The political economy of balanced budget requirements: Evidence from U.S. state environmental expenditure, 1974 – 2011

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Abstract

Currently, forty-nine states have explicit balanced budget rules, and most have additional rules on deficits and debt. Previous studies find that balanced budget rules assist states in having fiscal discipline by eliminating or reducing deficit spending. However, binding constraints on deficit spending reduce a state's fiscal flexibility. A lack of fiscal flexibility may lead to reduced levels of non-general expenditures, specifically environmental expenditure. This paper investigates the effect of stringent balanced budget rules on U.S. state environmental expenditure over the period 1975-2011. Using a Fixed-Effects panel estimation, the paper finds that stringent balanced budget rules are associated with 1.55% lower per capita environmental expenditure than weak rules. Further, the presence of political interest groups in a state significantly mitigates this reduction, causing environmental expenditure to fall by less than 0.36% in stringent rule states who fall in the top ten of the nation with respect to green interest group presence. However, political party mismatch between the governor and the majority in a state's legislature within stringent rule states is correlated with an additional 3.36% reduction in environmental expenditure. In an alternative specification, the paper finds that stringent rule states appear less affected by green interest group presence, and more so by political party mismatch. These findings suggest that stringent balanced budget rules may lead to lower environmental expenditure, that green interest group presence may limit this reduction, while political party mismatch exacerbates the reduction.

Keywords: Public Policy, Environmental Policy, Public Sector, Political Economy

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1. Introduction

One of the defining features of U.S. state fiscal policy is the use of balanced budget rules. Most governors and/or state legislators face a statutorily or constitutionally enforceable constraint to balance their state's budget. These constraints have the potential to induce fiscal discipline by making it difficult or impossible for states to experience budget deficits. Balanced budget rules are among the most popular fiscal institutions, favored by both politicians and voters.[1] Currently, forty-nine states have explicit balanced budget rules, and most have additional rules on deficits and debt. Despite this, the last two decades have seen state general fund expenditures rise and tax rates fall, leading many to experience increased fiscal stress, deficits, and debt. Additionally, balanced budget rules can reduce fiscal flexibility, which may lead to cuts in expenditure categories not part of the general expenditure of state budgets.[2]

Conventional wisdom suggests that a balanced budget rule (BBR) induces fiscal discipline by requiring a state's expenditure be less than or equal to incoming tax revenues. States hope to avoid politically unpopular and fiscally stressful expenditure deficits, by mandating their elected officials create and/or run balanced budgets. While the term "balanced budget rule" implies a complete balancing of a state's entire budget, in practice, BBRs are typically restrictions on deficit and debt stemming from their general fund. General expenditures typically concern money spent on education, police and fire protection, infrastructure, healthcare, and some social assistance. Such categories represent over 70% of a state's total budget on average. Therefore, BBRs are a limit on the allowable deficit size accruing from the general fund. Stringent rules require states to abstain completely from deficit spending, either in the

[1] Bohn and Inman (1996) discuss how the early 1990s were notable for the push both voters and politicians had for instituting a federal balanced budget rule. The rule never materialized.

[2] Bayoumi and Eichengreen (1995) assert that while balanced budget rules do reduce deficits during weak economic periods, they do so by applying considerable fiscal stress to states. Especially stringent rules reduce the fiscal flexibility and choke off potential responses, such as deficit financing.

current fiscal year or by the end of the next fiscal year. Such stringent rules require expenditure decreases or revenue increases in order to eliminate deficits. Less stringent, or weak rules allow states to run deficits from their general fund, but have some restrictions on the size of the allowed deficit and debt. Weak rules offer states more flexibility in reducing deficits, both in time and approach.

BBRs reflect the political and social cost of fiscal deficits. Deficits are costly to states and politicians, requiring expenditure reduction, revenue augmentation, and/or debt financing. Signaling a possible lack of fiscal discipline, state deficit spending is politically unpopular. To this point, Wagner (2006) finds that state deficit spending, brought on by economic contractions in the 1970s and 1980s, led to rising state debt and increased political turnover. How have BBRs performed in inducing fiscal discipline? Previous literature finds that *stringent* BBRs are associated with lower deficits, less debt, and less political manipulation of state budgets (Rose, 2008). This implies that states can induce fiscal discipline by having BBRs, but that rules should be substantially stringent. Weak rules are found to have little effect on deficit reduction and lead to higher levels of state debt. It is also important to note that the majority of deficit reduction carried out by states, regardless of the type of BBR, has been in the form of expenditure reduction. From 2008 to 2010, only 12 states sought revenue increases as a means to reduce their deficits.[3]

This paper adds to the literature on fiscal institutions by investigating the effect of BBRs on a non-general expenditure category, specifically U.S. state environmental expenditure. State environmental expenditure is defined as total spending in three separate categories, forest and park, fish and game, and natural resource management. The paper uses environmental

[3] Inman (2010) discusses how states began abandoning deficit financing shortly after the Great Recession, when national political atmosphere had grown hostile to incurring debt.

expenditure to focus on specific determinants, which may vary across spending categories, such as interest group influence. The literature on BBRs is somewhat mixed as to their role in state budgets and this study extends the discussion in order to better inform policy, rule design, and state fiscal discipline. Over the past two decades, average state general fund expenditures have risen while average tax rates have fallen, leading many states to experience fiscal stress (Rose, 2010). This stress may lead to lower levels of environmental expenditure, which may or may not be a reflection of voter and/or interest group preferences. Stringent BBRs may exacerbate this effect by reducing fiscal flexibility and further constraining state budgets. The paper sets out to answer the following questions: 1) what effect do stringent BBRs have on a non-general expenditure category, specifically environmental expenditure? 2) do BBRs interact with politics, leading to a possible political business cycle in environmental expenditures? 3) does this political business cycle appear influenced by the presence of environmental interest groups?

The paper finds that BBRs appear to have a significant effect on state environmental expenditure. Stringent BBR states are associated with 1.55% less environmental expenditure than weak rule states when the governor is a Republican. Further, the paper finds that the presence of interest groups does have a significantly positive effect on environmental expenditure in stringent rule states. Using membership data for nationally popular environmental activist groups, Greenpeace, the Sierra Club, and the National Wildlife Foundation, the paper finds that states with stringent rules and a substantial activist presence only see their environmental expenditures fall by about 0.36% when the governor is a Republican. Finally, political atmosphere appears to interact with BBRs as well. When the state governor's party does not match that of the majority in the state senate, stringent BBRs are associated with 3.36% less environmental expenditure when the governor is a Republican. This suggests that political-

mismatch exacerbates the effect of a stringent BBR. An alternative specification in which the estimation is split into stringent and weak rule states, finds that weak rule states are more impacted by the presence of interest groups. The rest of the paper is organized as follows: Section 2 discusses previous literature, while section 3 describes state BBRs and defines rule stringency. Section 4 discusses the data, empirical approach, and empirical results. Lastly, section 5 concludes the paper by summarizing the results and offering avenues for future research.

2 Literature review

Most research on BBRs has relied on empirical approaches based loosely on a median-voter framework, wherein the electorate puts forth a budget that ultimately reflects the preferences of the average voter subject to a budget constraint. Conceptually, BBRs are built into the budget constraint, establishing an upper bound on general fund expenditure. This upper bound is the level of available tax revenue. However, these upper bounds can be non-binding if the specific BBR rules are weak. To this point, much of the research assumes an electorate that faces either a stringent or weak BBR, but that the BBR itself does not change the ability of the electorate to provide the preferred level of public expenditure.[4]

In an early empirical study of BBRs, the ACIR (1987) created an index of stringency for BBRs, and used cross-section data from 1984 to find that stringent BBRs are associated with lower state deficits. On the other hand, von Hagen (1991), using a panel of data from 1975-1985, tested the same relationship and found no statistically significant impact of BBRs on deficits, but did find that stringent BBRs are associated with lower capital debt. In a panel of 48 states from

[4] Crain and Miller (1990) discuss how BBRs are effectively backstops against elected officials attempting to grow the government beyond the public's preferred level of support.

1965-1992, Alesina and Byaoumi (1996) find that stringent BBRs are associated with larger average budget surpluses. Further, they find that moving from no rule to the most stringent rule reduces cyclical variance of fiscal balance by about 40 percent.

Additional research on BBRs finds that stringent rules may lead to a reduction in fiscal flexibility. Bayoumi and Eichengreen (1995) find that states with stringent BBRs undertook less fiscal stabilization than those states with weaker rules. This indicates that BBRs may limit the ways in which a state can respond to fiscal crisis. It may be in the best interest of a state to carry a deficit over into the next year, but stringent BBRs limit this flexibility. Levinson (1998), analyzing the period 1969—1995, finds that states with stringent BBRs experience greater cyclical variability and are more prone to fiscal stress over the business cycle.

All the studies mentioned previously investigated the causal relationship between BBRs and general expenditure categories. The literature on the relationship between fiscal institutions and non-general categories is thin. List and Sturm (2004), using a panel of 48 states during the period 1960—2000, find that politics play a significant role in the level of environmental expenditure set by states. In their analysis, the composition of the electorate greatly influences environmental expenditure outcomes during elections when the governor is unable to be reelected. Economic conditions have also shown to impact environmental policy. Jacobsen (2012), utilizing data on U.S. Congressperson's League of Conservation Voters score, finds that state unemployment rates significantly affect environmental policy within the legislative branch. Both studies provide evidence that politics and economics play a significant role in the level of environmental policy at the state level.

Also crucially important is the recent work in the public finance literature to establish models that better reflect the true nature of voter and electorate preferences. Tullock (2004)

suggests that the median-voter model is lacking in its ability to include more complex, possibly multi-peaked, voter preferences. Similarly, Winer (1999) postulated that each voter's welfare was tied to their vote's ability to alter their own welfare. In other words, citizens gain higher utility by casting votes for platforms that are most likely to impact their welfare. Winer and Hettich (2004) formalized this framework into what they called *vote functions*. Each voter or group of voters has a vote function based on their own welfare. Here the potential electorate views these functions and creates party platforms based on optimal strategies to be elected. Building on this model to include interest groups, Miller and Schofield (2003) suggest that interest groups have the capacity to significantly impact party platforms, and thus budget decisions. In fact, it is likely that given substantial political power, interest groups will skew party platforms away from the average voter. The key takeaway from this framework is that the assumptions of the median voter model are too restrictive, given both the existence and apparent political power of interest groups and party platforms to alter budget decisions.

3 Budget creation framework

In order to investigate the potential for BBRs to significantly affect non-general expenditures, this paper focuses on state environmental expenditure. Environmental expenditure is chosen because, while it is considered a non-general expenditure category, voter preferences for state environmental expenditure are politically broad (Jacobsen, 2012). Environmental expenditure is used for state parks and recreation areas, fish and wildlife management, and natural resource management. In aggregate, environmental expenditure is purposed for maintaining and enriching the aesthetic and recreational value of the state. By maintaining numerous recreation areas, controlling fish and wildlife populations, and ensuring that vital natural resources are extracted in

an environmentally friendly manner, states use their environmental expenditure to provide resources for both public and private use. As List and Sturm (2006) point out however, these expenditures are viewed as a non-general expenditure category by both legislators and voters, less important than core budget categories such as education, infrastructure, and public safety. While the specific reason for this view is not clear, volatility in expenditure levels and a relatively low share of the state's budget indicate, at least anecdotally, that these expenditures are indeed viewed as non-general. Further, recent trends show movement towards a decentralized national environmental policy, wherein states take over the role of environmental stewards, suggesting that states will need to increase their own environmental budgets to maintain current standards, or resort to reducing environmental resources.[5] Moreover, the debate over environmental expenditure is politically contentious. The debate contrasts the potential reduction in economic growth of heightened environmental regulation and expenditure, with the potential for reduced aesthetic value stemming from relatively low environmental expenditures.[6]

With respect to the decision making process of budget creation, a few important issues require discussion. First is the question of who is creating the budget, and who ultimately decides the level of environmental expenditures. Budget creation at the state level is quite arduous and complicated, but the basic idea is common across states. Governors and/or state legislatures propose a fiscal year budget, and then the proposed budget is altered and approved by some majority rule. The question then becomes who decides the total level of public expenditure, and the specific levels of non-general expenditure? While it is theoretically beneficial to assume that

[5]Considering the immense fiscal stress states have found themselves in over the past several decades, the notion of state control over environmental policy become tricky. Regardless, if environmental policy is shifted to the states, then environmental policy will interact with any existing or adopted fiscal institution employed by the state.

[6] While this is a very simplified statement of a broader national debate occurring about environmental protection, it does get to the heart of the central issue of environmental spending. How and to what extent should environmental spending be based on economic efficiency or environmental quality, even if those two issues are not mutually exclusive (List and Sturm, 2006).

preferences are uni-dimensional, allowing the use of the Median-voter framework, the reality is that issues have become increasingly complex (Tullock, 2004). Expenditures are seen as being in competition with other expenditures, linking budget issues. As Hettich and Winer (1999) conclude, the simple median-voter model is likely to fall short of addressing some of the nuances of budgeting, especially for categories outside of the core budget. The growing influence of interest groups at the state level suggest that budget decisions are increasingly being made based on some party platform, rather than average population preferences (Hettich and Winer, 2004). Therefore, it is prudent that this paper address the need for an updated framework. Recent advancements in public policy equilibrium analysis have generated several frameworks that do address the added complexity of budget decisions, specifically the probabilistic spatial voting model. Here, two or more parties compete for votes by maximizing expected electoral support, while voters vote based on the influence of proposed policies to their welfare. This framework creates "expected vote functions" which parties then use to generate optimal strategies for party platforms. As mentioned above, the presence of interest groups is likely to affect budget decisions, which cause party platforms to diverge from the average voter (Schofield, 2003). Interest group and/or activist activity is heavily weighted within expected vote functions, as these groups appear to have considerable political influence. Additionally, non-general expenditure categories are especially problematic for a narrow median-voter model, as the ability of interest groups to affect those categories is likely pronounced.

3.1 Balanced budget rules

As previously discussed, the relative stringency of a BBR affects state budgets. States with stringent rules save more and have lower deficits and debt, but less fiscal flexibility. States with weak rules have less volatile fiscal mixes, greater fiscal flexibility, but higher deficits

and debt. How these rules are categorized is important to the analysis. For simplicity, we will categorize BBRs into two categories:1) stringent and 2) weak. Table 1.1 reports the breakdown among states.[7]

Nearly all states require their governor and/or state legislature submit and /or sign a balanced budget. Referred to as ex ante BBRs, these rules are *weak* on their own and in some cases accompanied with additional limits on deficits and debt. In addition, ex ante BBRs require only that the *proposed* budget be balanced, meaning that budget balancing is heavily reliant on accurate forecasting of both expenditures and revenues.

Table 1.1 State Balanced Budget Rules

States with stringent balanced budget rules (25): AL, AZ, CO, DE, FL, GA, IA, ID, IN, KS, KY, MS, MT, NE, NM, NC, OH, OK RI, SC, SD, TN, UT, WV, WY
States with weak balanced budget rules (22): AR, CA,[8] CT, IL, LA, MD, ME, MA, MI, MN, MO, NV, NH, NJ, NY, ND, OR, PA, TX, VA, WA, WI
State without a balanced budget rule (1): VT

Note: Data collected from the National Conference of State Legislatures and the National Association of State Budget Officers, 1975—2011.

These forecasts can be significantly different from realized expenditure and revenues, which may lead to state deficits. States with weak rules have, on average, higher deficits and debt, especially debt on capital. This is likely due to optimistic forecasting and the need to maintain capital investments regardless of a budget deficit. Further, ex ante BBRs do not

[7] While this does reduce the empirical breadth of the study, grouping BBRs into stringent and weak groups in common in the literature (Nice, 1991; von Hagen, 1991; Alt and Lowry, 1994). More recent studies, such as Poterba and Reuben (2001) attempt to utilize a more intricate BBR index, but the results were sensitive to empirical approach and not statistically different from the weak/stringent framework employed here.

[8] California recently voted, via voter referendum, to establish a stringent BBR in 2008, which went into effect in 2012.

prevent a state from carrying over a fiscal deficit across years. Because of this, some weak BBRs are also accompanied with additional rules on deficits and debt, though it appears most of these states do not set binding limits.[9] It is sometimes stated in the literature that weak BBRs are equivalent to having no BBRs at all, though this is somewhat misleading given the additional rules on deficits and debt. In practice, weak rules offer greater fiscal flexibility, but generally lead to higher amounts of state debt due to the allowance of deficit carry-over. For example, the state of Massachusetts has a statutory rule that requires the governor to propose a balanced budget and that the legislature sign a balanced budget, while allowing deficit carry-over in the event of over-optimistic forecasting or sudden economic contractions. As a result, Massachusetts has substantial accumulated debt per capita of more than $4,000 and has experienced budget deficits for the past several years. These BBRs are characterized by what Hou and Smith (2006) called *political* rules. Such rules constitute political pressure to propose and sign balanced budgets, but do not use formulas or other technical rules to prohibit deficit carry-over. For the purposes of this paper, weak rules are defined as rules that do permit deficit carry over. Currently, 22 states allow for deficit carry over, indicating weak BBRs.[10]

In addition to ex ante BBRs, more than half of all states have *stringent* rules that prohibit deficit carry-over, either in the current fiscal year or by the next fiscal year. Ex post BBRs specifically mandate that a state must ultimately run a balanced budget, not just propose one. Stringent BBRs force states to react to changing economic conditions during the current year to ensure that the budget is balanced by the end of the year, or that deficits are

[9] National Association of State Budget Officers, *Fiscal Survey of the States (Washington, D.C.*: National Association of State Budget Officers, 2011)

[10] National Association of State Budget Officers, *Budget Processes in the States (Washington, D.C.:* National Association of State Budget Officers. 2012*)*

eliminated by the next fiscal year. In other words, the state may be required to reduce expenditures or revenues to keep the budget balanced in the current fiscal year, or at the beginning of the next fiscal year. In the latter case, the next fiscal year budget is required to reflect the need to eliminate the deficit from the year prior. In practice, stringent rules reduce fiscal flexibility, especially during economic contractions, but lead to lower state debt by mandating strict fiscal discipline. An example of a state with stringent rules is Nebraska, where the presence of a deficit mandates specific budget balancing measures, such as a formula to reduce discretionary spending. As a result, Nebraska has relatively low accumulated debt per capita of $15.00. Hou and Duncombe (2008) referred to these as *technical* rules, often requiring specific formula approaches to deficit elimination. These rules constitute binding quantitative measures above and beyond the political pressure associated with weak rules. Currently, 25 states have binding constraints on deficit carry-over, indicating stringent rules.[11]

4 Data and empirics

To test for the effect of BBRs on a non-general expenditure, the empirical approach will involve comparing environmental expenditure among states with stringent and weak BBRs over the period of 1975-2011, controlling for interest group presence and political hostility. The analysis spans multiple periods of both economic expansion and contraction, as well as various periods of state fiscal stress. Utilizing the spatial voting framework requires the ability to control for party platforms. To do this, the paper distinguishes states by the party affiliation of the governor, who is assumed to follow the platform under which he or she

[11] National Association of State Budget Officers, *Budget Processes in the States (Washington, D.C.:* National Association of State Budget Officers. 2012*)*

were elected. To test for the effect of party platforms, the paper compares states with political party match between the governor and legislature with politically mismatched states. Another important feature of the spatial voting framework is the inclusion of interest groups, which may move budget decisions away from the average voter preferences. To test for this, data on national environmental membership by state is used to generate state specific interest group activity. The analysis tests not only the effect of BBRs on state environmental expenditure, but also how party platforms and interest group activity interact with BBRs to affect such expenditure.

4.1 Data

Table 1.2 has the means, standard deviations and definitions of the variables used. To analyze the questions discussed above, we will use data on environmental expenditures by U.S. states during the period 1975-2011.[12] There are three categories for environmental expenditure reported in the annual census of states. They are expenditures on "fish and game," "forest and parks," and "other natural resources." The paper aggregates "fish and game" and "forest and parks" as these two sub-categories are very similar in nature. Expenditure on "other natural resources" is significantly different, encompassing administrative expenses required for resource management and extraction.

The regressor of interest will be a dichotomous BBR variable, which equals 1 if the state has a stringent rule, and 0 otherwise. To control for political platforms, data on party affiliation for each state governor is collected, as well as the majority party of each state legislature over the same period. The party affiliation data are broken down into Republican

[12] This is an updated version of the data used in List and Sturm (2004), who kindly made their data available.

or Democrat.[13] For the purposes of the paper, the variable *party* equals 1 if the governor is a republican, and 0 otherwise. To acknowledge the potential influence of interest groups, data on environmental group membership by state was collected.[14]

Table 1.2 Means, Standard Deviations and Variable Definitions

variable	mean (std. dev.)	definition
totenvexp	30.27 (17.21)	per capita total state environmental expenditure and the sum of parks, forest, game, and natural resources
forest_game	14.21 (8.53)	per capita state expenditure on parks, forest, and game
natural_resource	16.06 (7.21)	per capita state expenditure on natural resources
bbr	0.52 (0.19)	=1 if state has stringent bbr, 0 otherwise
green	0.21 (0.11)	=1 if state is within the top ten states based on percentage of the population that is a member of at least one environmental interest group, 0 otherwise
party	0.42 (0.21)	=1 if the governor is a republican, 0 otherwise
hostile	0.31 (0.17	=1 if the governor and state legislature are a party mismatch, 0 otherwise
med_income	0.03 (0.04)	median income (millions)
population	4.99 (5.12)	total state population (millions)
kids	20.81 (2.94)	percentage of the population between ages 5 and 17
aged	11.82 (2.02)	percentage of the population above age of 65

Note: Expenditures and state income are deflated to 2000—2001 dollars.

Data on Greenpeace, the Sierra Club, and the National Wildlife foundation are used to generate the percent of total state population that is a member of any of these, which is then ranked across all states.[15] From this, a dummy variable, *green*, is created equaling 1 if the

[13] While a third category (Independent) exists, less than 15 instances of Independent governors show up across more than 1700 data points.

[14] Institute for Southern Studies, *Green Index* (Washington, DC: Island Press, 2005)

[15] The percentage varies across states with a high of 4.6% in Oregon and a low of 0.9% in Arkansas.

state is in the top ten among states with respect to green interest group presence, and 0 otherwise.[16] Lastly, to account of political hostility, data on the party in majority rule of each state senate is collected, with the variable *hostile* equaling 1 if the state has a mismatch between the governor and state legislator, and 0 otherwise.

State spending data is collected from the U.S. Census Bureau's Annual Survey of State Government Finances, 1975—2011. Data on Balanced Budget Rules are collected from the National Association of State Budget Officers (NASBO) and the National Conference of State Legislatures (NCSL). While RDF adoption and budget rule data are an updated version of data used previously in much of the literature.[17]

4.2 Empirical approach

The model of choice is a Fixed-Effects panel Estimation. The FE estimator controls for unobserved individual random effects (δ_i), which in this case would be state-level effects. It does so by mean-differencing data, which causes difficulty relative to time-invariant BBRs. The reason this difficulty arises is that the FE estimator performs an OLS on mean-differenced data. This means that mean-differencing on time-invariant data results in observations, and parameter estimates, equal to zero. Because the paper is interested in estimating the effects of time-invariant BBRs on environmental expenditure, simply including them in the model would be unproductive (Cameron & Trivedi, 2010). A useful alternative might be a Random-Effects estimation, in which the time-invariant BBR could be placed into the model. However, given the use of state level data and the propensity for individual state effects to persist over time, the RE is troublesome due to a likely

[16] Ranking each state and then setting an arbitrary cutoff for inclusion may lead to selection bias. To test for this, sensitivity tests were run for different cut-offs, top five, top twenty, etc… Increasing the inclusion rate significantly reduced the model's explanatory power, indicating that while arbitrary, the top ten appears statistically satisfactory as a cut off.

[17] Wagner (2004) kindly made his data available.

violation of the *unrelated effects* assumption (Wooldridge, 2002).[18] To assist in the decision over which estimator fits best, a Hausman Test is run to compare the estimates across the FE and RE estimators. The Hausman test produces a significant p-value (chi2(1) = 207.38 and prob>chi2 = 0.0000), which indicates that the FE estimator is superior to the RE estimator for the purposes of this paper.

The dichotomous nature of the BBR variable may appear to oversimplify reality. However, the most important factor regarding BBR design is whether a state has binding constraints on deficit carry over (Hou and Duncombe, 2008). The National Association of State Budget Offices (NASBO) surveyed states regarding their BBR design and categorized each state as having a stringent or weak balanced budget rule based on whether they had binding constraints on deficit carry over. This standard rating can be found in Table A.1 of Appendix A, which also lists whether a state has a constitutional or statutory BBR. While it may cause some interpretation issues, there is little reason to believe that such a dichotomous variable would bias results.

Therefore, the paper proceeds by utilizing a FE estimator and relying on interaction terms to allow inclusion of the time-invariant BBR variable. Relying on interaction terms creates some additional econometric issues. First, since the effect of stringent BBRs cannot be isolated, their impact must be interpreted as functions of other variables (here political party of the governor). Therefore, the paper can only isolate effects in states with a governor from a particular party. Second, since this method cannot estimate the impact of BBRs in states with either political party, the estimated impacts will be the difference in effects of BBRs across states with governors from different parties (Wooldridge, 2002). Third, in order to overcome some of the

[18] The *unrelated effects* assumes that the state-specific effect is uncorrelated with the explanatory variables of all past, current and future time periods of the same state.

two issues just mentioned, the model also includes full interactions of all other indicator variables to account for the lack of model detail.

Initially, a preliminary model is utilized to estimate the effect of politics and interest group influence on environmental expenditure. To do so, the paper estimates a fixed effects panel estimation similar to Besley and Case (1995) and List and Sturm (2006), which include demographic and socioeconomic control variables, as well as time and state fixed effects. The model is fully interacted among the three indicator variables, *party*, *green*, and *hostile*, which creates:

$$lntotenvexp_{it} = \alpha + \gamma_1 party_{it} + \gamma_2 green_{it} + \gamma_3 hostile_{it} + \gamma_4(party_{it} * green_{it}) + \gamma_5(party_{it} * hostile_{it}) + \gamma_6(green_{it} * hostile_{it}) + \gamma_7(party_{it} * green_{it} * hostile_{it}) + \beta X_{it} + \delta_i + \varphi_t + t_i + \varepsilon_{it} \quad (1)$$

where $lntotenvexp_{it}$ is the natural log of environmental expenditure in state i at time t. Here we log the dependent variable for analysis purposes, as is commonly done in the literature (Besley and Case, 2003) for ease of interpretation. The variables *party*, *green*, and *hostile* are dummy variables indicating governors' party affiliation, whether the state is in the top ten with respect to green interest group presence, and years in which the governor and legislature are a party mismatch respectively. Additionally, state fixed effects δ_i , time fixed effects φ_t, and state specific time trends t_i are included in the specification. The variable X_{it} is a vector containing state demographic and income data. These include total state population, the percentage of the population between 5 and 17, the percentage of the population above 65, and median income. Lastly, ε_{it} is a contemporaneous error term.

To analyze the impact of stringent BBRs, the preliminary specification (1) is extended by interacting the variable $party$ with the variable bbr. The variable bbr has a value of 1 if the state has a stringent BBR and 0 otherwise. Adding the interactions to (1) creates:

$$lntotenvexp_{it} = \alpha + \gamma_1 party_{it} + \gamma_2 green_{it} + \gamma_3 hostile_{it} + \gamma_4(party_{it} * green_{it}) + \gamma_5(party_{it} * hostile_{it}) + \gamma_6(green_{it} * hostile_{it}) + \gamma_7(party_{it} * green_{it} * hostile_{it}) + \gamma_8(party_{it} * bbr_i) + \beta X_{it} + \delta_i + \varphi_t + t_i + \varepsilon_{it} \quad (2)$$

Lastly, to test for the effect of interest groups and political hostility on environmental expenditures, specification (2) is extended by interacting *bbr* with *green*, and then *bbr* with *hostile*. Placing these full interactions into the model creates (3) and (4):

$$lntotenvexp_{it} = \alpha + \gamma_1 party_{it} + \gamma_2 green_{it} + \gamma_3 hostile_{it} + \gamma_4(party_{it} * green_{it}) + \gamma_5(party_{it} * hostile_{it}) + \gamma_6(green_{it} * hostile_{it}) + \gamma_7(party_{it} * green_{it} * hostile_{it}) + \gamma_8(party_{it} * bbr_i) + \gamma_9(bbr_i * green_{it}) + \gamma_{10}(party_{it} * bbr_i * green_{it}) + \beta X_{it} + \delta_i + \varphi_t + t_i + \varepsilon_{it} \quad (3)$$

$$lntotenvexp_{it} = \alpha + \gamma_1 party_{it} + \gamma_2 green_{it} + \gamma_3 hostile_{it} + \gamma_4(party_{it} * green_{it}) + \gamma_5(party_{it} * hostile_{it}) + \gamma_6(green_{it} * hostile_{it}) + \gamma_7(party_{it} * green_{it} * hostile_{it}) + \gamma_8(party_{it} * bbr_i) + \gamma_9(bbr_i * hostile_{it}) + \gamma_{10}(party_{it} * bbr_i * hostile_{it}) + \beta X_{it} + \delta_i + \varphi_t + t_i + \varepsilon_{it} \quad (4)$$

4.3 Results

Table 1.3 reports a summary of estimation results when a Republican is governor. Column 1 of Table 1.3 reports the results from the fully interacted preliminary specification (1). States with higher concentrations of "green" populations (ranked in the top ten nationally) have 1.78% higher per capita environmental expenditure than non-green states. States with political mismatch between the governor and state legislature have nearly 1.17% lower per capita environmental expenditure than states with political harmony among the governor and state legislature. The interaction of hostile and green yields a significantly positive result (0.35%), suggesting that the greenness of the population overcomes the lack of political match. Lastly, the full interaction of *party*, *green*, and *hostile* is significantly positive, suggesting that regardless of political affiliation of the governor or the lack of match between the governor and legislature, greenness still has a positive effect (0.14%) on per capita environmental expenditure.

Column 2 of Table 1.3 reports the second estimation (2), which includes the interaction of the variable bbr with $party$. The estimation on this interaction suggests that per capita environmental expenditure is 1.55% lower when a Republican governor faces a stringent BBR.

Column 3 of Table 1.3 reports specification (3), which further augments the interaction by fully interacting the variables *bbr* and *green*. This interaction finds that the greenness of a state mitigates the negative effect of stringent BBRs on per capita environmental expenditure, with stringent and green states only having 0.36% lower environmental expenditure when the governor is a Republican.

Table 1.3 The Political Economy of BBRs: Fixed Effects Panel Estimation

	lntotenvexp (1)	lntotenvexp (2)	lntotenvexp (3)	lntotenvexp (4)
party	-0.0077	-0.0073	-0.0075	-0.0073
	(0.78)	(0.79)	(0.91)	(0.88)
green	0.0096	0.0083	0.0083	0.0075
	(1.97)*	(1.87)*	(1.85)*	(1.93)*
hostile	-0.0068	-0.0087	-0.0065	-0.0061
	(2.44)**	(2.39)**	(2.29)**	(2.22)**
party*green	0.0033	0.0029	0.0028	0.0038
	(1.77)*	(1.78)*	(1.75)*	(1.72)*
party*hostile	-0.0072	-0.0067	-0.0066	-0.0062
	(1.35)	(1.03)	(1.11)	(1.04)
green*hostile	0.0035	0.0037	0.0038	0.0031
	(2.35)**	(2.48)**	(2.28)**	(2.45)**
party*green*hostile	0.0014	0.0012	0.0015	0.0011
	(1.76)*	(1.93)*	(1.83)*	(1.84)*
party*bbr		-0.0196	-0.0182	-0.0186
		(1.73)*	(2.13)**	(1.72)*
bbr*green			0.0032	
			(4.21)***	
party*bbr*green			0.0114	
			(2.62)**	
bbr*hostile				-0.0067
				(2.38)**
party*bbr*hostile				-0.0083
				(2.47)**
med_income	-0.0664	-0.0534	-0.0552	-0.0530
	(1.65)*	(1.81)*	(1.69)*	(1.74)*
population	0.1082	0.0982	0.0998	0.0862
	(1.84)*	(1.93)*	(2.03)*	(1.43)
kids	-0.0163	-0.0265	-0.0172	-0.0162
	(1.25)	(1.13)	(0.89)	(1.03)
aged	0.0438	0.0562	0.0548	0.0478
	(1.88)*	(1.94)*	(1.15)	(1.07)
_cons	3.7721	3.5452	3.4432	3.8282
	(2.85)***	(2.99)***	(3.07)***	(2.78)***
R^2	0.58	0.59	0.61	0.64
N	1,776	1,776	1,776	1,776

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

party=1 if governor is republican

Table 1.4 The Political Economy of BBRs: Fixed Effects Panel Estimation for Sub-categories

	lnforest	lnnatural	lnforest	lnnatural
party	-0.0058	-0.0080	-0.0044	-0.0091
	(0.91)	(1.99)*	(0.66)	(2.29)**
green	0.0064	0.0088	0.0074	0.0068
	(2.23)**	(1.63)*	(2.83)***	(1.33)
hostile	-0.0037	-0.0088	-0.0033	-0.0091
	(1.25)	(2.94)***	(1.11)	(2.89)***
party*green	0.0013	0.0036	0.0010	0.0037
	(1.77)*	(0.78)	(1.05)	(0.55)
party*hostile	-0.0056	-0.0077	-0.0049	-0.0082
	(1.35)	(1.69)*	(1.22)	(2.59)**
green*hostile	0.0068	0.0058	0.0064	0.0055
	(2.35)**	(2.21)**	(2.31)**	(3.11)***
party*green*hostile	0.0019	0.0025	0.0018	0.0028
	(1.61)*	(1.03)	(1.73)*	(1.31)
party*bbr	-0.0053	-0.0130	-0.0061	-0.0112
	(1.94)*	(1.77)*	(2.04)**	(1.57)
bbr*green	0.0033	0.0022		
	(1.08)	(1.36)		
party*bbr*green	0.0035	0.0083		
	(2.03)**	(2.45)**		
bbr*hostile			-0.0026	-0.0063
			(1.21)	(1.27)
party*bbr*hostile			-0.0089	-0.0173
			(1.77)*	(2.44)**
med_income	0.0051	-0.1720	0.0062	-0.1730
	(1.89)*	(0.89)	(1.65)*	(1.02)
population	0.1992	0.1125	0.1002	0.1064
	(2.43)**	(1.87)*	(1.65)*	(1.34)
kids	-0.0246	-0.0203	-0.0187	-0.0192
	(1.98)*	(1.14)	(1.82)*	(0.83)
aged	0.0239	0.0560	0.0303	0.0473
	(2.44)*	(1.85)*	(2.38)**	(1.38)
_cons	2.6538	4.8731	2.3132	4.6212
	(3.02)***	(3.38)***	(2.83)***	(3.55)***
R^2	0.53	0.58	0.49	0.59
N	1,776	1,776	1,776	1,776

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

party=1 if governor is republican

Column 4 of Table 1.3 reports the fourth estimation, which fully interacts the variables *bbr* and *hostile*. This interaction finds that political mismatch exacerbates the negative effect of BBRs on per capita environmental expenditure, with stringent and hostile states having about 3.36% lower environmental expenditure when the governor is a Republican.

Table 1.4 reports the effects on the two environmental expenditure sub-categories, forest and game, and natural resources. In stringent rule states, forest and game spending falls on average 0.57%, while natural resource management spending falls on average 1.21%. The effects of greenness and political hostility appear to impact the two sub-categories effectively equally, and in the same direction as our initial estimation.

In order to address some of the statistical issues stemming from the initial empirical approach, an alternative specification is utilized. Results from this alternative specification, wherein the data are split between stringent and weak states, are reported in Table 1.5. There are three statistically different coefficients across the two estimations, suggesting that stringent and weak rules states vary across those variables. The coefficients on *green*, the interaction of *green* and *hostile*, and the interaction between *party*, *green*, and *hostile* are all positive and significantly different across the two types of states. The impact of greenness across these three variables results in 1.98% higher per capita environmental expenditure in weak rule states, and 0.97% higher environmental expenditure in stringent rule states.

Table 1.5 The Political Economy of BBRs: Fixed Effects Panel Estimation for Alternative Specification

	lntotenvexp (bbr = 1)	lntotenvexp (bbr = 0)	test across models
party	-0.0101	-0.0060	chi2 (1) = 4.02
	(0.99)	(0.79)	Prob>chi2 = 0.2366
green	0.0059	0.0088	chi2 (1) = 27.25
	(1.97)*	(1.91)*	Prob>chi2 = 0.0041
hostile	-0.0077	-0.0057	chi2 (1) = 7.02
	(2.44)**	(2.39)**	Prob>chi2 = 0.1312
party*green	0.0018	0.0061	chi2 (1) = 6.77
	(1.77)*	(1.78)*	Prob>chi2 = 0.1576
party*hostile	-0.0086	-0.0051	chi2 (1) = 6.59
	(1.00)	(0.89)	Prob>chi2 = 0.1731
green*hostile	0.0020	0.0073	chi2 (1) = 25.09
	(1.89)*	(2.21)**	Prob>chi2 = 0.0073
party*green*hostile	0.0018	0.0037	chi2 (1) = 22.89
	(1.21)	(2.29)**	Prob>chi2 = 0.0098
med_income	0.0771	-0.0690	
	(1.76)*	(1.23)	
population	0.1057	0.1011	
	(2.21)**	(1.73)*	
kids	-0.0217	-0.0273	
	(0.88)	(1.11)	
aged	0.0399	0.0441	
	(1.99)*	(2.21)**	
_cons	3.9381	3.0134	
	(4.01)***	(2.65)**	
R^2	0.64	0.69	
N	925	851	

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

party=1 if governor is republican

In summary, there is evidence that BBRs significantly affect the level of environmental expenditure budgeted by states. Stringent BBRs are associated with 1.55% less per capita environmental expenditure when the governor is a Republican. The greenness of a state mitigates the negative effect of stringent BBRs on per capita environmental

expenditure, with stringent and green states only having 0.36% lower environmental expenditure when the governor is a Republican. Political mismatch appears to exacerbate the effect, with stringent and hostile states having about 3.36% lower environmental expenditure when the governor is a Republican. Results from the alternative specification indicate that weak rule states are more affected by green interest group presence, with greenness correlated with 1.98% higher per capita environmental expenditure in weak rule states, and 0.97% higher environmental expenditure in stringent rule states.

In addition to the specifications discussed above, and to account for some of the econometric issues of utilizing the time-invariant BBR variable, a robustness check is instituted to test for the impact of realized balanced budgets on environmental expenditure. The results from this robustness check can be found in Table B.1 of Appendix B, which show that in years when states had a balanced budget, environmental expenditure was 1.30% lower when the governor was a Republican. Greenness appears significant, increasing per capita environmental expenditure by 2.55%, while political hostility is also significant, decreasing environmental expenditure by 1.27%.

5 Conclusion

Using panel data on U.S. state environmental expenditures from 1975-2011, the analysis finds evidence that stringent balanced budget rules may lead to lower levels of non-general expenditure, specifically environmental expenditure. Per capita Environmental expenditure is 1.55% lower when the state faces a stringent BBR and has a Republican Governor. The presence of environmental interest groups does appear to have significant effects on state environmental expenditure, with stringent states in the top ten nationally in green interest

group presence only having 0.36% lower per capita environmental expenditure when the governor is a Republican. Additionally, politics appear to interact with BBRs, with per capita environmental expenditure 3.36% lower in stringent states with political mismatch and a Republican governor. Results from the alternative specification indicate that weak rule states are more affected by green interest group presence, with greenness correlated with 1.98% higher per capita environmental expenditure in weak rule states, and 0.97% higher environmental expenditure in stringent rule states.

The findings in this paper point to the inherent political nature of budget creation. When faced with the task of balancing a budget, politicians are likely politically influenced, and incentivized to choose levels of non-general expenditure categories that are in line with the platforms that resulted in their election. Platforms are created from vote function taking into consideration both the median voter and interest groups. Non-general expenditure is more discretionary and are politically more important to specific interest groups than the median voter. Therefore, the presence of interest groups should skew the expenditure outcomes away platforms favoring the average voter. Compounding this issue are state balanced budget rules. These rules further constrain state budgets and exacerbate the political influence of non-general expenditure categories. Furthermore, with the historic trend of higher general fund expenditure and lower tax revenues, states are likely to find themselves with fiscal stress for the time being. Perhaps a reexamination of state balanced budget rules is in order after consideration of recent trends. Otherwise, general expenditures are going to continue to rise, potentially choking off non-general expenditures, unless significant concentrations of interest groups overcome this effect.

Given the popularity of state balanced budget rules and the evolution of state budgets over the past several decades, additional research is necessary to fully understand the impact of these rules. One avenue of research would be to create an index of balanced budget rule stringency, similar to Hou and Duncombe (2008), but more reflective of the political pressure to balance budgets. For example, no BBR index accounts for the presence of other fiscal institutions, such as Rain Day Funds and Tax and Expenditure Limits. Additionally, the interaction of balanced budget rules and gubernatorial term limits may lead to various outcomes for different types and levels of state expenditure. Lastly, no study as analyzed the regional economic impacts of clusters of states whose BBRs are relatively stringent.

Appendix A

Table A.1 BBRs among US states as of FY2012			
	BBRs (Type)		
Alabama	Constitutional (Stringent)	Nebraska	Constitutional (Stringent)
Arizona	Constitutional (Stringent)	Nevada	Statute (Weak)
Arkansas	Statute (Weak)	New Hampshire	Statute (Weak)
California	Constitutional (Stringent)[19]	New Jersey	Constitutional (Weak)
Colorado	Constitutional (Stringent)	New Mexico	Constitutional (Stringent)
Connecticut	Statute (Weak)	New York	Constitutional (Weak)
Delaware	Constitutional (Stringent)	North Carolina	Constitutional (Stringent)
Florida	Constitutional (Stringent)	North Dakota	Constitutional (Weak)
Georgia	Constitutional (Stringent)	Ohio	Constitutional (Stringent)
Idaho	Constitutional (Stringent)	Oklahoma	Statute (Stringent)
Illinois	Constitutional (Weak)	Oregon	Constitutional (Weak)
Indiana	Statute (Stringent)	Pennsylvania	Constitutional (Weak)
Iowa	Constitutional (Stringent)	Rhode Island	Constitutional (Stringent)
Kansas	Constitutional (Stringent)	South Carolina	Constitutional (Stringent)
Kentucky	Constitutional (Stringent)	South Dakota	Constitutional (Stringent)
Louisiana	Constitutional (Weak)	Tennessee	Constitutional (Stringent)
Maine	Constitutional (Weak)	Texas	Constitutional (Weak)
Maryland	Constitutional (Weak)	Utah	Constitutional (Stringent)
Massachusetts	Constitutional (Weak)	Vermont	
Michigan	Constitutional (Weak)	Virginia	Non-Constitutional (Weak)
Minnesota	Constitutional (Weak)	Washington	Statute (Weak)
Mississippi	Statute (Stringent)	West Virginia	Constitutional (Stringent)
Missouri	Constitutional (Weak)	Wisconsin	Constitutional (Weak)
Montana	Statute (Stringent)	Wyoming	Non-Constitutional (Stringent)

[19] California voters recently voted in a stringent balanced budget requirement, after decades of the state having a weak balanced budget rule.

Appendix B

Table B.1 The Political Economy of BBRs: Fixed Effects Panel Estimation Robustness Check

	lntotenvexp	lntotenvexp	lntotenvexp	lntotenvexp
party	-0.0077	-0.0103	-0.0100	-0.0087
	(1.18)	(0.99)	(1.08)	(1.04)
balanced		-0.0043	-0.0027	-0.0029
		(2.27)**	(1.83)*	(1.68)*
party*balanced		-0.0087	-0.0092	-0.0076
		(2.89)***	(2.33)**	(2.15)**
green			0.0073	
			(2.09)**	
party*green			0.0022	
			(1.39)	
balanced*green			0.0073	
			(1.94)*	
party*balanced*green			0.0107	
			(2.39)**	
hostile				-0.0034
				(2.32)**
party*hostile				-0.0023
				(1.73)*
balanced*hostile				-0.0014
				(2.54)**
party*balanced*hostile				-0.0056
				(2.22)**
med_income	-0.0734	-0.0717	-0.0701	-0.0730
	(1.89)*	(1.75)*	(1.77)*	(1.69)*
population	0.1023	0.1033	0.1002	0.0914
	(1.92)*	(1.87)*	(1.68)*	(1.65)*
kids	-0.0163	-0.0265	-0.0172	-0.0195
	(0.98)	(1.13)	(0.99)	(1.03)
aged	0.0371	0.0397	0.0403	0.0425
	(1.92)*	(1.76)*	(1.18)	(1.07)
_cons	3.1065	3.1732	3.0132	3.4282
	(2.65)***	(2.74)***	(3.02)***	(3.33)***
R^2	0.44	0.42	0.53	0.62
N	1,776	1,776	1,776	1,776

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

party=1 if governor is republican

References

Abrams, Burton A., and William R. Dougan, 1986. "The Effects of Constitutional Restraints on Governmental Spending." *Public Choice* 49 (2), 101–116.

Advisory Commission on Intergovernmental Relations, 1961. *State Constitutional and Statutory Restrictions on Local Government*. U.S. Government Printing Office, Washington, DC.

Advisory Commission on Intergovernmental Relations, 1987. *Fiscal Discipline in the Federal System: National Reform and the Experience of States*. U.S. Government Printing Office, Washington, DC.

Alesina, Alberto, and Tamim Bayoumi, 1996. "The Costs and Benefits of Fiscal Rules: Evidence from U.S. States." NBER Working Paper No. 5614.National Bureau of Economic Research, Cambridge, MA.

Alesina, Alberto, and Roberto Perotti, 1996. "Fiscal Discipline and the Budget Process." *American Economic Review* 86 (2), 401–407.

Alt, James E., and Robert C. Lowry, 1994. "Divided Government, Fiscal Institutions, and Budget Deficits: Evidence from the States." *American Political Science Review* 88 (4), 811–828.

Bayoumi, Tamim, and Barry Eichengreen, 1995. "Restraining Yourself: The Implications of Fiscal Rules for Economic Stabilization." *International Monetary Fund Staff Papers* 42 (1), 32–48.

Bertrand, Marianne; Esther Duflo and Sendhil Mullainathan, 2004 "How Much Should We Trust Differences-in-Differences Estimates?",*Quarterly Journal of Economics*, 119(1), 249-75.

Bergstrom, Theodore C. and Robert P. Goodman, 1973. "Private Demands for Public Goods," *American Economic Review* 63(3), 280-96.

Besley, Timothy and Robin Burgess, 2002 "The Political Economy of Government Responsiveness: Theory and Evidence from India", *Quarterly Journal of Economics*, 117(4), 1415-52.

Besley, Timothy and Anne Case, 1995 "Does Electoral Accountability Affect Economic Policy Choices? Evidence from Gubernatorial Term Limits", *Quarterly Journal of Economics*, 60(3), 769-98.

Besley, Timothy and Anne Case, 2003 "Political Institutions and Policy Choices: Evidence from the United States", *Journal of Economic Literature*, 41(1), 7-73.

Bohn, Henning, and Robert P. Inman, 1996. "Balanced Budget Rules and Public Deficits: Evidence from the U.S. States." NBER Working Paper No. 5533.National Bureau of Economic Research.

Buchanan, James M., and Richard Wagner, 1977. "*Democracy in Deficit: The Political Legacy of Lord Keynes."* Academic Press, New York, NY.

Buchanan, James M., 1958. *Public Principles of Public Debt: A Defense and Restatement*. Richard D. Irwin Publishers, Homewood, IL.

Cameron, A. C., and P. K. Trivedi (1986), "Econometric Models Based on Count Data: Comparisons and Applications of Some Estimators," *Journal of Applied Econometrics*, 1, 29–53.

Center for Budget and Policy Priorities, 2012. "Reducing Federal Deficits Without a Significant Revenue Increase Would Shift Substantial Costs to States." Center for Budget and Policy Priorities, December 6th, 2012.

Cox, James, and David Lowery, 1990. "The Impact of the Tax Revolt Era State Fiscal Caps." *Social Science Quarterly* 71 (3), 492-509.

Crain, W. Mark, and James C. Miller, III, 1990. "Budget Process and Spending Growth." *William and Mary Law Review* 31 (4), 1021–1046.

Fatás, Antonio, and Ilian Mihov, 2006. "The Macroeconomic Effects of Fiscal Rules in the U.S. States." *Journal of Public Economics* 90 (1–2), 101–117.

Gold, Steven D. "Contingency Measures and Fiscal Limitations: The Real World Significance of Some Recent State Budget Innovations." *National Tax journal* 37 No. 3 (September, 1984): 421-32.

Heyes, Anthony, and Bouwe Dijkstra, 2002 "Interest Groups and the Demand for Environmental Policy," in *International Yearbook of Environmental and Resource Economics 2001/2002*.

Hou, Yilin, 2004. "Budget Stabilization Fund: Structural Features of Enabling Legislation and Balance Levels." *Public Budgeting and Finance* 24 (3), 38–64.

Hou, Yilin, and William Duncombe, 2008. "State Saving Behavior: Effects of Two Fiscal and Budgetary Institutions." *Public Budgeting and Finance* 28 (3), 48–67.

Hou, Yilin, and Daniel L. Smith, 2006. "A Framework for Understanding State Balanced Budget Requirement Systems: Reexamining Distinctive Features and an Operational Definition." *PublicBudgeting and Finance* 26 (3), 22-45.

Hou, Yilin, and Daniel L. Smith, 2010. "Do State Balanced Budget Requirements Matter? Testing Two Explanatory Frameworks." *Public Choice* 145, 57–79.

Inman, Robert (2010) "States in Fiscal Distress" NBER Working Paper No. 16086, National Bureau of Economic Research, June 2010; http://www.nber.org/papers/w16086

Joyce, Philip G., and Daniel R. Mullins, 1991. "The Changing Fiscal Structure of the State and Local Public Sector: The Impact of Tax and Expenditure Limitations." *Public Administration Review* 51 (3), 240–253.

Jacobsen, Grant, 2011. "Do Economic Conditions Influence Environmental Policy? Evidence from the U.S. Congress", University of Oregon Working Papers.

Kiewiet, D. Roderick, and Kristin Szakaly, 1996. "Constitutional Limitations on Borrowing: An Analysis of State Bonded Indebtedness." *The Journal of Law, Economics, and Organization* 12 (1), 62–97.

Levinson, Arik, 1998. "Balanced Budgets and Business Cycles: Evidence from the States." *National Tax Journal* 51 (4), 715–732.

List, John and Daniel Sturm, 2006. "How Elections Matter: Theory and Evidence from Environmental Policy," *Quarterly Journal of Economics*, 121(4), November 2006, 1249-1281.

Lowry, Robert C., and James E. Alt, 2001. "A Visible Hand? Bond Markets, Political Parties, Balanced Budget Laws, and State Government Debt." *Economics and Politics* 13 (1), 49–72.

Miller, Gary and Norman Schofield, 2003. "Activists and Party Realignment in the United States." *American Political Science Review* 97(2), 245-260.

Mourouga, 2008, "A Review of Random Effects Modeling in Stata", Ligue nationale Contre Le Cancer, Paris.

Mullins, Daniel R., and Philip G. Joyce, 1996. "Tax and Expenditure Limitations and State and Local Fiscal Structure: An Empirical Analysis." *Public Budgeting and Finance* 16 (1), 75–101.

Nice, David C., 1991. "The Impact of State Policies to Limit Debt Financing." *Publius* 21 (1), 69–82.

National Association of State Budget Officers, 2008—2012. "Annual Fiscal Survey of the States." *Washington, D.C.:* National Association of State Budget Officers.

Nicholas, J. and Donald J. Boyd. "A Second Quarter of Slow State Tax Revenue Growth." *State Revenue Report* No 44. Nelson A. Rockefeller Institute of Government, June 2001.

Nicholas, J. and Donald J. Boyd. "State Budgetary Assumptions in 2001 – States Will Be Lowering Their Economic Forecasts." *State Fiscal Brief* No. 62. Nelson A. Rockefeller Institute of Government. May 2001.

Poterba, James M., 1994. "State Responses to Fiscal Crises: The Effects of Budgetary Institutions and Politics." *The Journal of Political Economy* 102 (4), 799–821.

Poterba, James M., 1995. “Balanced Budget Rules and Fiscal Policy: Evidence from the States.” *National Tax Journal* 48 (3), 329–336.

Poterba, James M., 1997. "Demographic Structure and the Political Economy of Public Education," Journal of Policy Analysis and Management, John Wiley & Sons, Ltd., vol. 16(1), pages 48-66.

Poterba, James M., and Kim Rueben, 2001. “Fiscal News, State Budget Rules, and Tax-Exempt Bond Yields.” *Journal of Urban Economics* 50 (3), 537–562.

Rose, Shanna, 2006. “Do Fiscal Rules Dampen the Political Business Cycle?” *Public Choice* 128 (3), 407–431.

Rose, Shanna. 2010. Institutions and Fiscal Sustainability. *National Tax Journal* 63, no. 4: 807–38.

Schofield, Norman (2003). "Valence Competition in the Spatial Stochastic Model". *Journal of Theoretical Politics* 15(4), 371-383.

Shadbegian, Ronald J., 1996. “Do Tax and Expenditure Limitations Affect the Size and Growth of State Government?” *Contemporary Economic Policy* 14 (1), 22–35.

Tullock, Gordon (2004). "Problems of Voting". Unpublished paper presented at the Public Choice Meetings, Baltimore, March 2004.

von Hagen, Jürgen, 1991. “A Note on the Empirical Effectiveness of Formal Fiscal Restraints.” *Journal of Public Economics* 44 (2), 199–210.