
NDRF	27.82	0.674	102.33	2.637 **
NDSTD	7.65	2.096 **	3.99	1.162

Cross-sectional regressions for 47 states. All regressions include a constant term and SOUTH. Dependent variable: state fixed effects from stage-1 panel regression with AR1 adjustment and balance sheet controls.
New variable: ELVOT = Supreme court justices elected by voters, see Table 2.

** = Significant at 5%
* = Significant at 10%

Table 12: Statutory versus constitutional NOCARRY restrictions

	NOCARRY		(NOCARRY * STATUTORY)	
	Coef.	t-value	Coef.	t-value
	(1)	(2)	(3)	(4)
TAF	-13.63	-0.17	39.31	0.28
I	14.15	1.13	3.17	0.14
WBTOM	-105.89	-1.60	82.56	0.71
GCPF	-11.18	-1.31	25.77	1.73*
GCTF	0.16	0.22	-0.41	-0.33
IntSD+IntLD	-11.64	-1.55	-3.60	-0.27
PrnLD	-3.69	-0.55	10.24	0.87
SURGF	106.93	2.82**	-55.24	-0.83
NDCAP	5.21	0.25	-27.04	-0.75
NDRF	76.28	1.89*	-28.37	-0.40
NDSTD	9.29	2.77**	2.87	0.49

Cross-sectional regressions for 47 states. All regressions include a constant term and SOUTH. Dependent variable: state fixed effects from stage-1 panel regression with AR1 adjustment and balance sheet controls. States with statutory NOCARRY requirements are: Arkansas, Maine, North Carolina.

** = Significant at 5%
* = Significant at 10%

Table 13: The role of two year budget cycles:

PANEL A: Biennial Budget Cycles

	NOCARRY		Biennial Budget Cycle: Biennial Session		Annual Session	
	Coef.	t-value	Coef.	t-value	Coef.	t-value
	(1)	(2)	(3)	(4)	(5)	(6)
TAF	-2.33	-0.03	-83.33	-0.85	-18.23	-0.23
I	16.51	1.34	-5.88	-0.39	-20.29	-1.65*
WBTOM	-93.90	-1.42	-107.75	-1.35	32.93	0.50
GCPF	-7.99	-0.91	-11.77	-1.10	-6.96	-0.80
GCTF	0.11	0.15	0.44	0.50	-0.16	-0.22
IntSD+IntLD	-10.83	-1.44	-3.99	-0.44	-8.34	-1.12
PrnLD	-1.60	-0.24	-16.05	-2.00**	-0.42	-0.06
SURGF	103.01	2.76**	48.95	1.08	-47.37	-1.28
NDCAP	1.92	0.09	17.45	0.68	0.84	0.04
NDRF	76.02	1.89*	23.94	0.49	-44.76	-1.12
NDSTD	8.71	2.61**	5.40	1.33	3.44	1.04

PANEL B: Biennial Balance Requirements

	NOCARRY		2-year NOCARRY requirement with Biennial Session		Annual Session	
	Coef.	t-value	Coef.	t-value	Coef.	t-value
	(1)	(2)	(3)	(4)	(5)	(6)
TAF	-30.21	-0.37	24.17	0.17	164.26	1.18
I	14.41	1.13	17.47	0.80	-18.09	-0.83
WBTOM	-111.50	-1.65*	-55.40	-0.48	161.51	1.41
GCPF	-7.30	-0.81	-18.25	-1.20	-4.50	-0.29
GCTF	0.25	0.34	-0.62	-0.49	-0.54	-0.43
IntSD+IntLD	-12.11	-1.56	7.79	0.59	-5.36	-0.41
PrnLD	0.36	0.06	-30.91	-2.81**	-2.98	-0.27
SURGF	91.87	2.40**	121.08	1.87*	-5.62	-0.09
NDCAP	0.78	0.04	3.65	0.10	23.64	0.65
NDRF	66.50	1.63	101.79	1.47	-22.31	-0.32
NDSTD	9.46	2.71**	2.56	0.43	-2.48	-0.42

Cross-sectional regressions for 47 states. All regressions include a constant term and SOUTH. Dependent variable: state fixed effects from a stage one panel regression with AR1 adjustment and balance sheet controls.

States with:
NOCARRY over two years only (6 states):
MINNESOTA, NORTH DAKOTA, OREGON, TEXAS, VIRGINIA, WASHINGTON.
Biennial budget cycle with annual session of the legislature (11 states):
FLORIDA, HAWAII, INDIANA, IOWA, MAINE, MINNESOTA, NORTH CAROLINA, OHIO, VIRGINIA, WASHINGTON.
Biennial budget cycle with biennial session of the legislature (6 states):
ARKANSAS, KENTUCKY, MISSOURI, NORTH DAKOTA, OREGON, TEXAS.

** = Significant at 5%
* = Significant at 10%

Table 14: The cyclical responsiveness of budget surpluses

Panel A: Income growth as cyclical indicator

Dep.Var.	Average Responsiveness Coef. (1)	t-value (2)	Effect of ACIR Index Coef. (3)	t-value (4)	Effect of NOCARRY Coef. (5)	t-value (6)	Responsiveness if NOCARRY.. ..=0 (7)	..=1 (8)
SURGF	0.0487	5.06**	-0.0049	-1.36	-0.0401	-1.92*	0.0776	0.0376
SURTOT	0.0927	6.99**	-0.0114	-2.40**	-0.0712	-2.54**	0.1442	0.0730
SURINS	0.0324	7.39**	-0.0015	-0.92	-0.0079	-0.80	0.0381	0.0302

Panel B: Changes in the unemployment rate as cyclical indicator

Dep.Var.	Average Responsiveness Coef. (1)	t-value (2)	Effect of ACIR Index Coef. (3)	t-value (4)	Effect of NOCARRY Coef. (5)	t-value (6)	Responsiveness if NOCARRY.. ..=0 (7)	..=1 (8)
SURGF	-0.1894	-9.29 **	0.0064	0.83	0.0579	1.28	-0.2313	-0.1733
SURTOT	-0.3709	-13.53**	0.0245	2.50 **	0.1546	2.69 **	-0.4827	-0.3281
SURINS	-0.1022	-9.06 **	0.0014	0.33	0.0146	0.58	-0.1127	-0.0981

Cols.(1)-(2): Average responsiveness = Average of the β_s coefficients across states, and the associated t-value.

Cols.(3)-(6): Slope coefficients and t-values in univariate cross-sectional regressions of the β_s-values on the ACIR-index and on NOCARRY, respectively.

Cols.(7)-(8): Average β_s coefficients conditional on NOCARRY=0 and on NOCARRY=1, respectively.

** = Significant at 5%
* = Significant at 10%

Appendix Table A.1: Random Effects (GLS) Estimates for the Impact of Fiscal Rules

Panel A: Regression with economic and political controls.

RULE	Coef.on RULE Coef.	t-val	Coef.on NOCARRY Coef.	t-val
(1)	(2)	(3)	(4)	(5)
NOCARRY			86.71	3.745**
SUBMIT	-20.64	-0.596	74.36	2.393**
PASS	73.96	2.811**	116.04	4.884**
CARRY	-25.56	-0.887	75.94	2.913**
LINEITEM	44.38	1.716*	81.70	3.682**
DEBTREST	2.87	0.115	84.69	2.915**
ACIR-Index	2.00	0.241	76.00	1.521

Panel B: Regression with economic, political, and balance sheet controls.

RULE	Coef.on RULE Coef.	t-val	Coef.on NOCARRY Coef.	t-val
(1)	(2)	(3)	(4)	(5)
NOCARRY			56.64	3.397**
SUBMIT	21.98	0.936	68.59	3.237**
PASS	63.09	3.368**	82.51	4.664**
CARRY	-37.32	-1.910*	40.66	2.207**
LINEITEM	35.16	1.969*	51.95	3.225**
DEBTREST	-14.99	-0.878	66.23	3.316**
ACIR-Index	-4.96	-0.865	82.97	2.388**

Panel of 47 states for 1970-1991; 1970 is used for lags; 987 obs. The error terms are assumed to be the sum of a state-specific and an idiosyncratic component, $u_{st} = v_s + \xi_{st}$. All regressions are estimated by GLS.

The regressors are as follows:
In panel A: The same economic and political controls as in Table 5, panel A, a constant, SOUTH, NOCARRY, and (except in the first line), the specific fiscal rule noted in column 1.
In panel B: The same economic, political, and balance sheet controls as in Table 5, panel B, a constant, SOUTH, NOCARRY, and (except in the first line), the specific fiscal rule noted in column 1.

** = Significant at 5%
* = Significant at 10%

Appendix Table A.2: Alternative Stage 1 Regressions: Differenced equations with lagged endogenous variables instrumented by twice-lagged levels and differences

Variable	Economic and political controls only		Economic, political, and balance sheet controls	
	Coef.	t-value	Coef.	t-value
	(1)	(2)	(3)	(4)
CONSTANT	-10.80	-2.46**	-15.44	-1.95*
ΔINC	0.02	1.71	0.02	1.14
ΔINC(-1)	-0.01	-0.83	-0.00	-0.18
ΔUNEMP	-24.58	-5.43**	-22.40	-4.23**
ΔUNEMP(-1)	18.05	4.28**	13.73	1.88*
ΔAID	0.07	1.20	0.05	0.69
ΔAID(-1)	-0.06	-1.02	-0.13	-1.76*
ΔREPGOV	-2.00	-0.13	3.79	0.22
ΔREPALL	-17.41	-0.94	-23.40	-1.17
ΔDEMALL	-9.58	-0.60	-1.85	-0.10
ΔDIVLEG	2.19	0.16	5.67	0.37
ΔOTHERGOV	-10.28	-0.44	-2.14	-0.08
ΔSURGF(-1)	0.13	1.42	0.21	1.53
ΔRAIN			-0.19	-0.64
ΔLDOFF			-0.04	-0.44
ΔSDOUT			0.16	0.51
ΔLDOUT			0.22	1.44

Significance level in F-tests for the exclusion of:

Income and unemp.:	0.000	0.000
Aid:	0.172	0.071
Politics:	0.852	0.853
Balance sheet:		0.624

Panel of 47 states for 1970-1991; 1970-72 are used for lags and instruments; 893 obs. The dependent variable is ΔSURGF. The regressors ΔSURGF(-1), ΔRAIN, ΔLDOFF, ΔSDOUT, and ΔLDOUT are instrumented by the the lagged differences (ΔSURGF(-2), ΔRAIN(-1), ΔLDOFF(-1), ΔSDOUT(-1), and ΔLDOUT(-1), respectively) and by the twice-lagged levels (SURGF(-2), RAIN(-1), LDOFF(-1), SDOUT(-1), and LDOUT(-1), respectively).

** = Significant at 5%
* = Significant at 10%

Appendix Table A.3: Alternative Stage 2 Regressions (Stage 1 regression = Table A.2)

Panel A: Differenced, with economic and political controls

	Rule only Coef.on RULE		With SOUTH Coef.on RULE		With SOUTH and NOCARRY Coef.on RULE		Coef.on NOCARRY	
	Coef. (1)	t-value (2)	Coef. (3)	t-value (4)	Coef. (5)	t-value (6)	Coef. (7)	t-value (8)
NOCARRY	91.60	3.793 **	78.89	3.105 **				
SUBMIT	-97.45	-3.661 **	-82.83	-2.915 **	-43.45	-1.131	52.01	1.497 *
PASS	-10.64	-0.323	-4.08	-0.130	50.01	1.563	100.31	3.518 **
CARRY	-75.21	-2.421 **	-69.13	-2.328 **	-34.59	-1.066	64.07	2.215 **
LINEITEM	49.08	1.440	36.13	1.089	27.95	0.913	76.81	3.006 **
DEBTREST	44.34	1.798 *	43.65	1.871 *	1.91	0.067	77.51	2.359 **
ACIR-Index	13.15	3.088 **	10.80	2.457 **	-4.30	-0.461	101.74	1.824 *

Panel B: Differenced, with economic, political, and balance sheet controls

	Rule only Coef.on RULE		With SOUTH Coef.on RULE		With SOUTH and NOCARRY Coef.on RULE		Coef.on NOCARRY	
	Coef. (1)	t-value (2)	Coef. (3)	t-value (4)	Coef. (5)	t-value (6)	Coef. (7)	t-value (8)
NOCARRY	146.61	3.220 **	119.79	2.517 **				
SUBMIT	-187.01	-3.926 **	-160.79	-3.162 **	-131.82	-1.877 *	38.25	0.603
PASS	-10.48	-0.174	1.79	0.031	86.31	1.434	156.77	2.923 **
CARRY	-93.55	-1.600	-81.90	-1.469	-22.51	-0.366	110.14	2.009 **
LINEITEM	89.63	1.445	65.51	1.088	53.18	0.927	115.84	2.420 **
DEBTREST	71.53	1.581	70.25	1.645 *	9.39	0.176	113.02	1.836 *
ACIR-Index	24.02	3.103 **	19.62	2.458 **	8.67	0.497	73.72	0.706

Cross-sectional regressions for 47 states. All regressions include a constant term. Dependent variable: state fixed effects from stage-1 panel regression shown in Table A.2.

** = Significant at 5%
* = Significant at 10%

Appendix Table A.4: Regressions on the zero-one indicator for (SURGF <0).

Variable	OLS-Regression Coef.	OLS-Regression t-value	AR1-Regression Coef.	AR1-Regression t-value
	(1)	(2)	(3)	(4)
INC	-0.0000	-0.14	-0.0000	-0.14
ΔINC	-0.0000	-0.27	-0.0000	-0.31
UNEMP	0.0082	1.14	0.0102	1.11
ΔUNEMP	0.0662	5.18**	0.0713	5.22**
AID	-0.0003	-1.58	-0.0003	-1.52
AID(-1)	0.0000	0.01	0.0001	0.51
REPGOV	0.0203	0.55	0.0311	0.72
REPALL	-0.0270	-0.59	-0.0209	-0.38
DEMALL	0.0424	1.00	0.0494	1.02
DIVLEG	0.0110	0.29	0.0432	1.00
OTHERGOV	-0.0416	-0.69	-0.0170	-0.24
TIME	0.0066	1.60	0.0067	1.32
RAIN	-0.0001	-0.84	-0.0000	-0.40
LDOFF	0.0001	2.08**	0.0001	1.63
SDOUT	-0.0004	-1.32	-0.0005	-1.28
LDOUT	0.0001	1.28	0.0001	1.16
R-squared:	0.36		0.39	
Durbin-Watson:	1.615		2.050	
AR in residuals:			0.229 (t=6.57)	
Significance level in F-tests for the exclusion of:				
State dummies:	0.000		0.000	
Income and unemp.:	0.000		0.000	
Aid:	0.212		0.308	
Politics:	0.818		0.850	
Time trend:	0.109		0.186	
Balance sheet:	0.000		0.001	

Panel of 47 states for 1970-1991; 1970 is used for lags; 987 obs.

** = Significant at 5%
* = Significant at 10%

Appendix Table A.5: Coefficients in the Stage-1 Regressions underlying Table 8, Panel B.

Panel A: Coefficients on the balance sheet controls and on time

Variable:	RAIN		SDOUT		LDNET		LDOFF		TIME	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
TAF	-0.026	-0.87	-0.024	-0.26	0.039	1.84	-0.009	-0.51	13.667	6.10*
I	0.052	7.94*	0.029	1.49	0.020	4.22*	0.019	4.76*	3.443	6.44*
WBTOM	0.164	5.53*	-0.147	-1.59	-0.046	-2.17*	0.038	1.98*	21.519	9.97*
GCPF	0.004	0.76	0.028	1.37	-0.003	-0.63	0.006	1.39	0.002	0.00
GCTF	0.000	0.69	0.000	0.10	-0.000	-0.44	0.002	4.38*	-0.081	-1.69
IntSD+IntLD	-0.001	-0.20	0.036	3.51*	0.044	17.39*	0.001	0.26	3.156	9.26*
PrnLD	0.022	2.61*	0.005	0.15	0.057	8.87*	0.020	2.96*	1.307	2.69*
SURGF	-0.106	-4.00*	0.035	0.35	-0.017	-0.88	-0.063	-3.18*	-6.339	-4.00*
NDCAP	0.118	5.16*	-0.624	-6.30*	-0.062	-3.46*	-0.033	-1.72	-3.367	-2.54*
NDRF	-0.184	-9.33*	0.134	1.56	0.034	2.20*	-0.026	-1.56	-2.555	-2.23*
NDSTD	0.000	0.00	0.244	10.52*	0.010	2.52*	-0.012	-2.72*	0.044	0.15

Panel B: Coefficients on the economic controls

Variable:	INC		DINC		UNEMP		DU		AID		AID-1	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
TAF	0.041	4.98*	0.061	6.76*	-4.767	-1.36	-4.246	-1.31	0.667	15.77*	0.061	1.40
I	0.000	0.10	-0.003	-1.57	-1.990	-2.53*	1.969	2.80*	-0.051	-5.54*	-0.050	-5.37*
WBTOM	0.035	4.31*	0.040	4.34*	5.138	1.47	13.760	4.17*	0.487	11.25*	0.110	2.45*
GCPF	0.006	4.55*	-0.001	-0.45	1.029	1.65	0.570	0.80	-0.005	-0.47	-0.014	-1.39
GCTF	0.000	1.32	-0.000	-0.91	0.133	1.64	-0.078	-0.98	-0.000	-0.27	0.000	0.05
IntSD+IntLD	-0.002	-1.56	0.002	2.16*	0.561	1.30	-0.468	-1.26	-0.002	-0.50	-0.014	-2.85*
PrnLD	-0.001	-0.60	0.007	1.88	0.619	0.70	-2.128	-1.55	0.028	1.44	-0.036	-1.80
SURGF	0.006	0.99	0.012	1.22	-11.789	-4.07*	-16.479	-4.50*	0.113	2.29*	-0.008	-0.16
NDCAP	-0.004	-0.69	-0.000	-0.04	-5.907	-2.44*	4.600	1.15	0.263	4.59*	0.097	1.64
NDRF	0.007	1.64	0.012	1.29	-3.660	-1.74	-19.487	-5.68*	-0.131	-2.67*	-0.058	-1.14
NDSTD	0.001	1.03	0.000	0.03	-0.314	-0.59	-3.044	-2.98*	-0.027	-1.62	0.017	0.98

Panel of 47 states for 1970-1991 with AR1 adjustment and balance sheet controls; 1970-71 are used for lags; 940 obs. The odd numbered columns show the estimated coefficients, the even numbered columns the associated t-statistics.

* = significant at the 5% level.