

# The Hidden Consequences of Balanced Budget Requirements

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## **Abstract**

This paper investigates the potential unintended consequences of balanced budget requirements. The goal of balanced budget provisions is to enhance state government accountability by curtailing deficit spending. Consistent with this idea, Poterba (1995) finds that in economic downturns states with strong balanced budget requirements are more likely to cut spending than states that have weak balanced budget rules. In this paper, we extend Poterba's analysis, investigating the other actions states take when facing balanced budget requirements. We find that when facing fiscal problems, state governments tend to sell public assets and engage in accounting gimmicks like inter-temporal shifting of expenses to meet balanced budget requirements. We also find that the assets are more likely to be sold at a loss in states facing strict balanced budget requirements, suggesting that balanced budget requirements may increase the chances of states having fire sales. We conclude our analysis by investigating the interaction between the use of accounting gimmicks and asset sale behavior, finding that states are less likely to sell assets if they shift expenses into future periods. Overall, the results of this paper should be interesting to both academics and practitioners. Specifically, our paper provides evidence on the consequences of control mechanisms, and highlights the tradeoffs between accounting discretion and asset sale behavior in a governmental setting. In particular, there has been a mounting criticism against the discretion in state government accounting choices, and our paper highlights some of the benefits of this discretion.

## 1. Introduction

In U.S. state governments, budgeting and balanced budget requirements are ubiquitous. Every state has a budget, and every state other than Vermont has some form of constraint on fiscal discretion, including requirements for governors to submit a balanced budget, requirements for legislatures to pass a balanced budget, restrictions on rolling over a deficit, and restrictions on issuing debt to cover the deficit. The wide use of balanced budget requirements suggests that state governments perceive balanced budget requirements to be net beneficial.

In this paper we examine the consequences of balanced budget restrictions. Existing research finds that balanced budget restrictions result in reductions of expenditures.<sup>1</sup> We extend this literature by investigating whether states with relatively more strict balanced budget requirements sell-off assets, sell assets at lower prices, or engage in other actions like delaying payment on incurred expenditures to meet balanced budget requirements in periods where states face fiscal difficulties.

There is a long literature suggesting that organizations use elements of their accounting systems to control agent's behavior and that budgets are one of the more common control mechanisms (see Zimmerman (2001) for a survey of this literature). Similarly, Becker and Green (1962) suggest that the use of budgets by municipalities and state governments appears to have become popular during the 19<sup>th</sup> century, and they were an important part of municipal reform as they were often used as a mechanism to coordinate accounting policies across different branches of governments and to control the behavior of elected officials.<sup>2</sup> However, there are likely to be additional consequences when states use the budget as a control mechanism. For example, Murphy (2000) argues that when firms use budgeted numbers in compensation

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<sup>1</sup> See Poterba (1996) for a summary of this research.

<sup>2</sup> For a more in depth discussion of the adoption of balanced budget rules in the 1840's and 1850's see <http://www.iie.com/publications/wp/wp12-1.pdf>

packages, managers have incentives to distort budgeted numbers (sandbag the budget) and to take actions to avoid unusually large positive earnings realizations which may influence future payouts. Leone and Rock (2002) and Bouwens and Kross (2011) provide evidence that firms that employ ratcheting budgets will engage in income decreasing earnings management or real earnings management (reducing selling activities) once they meet their targets.

While these papers focus on the effects of ratcheting budgets in corporations, we explore the consequences of balanced budget restrictions in governmental entities. Balanced budget rules require organizations to either limit their expenditures or increase their revenues (taxes) to ensure that revenues exceed expenses in any given fiscal period. The least restrictive balanced budget rules require expected expenditures to be less than expected revenues, while the most restrictive budget rules prohibit states from carrying over a deficit (i.e. actual expenditures must be less than actual revenues). Poterba (1995) finds that budgeting rules result in intended outcomes, like deficit reductions through reductions in spending or increases in taxes. We extend these tests by investigating whether there are additional consequences of balanced budget requirements; specifically, we investigate whether strict budget requirements lead to asset sales or accounting gimmicks like expense shifting to meet short-term budget restrictions.

First, we investigate the relation between budget restrictions and asset sales. Selling public assets, like office buildings, real estate, toll roads, bridges, prisons, etc., is one mechanism that state and local governments can use to fill their budget holes because the sale brings in one-time cash infusions that can offset deficits. For example, in 2008 Chicago auctioned off its parking meters to a Morgan Stanley led partnership for a lump sum of \$1.16 billion to balance

the city's budget. While the sale of the parking meters helped the city meet its balanced budget requirement, critics argued that the assets were sold at too low of a price.<sup>3</sup>

As an alternative to selling assets, we examine whether states engage in accounting gimmicks such as delaying payment on incurred expenses that will allow them to avoid balanced budget rules (at least in the short term) at the cost of imposing cash short falls on the state's creditors. Specifically, balanced budget rules follow cash accounting. When facing fiscal difficulties, states can reduce expenses by laying off employees, incurring furloughs, etc., they can raise revenues by selling off assets, or they can simply choose to delay payment to their vendors until the next fiscal period. For states that have strict balanced budget rules, not paying for incurred expenditures will delay the problem for one fiscal period. In contrast, states with lax balanced budget rules can use debt or other budgeting techniques to avoid having to cut expenditures or increase taxes indefinitely. Finally, we investigate whether there is a trade-off between accounting discretion and asset sales. Asset sales are highly visible and can attract public scrutiny. Therefore, we hypothesize that states with strict balanced budget requirements will be less likely to sell off assets if they can use accounting discretion to avoid the balanced budget requirements.

To provide evidence on these hypotheses we collect data on a state's asset sales and the magnitude of their expenditures from the U.S. Census Bureau and the National Association of State Budget Officers (NASBO) over the period 1998 – 2006. We are able to identify asset sale information and expenditure information for 449 state-years over this period of time. Our primary variables of interest are the extent to which a state suffers fiscal problems and the

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<sup>3</sup> For discussions of this transaction see Office of the Inspector General, City of Chicago, Report of Inspector General's Findings and Recommendations: An Analysis of the Lease of the City's Parking Meters, 2 June 2009 and Chicago Mayor Richard M. Daley press release on December 2, 2008: [http://www.cityofchicago.org/city/en/depts/mayor/press\\_room/press\\_releases/2008/december\\_2008/chicago\\_receive\\_s\\_.html](http://www.cityofchicago.org/city/en/depts/mayor/press_room/press_releases/2008/december_2008/chicago_receive_s_.html).

strictness of a state's balanced budget requirements. To proxy for the state's fiscal condition, we use the actual difference between revenues and expenditures for the year (excluding revenues from asset sales). We use the analysis in the 2010 National Conference of State Legislatures (NCSL) report to identify the strictness of a state's balanced budget requirements. Specifically, a state is considered to have rigorous balanced budget requirements if it is legally prohibited from carrying the deficits to the next fiscal cycle.

We model the decision to sell assets as a function of a state's fiscal health, the strictness of their balanced budget requirements, and the interaction of these two effects. We include controls for characteristics of the state government, like the characteristics of the revenues it receives, the extent to which it receives federal funding, its reliance on debt markets, and the size of the state. We also control for general macro-economic conditions like the state's unemployment rate, changes in state GDP, and changes in state personal income level.

One potential consequence of selling assets to meet budget requirements is that the state may engage in fire sales. To provide initial evidence on the efficacy of the state's asset sales, we model the ratio of the proceeds from the sale to the book value of the asset at the time of the sale as a function of the state's financial position, the strictness of the state's balanced budget requirements, and the interaction between the two. We expect that if the balanced budget requirements are encouraging fire sales, states facing financial difficulties in strict balanced budget regimes will be more likely to sell their assets at a lower price, relative to book value, than states that do not have balanced budget requirements.

To examine the extent to which states delay the payment of incurred expenditures, we follow Alt and Lowry's (1994) model to determine each state's expected expenditures and use the residual as our measure of a state's unexpected expenditures in year  $t$ . We then investigate

whether unexpected expenditures in year  $t+1$  are related to the restrictiveness of the state's balanced budget requirements, the extent to which the state receives a deficit shock, the interaction of these two terms, and the same control variables we discuss above. We conclude our tests by partitioning our sample into states that are likely (unlikely) to have engaged in expense shifting and investigate whether the propensity to sell assets after a deficit shock is larger in states that have not shifted expenditures.

Overall, the results of our tests are consistent with our main hypothesis. We find that when states have financial problems, they are more likely to sell assets. We also find that the asset sale behavior is dominated by states that have strict balanced budget requirements (BBRs). To ensure our results are not an artifact of our research design, we conduct three cross-sectional analyses, examining whether the increased propensity to sell assets is concentrated in states that are restricted from issuing debt to fund their deficit, states that have insufficient "rainy day" reserves, and in states where revenues fall below expenses. In all cases we find that poor fiscal outcomes lead to asset sales, and strong balanced budget requirements increase the probability of asset sales. In states that can issue debt to fund the revenue shortage, have large rainy day funds, or have current surpluses (revenues greater than expenses), strong balanced budget requirements do not influence decisions to sell assets. Jointly, these tests provide results consistent with the hypothesis that strong balanced budget requirements influence a state's decision to sell assets.

We also find that the proceeds from the sale of capital assets are lower when they are sold in periods in which the state is in financial distress, and this effect is magnified by balanced budget requirements. This evidence is consistent with states engaging in fire sales in order to meet budget requirements. Our results imply that a \$100 per capita deficit shock in a strong BBR

state results in a 30% reduction in the ratio of the proceeds from asset sales to the book value of the assets sold.

We also find that in years that a state has fiscal problems, it is more likely to shift payments on incurred expenditures into the next fiscal period, and again this behavior is predominantly being driven by states that have strong balanced budget provisions. In fact, for states that have weak balanced budget provisions, we do not find evidence of expenditure shifting. Our final analysis finds that states that shift expenses to avoid balanced budget requirements are less likely to engage in asset sale behavior. Thus the accounting discretion inherent in a “cash accounting system” alleviates the need to sell assets potentially at fire sale prices.

Our findings should be interest to practitioners, academics, and governmental entities. From a practitioner’s and governmental entity’s perspective, balanced budget requirements are used in a variety of different for-profit and non-for-profit organizations. The widespread use of these control mechanisms suggests that they are net beneficial. Our paper highlights that, in addition to reducing expenditures in economic downturns, balanced budget requirements can incent agents to shift expenditures into future time periods or sell assets at a loss to meet the balanced budget requirements. Organizations should consider whether this behavior is optimal, whether they should provide accounting discretion to meet budgetary requirements, and whether they need additional controls limiting this behavior when they enact balanced budget requirements.

In terms of academic research, our paper contributes to two streams of research. First, this paper adds to the literature on real earnings management. For example, Bartov (1993) documents that companies sell assets to smooth earnings and to avoid bond covenant violations.

Perry and Grinaker (1994) find that firms adjust their R&D expenditures to meet analyst expectations, and Herrmann et al. (2003) find that corporate asset sales are related to reducing management forecast errors. Roychowdhury (2006) provides evidence that managers use operational activities, such as price discounts, overproduction, and lowering discretionary expenditures to avoid reporting negative earnings. Our paper adds to this literature by providing evidence that state governments also use real activities, such as asset sales, to avoid binding balanced budget requirements and that accounting discretion can curtail this behavior.

In addition, our paper also adds to the growing literature on accounting choices and the use of control mechanisms in governmental entities. For example, Gore (2009) examines municipalities' incentives to hoard cash and finds that municipalities with independent councils are less likely to engage in this behavior and municipalities with staggered boards are more likely to engage in this behavior. Our paper adds to this literature by focusing on an alternative control mechanism, balanced budget requirements, and examining the consequences of this mechanism.

## **2. Background**

In this section we provide background information on balanced budget requirements, asset sales, and the inter-temporal shifting of expenditures, and develop our hypotheses.

### **2.1 Balanced budget restrictions**

As we discuss in the introduction, since at least the 1840s states and municipalities have been actively involved in budgeting. All 50 states engage in some form of budgeting, and 49 out of 50 states have some form of balanced budget requirement.<sup>4</sup> Given the long lasting and nearly

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<sup>4</sup> The National Conference of State Legislatures (2010) report highlights that researchers and policy makers often assert that 49 states must balance their budgets, with Vermont being the exception. There is sufficient lack of clarity regarding budgeting rules that some add Wyoming and North Dakota as exceptions, and some authorities in Alaska contend that it does not have an explicit requirement for a balanced budget.

universal use of budgets, it is clear that governmental entities view budgets as being net beneficial. Consistent with this idea, Poterba (1995) finds that states with strict balanced budget requirements are more likely to make expenditure cuts when faced with deficit shocks. Specifically, he finds that a \$100 deficit shock leads to a \$44 reduction in expenditures in states that have strong balanced budget rules, but only a \$17 reduction in states with weak balanced budget rules. While these results highlight that balanced budget rules lead to a reduction in deficit spending, they also suggest that there are potentially additional consequences associated with these control mechanisms, like asset sales and expense shifting. That is, there is not a one-for-one reduction in spending when there is a deficit shock, so states with strong balanced budget rules are likely to be engaging in other actions to balance their budgets.

The extent to which states engage in actions like fire sales and expense shifting to meet budgets is unclear as there are no uniform balanced budget rules. For example, a recent survey conducted by the National Conference of State Legislatures (NCSL) highlights the nuances of the budgeting process and the lack of uniform budgeting rules. In particular, budget rules primarily refer to a state's operating budget, which relates to their general fund. Numerous states have other funds in addition to their general fund, and balanced budget requirements typically do not impact these funds. Some states have constitutional provisions that require a state's actual cash expenditures in a fiscal period must be less than actual revenues and available cash balances. Other states limit the state's ability to raise debt, and others only require that the appropriated budget be in balance (they do not require actual expenditures be less than actual revenues plus cash on hand). Thus the extent to which balanced budget rules lead to behaviors like asset sales and accounting gimmicks is an empirical issue.

To measure the restrictiveness of balanced budget requirements we rely on the classification in the 2010 report published by NCSL, which is based in part on a survey conducted by the National Association of State Budget Officers (NASBO) in 2008. The report focuses on three elements: (1) whether governors are required to propose a balanced budget, (2) whether the enacted budget is required to be in balance, and (3) whether the state can carry a deficit over. Consistent with this study, we classify states as having strong balanced budget rules if they are restricted from carrying over a deficit. We note that there are other classification schemes, which are similar to the NCSLs (see for example the General Accounting Office (GAO) 1993 and Hou and Smith (2006)). We rely on the more recent survey, and we also conduct sensitivity analyses (untabulated) that focus on restrictions on a state's ability to engage in borrowing as an alternative measure for state budget restrictions.

## **2.2 Governmental asset sales**

The privatization of state assets is controversial. Privatization has been called a variety of different names (like denationalization), has occurred in a variety of different countries (some estimate over 100 countries have privatized assets), and has occurred over a variety of time periods. In this paper, we do not attempt to evaluate whether there is a net benefit to the privatization of state assets (see Megginson and Netter (2001) for a survey of some of this literature). Instead, we focus on whether deficit shocks trigger state sales of assets and whether accounting control mechanisms, like balanced budget requirements, mitigate or exacerbate a state's proclivity to engage in these actions. We also attempt to provide evidence on the consequences of these sales by investigating whether the assets are sold at lower values in order to meet the state budget requirements.

States own a variety of different assets that can be potentially privatized. States have sold their parking meters, capitol buildings, prisons, roads (and the tolls on those roads), and a variety of other assets. Sometimes the sale is designed as a sale-leaseback transaction, where the state sells the asset and then leases it back from the new owner. For example, in 2010 Arizona sold and leased back several of the government's buildings, including the executive tower, the legislative buildings, the department of public safety headquarters, and several prison complexes. According to the press release by the Arizona Department of Administration, the sale and leaseback deal raised \$735 million for the state government to aid the general fund.<sup>5</sup> Other times the state sells the asset for a one-time payment, and the asset reverts back to the state government after a certain period of time.<sup>6</sup> For example, in 2006 Indiana auctioned off a 157-mile toll road to a consortium made up of Australian bank Macquarie and Spanish firm Cintra. The Australian-Spanish partners paid a lump sum of \$3.8 billion in exchange for the right to collect tolls for the following 75 years. After 75 years, the toll road reverts back to the Indiana state government.

On its face, the idea that states sell off their assets when facing fiscal difficulties does not seem to be particularly controversial. If you or I did not have enough money to pay our bills, we might consider a variety of different mechanisms to meet the shortfall including selling some assets to pay our bills. What is potentially more interesting is that a state's balanced budget rules might influence a state's decision to use this alternative in response to shocks in revenues.

The selling off of a state's assets involves a trade-off of obtaining cash flows to meet current fiscal needs at the cost of the future cash flows the asset can generate. What is

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<sup>5</sup> See the press release at: <http://azdoa.gov/news/011410release.pdf>

<sup>6</sup> It is important to note, we examine a state's propensity to sell assets, the proceeds they receive from those asset sales, and the ability to engage in accounting gimmicks like expense shifting. Sale-leaseback transactions are asset sales, but they are also a form of off-balance sheet financing, which is another tool states can use to avoid balanced budget restrictions. Unfortunately we do not have data on leaseback transactions to examine the extent to which leaseback transactions occur.

potentially worrisome is that the elected officials that are selling the assets today are unlikely to be in office in the future when the forgone future cash flows are most needed. As a result, elected officials have incentives to sell the assets at reduced prices to meet current budget shortfalls without considering potential future costs. Take the abovementioned Arizona sale and lease back deal for example. A 2009 New York Times article estimates that the \$735 million sold office buildings “are expected to cost the state \$1.5 billion in lease back fees over the next two decades.”<sup>7</sup> In the long run, taxpayers are the ultimate bearer of these fees. An additional concern is that the state is potentially making asset sale decisions based on the timing of deteriorations in their financial condition rather than based on the optimal holding period of the capital asset.

### **2.3 Inter-temporal shifting of expenditures**

As opposed to selling assets in response to deficit shocks, states can use accounting gimmicks that shift the revenues or expenditures from period to period. Gold (1983) explains that “a state ... usually has considerable latitude to accelerate tax collections, defer outlays, and adopt accounting practices which avert a deficit.” This kind of manipulation is cosmetic in nature, because it only changes the allocation of resources across periods but does not increase the overall resources available. One popular form of cosmetic accounting tricks used by state governments is expenditure shifting.

Expenditure shifting happens when state governments delay payments from one fiscal year to another. The GAO (1985) study suggests that payment shifting is widely used among state governments. For example, New York enacted a new payroll system that resulted in a \$150 million payment shift from fiscal year 1983 to fiscal year 1984. More recently, Illinois delayed at

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<sup>7</sup> The article can be accessed on: <http://www.nytimes.com/2009/09/25/us/25phoenix.html>

least \$1 billion in unpaid Medicaid bills into future fiscal years.<sup>8</sup> The GAO's (1993) survey of state budgeting suggests that when states use actions other than revenue increases or spending cuts to close the budget gap, 13% of the time they resort to deferring payments to the following fiscal year. We expect that states with more restrictive balanced budget rules face more pressure to close the budget gaps and are therefore more likely to engage in inter-temporal expenditure shifting.<sup>9</sup>

## **2.4 The use of accounting discretion to avoid selling assets**

In our final analysis, we investigate whether states use the discretion afforded to them by their accounting system to avoid selling assets. Asset sales are highly visible and potentially have long-term consequences. As an alternative to selling assets, states that have the ability to shift expenses into the future could engage in this behavior to meet balanced budget requirements. Therefore, we expect that asset sales and expenditure shifting are used as substitutes by states to meet balanced budget provisions.

## **3. Research Design**

### **3.1 Asset sales and balance budget restrictions**

We use the following model to examine the relation between budget constraints and asset sales:

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<sup>8</sup> In May 2011, a statement from the Illinois Department of Healthcare and Family Services Director Julie Hamos states that "If the General Assembly makes these budget reductions but does not authorize actual rate or program cuts by legislation or rule ... the ending FY12 bills on hand would be \$1.9 billion [which is \$1.1 billion higher than expected]. This approach would not be an actual budget reduction, just a continued pattern of deferring payment of bills." The statement can be obtained from: <http://www.civicfed.org/sites/default/files/HFS%20Statement.pdf>.

<sup>9</sup> We considered including a third "accounting gimmick" in the paper by investigating whether states defer making contributions to defined benefit plans when facing fiscal stress and whether this effect is amplified when the state has strong balanced budget requirements. Chaney et al (2002) find that when states face fiscal downturns, contributions to defined benefit plans are lower. Due to a small sample size (a total of 48 observations with only 9 observations in weak BBR states), they do not have sufficient power to fully explore the effect of BBRs on pension funding. Given the preliminary results in Chaney et al (2002) and the additional data collection costs for funding of state pensions, we omit this analysis from the paper.

$$\text{ASALE} = \alpha_0 + \alpha_1 \text{NETREV} + \alpha_2 \text{STRONGBBR} + \alpha_3 \text{NETREV} * \text{STRONGBBR} + \theta \text{Controls} + \varepsilon \quad (1)$$

where the dependent variable, ASALE, is the per capita revenues from asset sales. NETREV is the per capita difference between the revenues and the expenditures in the general fund after subtracting out the revenues from asset sales.<sup>10</sup> We subtract out revenues from asset sales to avoid any mechanical relation between ASALE and NETREV. A positive NETREV means the state has a surplus in the general fund without including any revenues from selling public assets, and a negative NETREV means the state has a deficit. We expect there to be a negative relation between ASALE and NETREV, because states are more likely to sell assets when they are in financial trouble.<sup>11</sup>

We base our measure of the strength of the balanced budget restrictions on the analysis in the 2010 NCSL report.<sup>12</sup> STRONGBBR is a dummy variable equal to one if the state is legally prohibited from carrying any deficit forward. Specifically, if the state has a restriction that actual revenues plus rainy day funds must exceed actual expenditure, we consider the state to have a strong balanced budget requirement. Since balance budget restrictions are binding only when the state has deficits, we do not have any predictions on the general relation between ASALE and STRONGBBR.

Our variable of interest in equation (1) is the interaction term, NETREV\*STRONBBR. We expect states to be more likely to sell assets if they are in bad fiscal condition, and this

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<sup>10</sup> NETREV includes any tax increases or spending cuts enacted during the fiscal year, but excludes any revenues from asset sales.

<sup>11</sup> In untabulated sensitivity analyses we used an alternative measure of deficit shock. Specifically, we examined the difference between budgeted surpluses and actual surpluses after removing the effects of asset sales. Results from these analyses were qualitatively and quantitatively similar to those we report in the paper.

<sup>12</sup> Balanced budget restrictions, and the extent to which they are binding, have been around since the early 19<sup>th</sup> century. We recognize that the fiscal soundness of the state and the political make-up of the state's voters likely influenced the adoption of balanced budget restrictions. However, these regulations were adopted so long ago and therefore, we consider them to be exogenous for our analysis.

relation should intensify if they also have strong balanced budget restrictions. Therefore, we expect the coefficient on NETREV\*STRONGBBR to be negative.

We include a set of control variables that are likely to affect state governments' incentives to raise revenues through asset sales. The first variable we consider is the extent to which states depend on credit markets. States that borrow frequently need to maintain a high level of liquidity to obtain good credit ratings. Moody's 2009 report on rating methodology for U.S. local governments indicates that liquidity is one of the most important factors in determining a government's rating assignment (Moody's, 2009).

Anecdotal evidence also suggests that reliance on the credit markets affects a state's desire to maintain its liquidity level. For example, during the administration of Governor Martin O'Malley, Maryland heavily depended on borrowing to balance the budget. In spite of great fiscal pressure, Governor O'Malley refused to dig into the state's rainy day fund to maintain its AAA bond rating.<sup>13</sup> Since selling assets immediately generates liquidity and boosts the general fund balance, we expect that states with a strong reliance on credit markets have greater incentives to sell assets when facing financial difficulties. We use the per capita long-term debt issued during the year (DISSUE) to represent a state's reliance on credit markets.

We also consider the characteristics of the state's revenue streams. When states have access to a variety of revenue sources, they can raise funds relatively more quickly and should be less likely to need to sell public assets to obtain cash. In contrast, states with limited revenue resources are more susceptible to adverse revenue shocks and may need to sell assets more frequently. REVLIMITED is the decile ranking of a state-year's revenue concentration index where the higher the rank, the more limited revenue sources.

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<sup>13</sup> Sean R. Sedam, "O'Malley, Education, rainy day fund off limits," *The Gazette*, October 16, 2009, at [http://www.gazette.net/stories/10162009/poline200351\\_32528.shtml](http://www.gazette.net/stories/10162009/poline200351_32528.shtml)

Following Copeland and Ingram (1982) and Gore (2009), we construct the concentration index (RCI) as the product of the portion of total revenue from each revenue source.  $RCI = (r_1/R)(r_2/R)\dots(r_N/R)$ , where  $r$  is the amount of revenue received from a specific source and  $R$  is total revenue. RCI is constructed in the way that the more concentrated the sources of revenue, the higher the index. We consider all revenue sources for state governments including current charges for performance of services, grants and aid from the federal government, revenues received from local governments, taxes, and other miscellaneous revenues (such as rents, fines, donations, etc.).

Another revenue characteristic that may affect the frequency of asset sales is revenue uncertainty. Compared to states with a steady revenue stream, states with volatile revenues are more likely to face unforeseen contingencies and need to infuse cash more frequently from selling capital assets. REVUNCERTAIN is the decile ranking of state revenue uncertainty. Following Core et al. (2006) and Gore (2009), we measure revenue uncertainty using the coefficient of variation of total revenue, defined as the ratio of the standard deviation of revenue to mean revenue measured over the previous 5 years. The final revenue characteristic we consider is the amount of aid from the federal governments. States with a higher reliance on federal funding tend to be in financial trouble and are more likely to use asset sales to bring in cash. FEDCONT is the per capita revenues from the federal government.

In addition to the above control variables, we include a set of variables to control for the general macroeconomic conditions of the state. States with good macro conditions should be less likely to sell assets to bring in extra cash. GDPGROWTH is the state GDP growth in percentage. FIGROWTH is the state personal income growth in percentage. UNEMPLOYMENT is the state unemployment rate in percentage. Finally we control for the size of the state by including the log

of the state population (LNPOP). Although we scale all the monetary variables by the state's population to control for the scale of the state and to reduce the heteroscedasticity in the error term, we also include size as a control to reduce the possibility that our results are simply capturing a scale effect.

We estimate equation (1) by pooling all the data over the sample period. Since we are running a full panel, in all our analyses we cluster standard errors by state and by year to correct for possible correlations across observations of a given state and of a given year (Rogers, 1993; Petersen, 2009). Appendix I lists detailed variable definitions.

In our next three analyses, we conduct cross-sectional tests to investigate whether the relationship between NETREV, STRONGBBR and the propensity (or intensity) of asset sales is affected by a state's ability to raise debt to fund a deficit, by the extent to which a state has a rainy day fund, and by whether the fiscal shock to the state government resulted in a deficit.

Our first cross-sectional test investigates whether a state's ability to raise debt to fund a deficit influences the intensity of asset sales to meet budget requirements. We expect states that have limits on raising debt to be more likely to sell off assets in a downturn, and states that have limits on debt and strong BBRs to be the most likely to sell off assets. We then investigate whether the magnitude of a state's rainy day fund influences the intensity of asset sales during fiscal downturns to meet balanced budget requirements. We expect states that have insufficient rainy day funds to be more likely to sell off assets in a downturn, and states that have insufficient rainy day funds and strong BBRs to be the most likely to sell off assets.

Our final cross-sectional test investigates whether the magnitude of the fiscal shock influences the intensity of asset sales to meet balanced budget requirements. We expect states that incur a deficit in the current fiscal year (i.e. revenues greater than expenses) to be more

likely to sell off assets in a downturn, and states that incur a deficit and have strong BBRs to be the most likely to sell off assets.

### 3.2 Analysis of the gains and losses on the asset sales

To investigate whether the proceeds a state receives from their asset sales depend on the state's fiscal condition and their budgeting rules, we model the asset sale proceeds as a percentage of their book value as a function of the state's fiscal health, the strength of their balanced budget requirements, and a set of control variables. Specifically, we analyze the following model:

$$\text{ASALE/BV} = \alpha_0 + \alpha_1\text{NETREV} + \alpha_2\text{STRONGBBR} + \alpha_3\text{NETREV*STRONGBBR} + \theta \text{ Controls} + \varepsilon \quad (2)$$

where ASALE/BV is calculated as the revenue from asset sales for the year divided by the book value of the capital assets sold for the year.<sup>14</sup> Similar to the analysis in equation (1), we use NETREV as our measure of fiscal health. Specifically, NETREV measures the net surplus or deficit in the general fund without the effect of revenues from asset sales; we expect a positive relation between NETREV and ASALE/BV because we expect that states are more likely to sell assets at a loss when they are in financial trouble.

Our coefficient of interest is  $\alpha_3$ , which captures the extent to which states facing strict balanced budget restrictions sell assets below their book value when they have a shock to their financial condition. If states engage in fire sales to meet their current period budget restrictions when they are in poor financial health, we expect a positive coefficient on NETREV\*STRONGBBR. We follow our previous analysis and include a set of control

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<sup>14</sup> We use ASALE/BV as our measure of the relative gain/loss on assets sold, because we can obtain data on the book values of assets sold from the reconciliation between the general fund and the government wide financial statements. Some states directly report value of the gain/loss on assets sold in their reconciliation. However, during our sample period only 36 state-year reconciliations directly disclosed the gain/loss on assets sold. Therefore, to preserve sample size for statistical power, we use ASALE/BV.

variables that might impact the selling price relative to the book value of the asset. Specifically, we control for the state's access to credit markets, characteristics of the state's revenue streams, and the general macroeconomic conditions of the state.

### 3.3 Measuring inter-temporal shifting of expenditures

To measure the inter-temporal shifting of expenditures, we first develop a model predicting each fiscal year's normal portion of expenditures. Any deviations from the normal portion are considered a result of expenditure shifting. We follow the reduced form expenditure equation in Alt and Lowry (1994) to model each year's expenditure. Specifically, current year's expenditure is a function of last year's expenditure, state personal income, federal government contributions, state unemployment rate, and last year's surplus. The model takes the form:

$$\text{EXP} = \beta_0 + \beta_1 \text{LAGEXP} + \beta_2 \text{PI} + \beta_3 \text{FEDCONT} + \beta_4 \text{UNEMPLOYMENT} + \beta_5 \text{LAGSURPLUS} + \varepsilon \quad (3)$$

where EXP is per capita total expenditures in the general fund. LAGEXP is lagged per capita total expenditures in the general fund. PI is state personal income per capita. LAGSURPLUS is lagged SURPLUS, where SURPLUS is defined as total revenues in the general fund minus total expenditures in the general fund, all deflated by state population.

We estimate equation (3) by pooling all the data over the sample period. After requiring non-missing variables, we have 399 observations for estimating the model. The residual of the regression reflects any deviation from the normal part of the expenditure. When shifting happens, next year's expenditures will be abnormally high. Therefore, we use the lead residual from equation (3), LEADEXP\_RESID, to proxy for the amount of shifting in the current year.<sup>15</sup>

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<sup>15</sup> Note that shifting may not necessarily result in abnormally low expenditures in the current year. For example, it is possible that states engage in inter-temporal shifting because current year's spending is higher than the expected amount. By deferring some payments to the next year, current year's expenditures fall back to the normal level and

We recognize that our model is less effective in capturing any shifting behavior that has been employed consistently across years. For example, Minnesota has been continuously delaying the payments to schools over three decades. According to a report by Stateline, a nonpartisan, nonprofit news service of the Pew Center on the States, the Minnesotan state government pays only 70% of the school funding each year and pushes the remaining 30% to the next fiscal year.<sup>16</sup> However, this trick only delays a portion of the growth in school expenditures each year. Each subsequent year the state has to pay 30% from the previous year and 70% from the current year. Breaking this cycle is difficult because it means the government has to pay more than 100% of the funding in one year. In 2011, due to continuous growth in school related expenditures, the Minnesotan state government owed its schools more than \$2 billion.<sup>17</sup>

### **3.4 The relation between expense shifting and asset sales**

In our final analysis we combine our expense shifting test with our asset sale test to investigate whether states that have strong BBRs and that inter-temporally shift expenditures are less likely to sell assets. Specifically, based on our expense shifting model (equation 3 above) we partition our sample into states that likely shifted expenditures forward (i.e. the residual from the regression is positive in period  $t+1$ ) and states that unlikely shifted expenditures forward. We then test whether states that experience a deficit shock and have strong balanced budget restrictions are less likely to engage in asset sale behavior if they shifted expenses into the future (i.e. we test whether the coefficient on  $STRONGBBR*NETREV$  is systematically different across the two subsamples).

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will not be detected by equation (3). However, next year's expenditures are likely to be higher than the usual amount. Therefore, we use lead one-year's residual to proxy for the amount of shifting.

<sup>16</sup> The report can be accessed at: <http://www.stateline.org/live/details/story?contentId=583189>

<sup>17</sup> See news article: <http://www.startribune.com/politics/statelocal/125578518.html>

### **3.5 Sample selection**

Our sample period covers the fiscal years 1998 through 2006. We use multiple public data sources to construct the sample. We obtain the state governments' financial data and asset sale data from the Census Bureau's Annual Survey of Governments. We collect the book value of the assets sold from the state's Comprehensive Annual Financial Reports (CAFR).<sup>18</sup> We also collect states' budget data from the NASBO fiscal surveys. The NASBO conducts a survey each year on all 50 state budget offices. These surveys focus on states' general funds and obtain information on the actual and appropriated revenues and expenditures in the general fund balances. We obtain the state population from the U.S. Census Bureau and the state unemployment rate from the Bureau of Labor Statistics. We collect states' GDP and personal income data from the Bureau of Economic Analysis. After requiring non-missing data, our final sample has 449 state-year observations.

## **4. Results**

### **4.1 Descriptive statistics**

Table 1 presents descriptive information on variables used in estimating equation (1). We find that the average asset sale during the sample period is around \$14 million or \$7.5 per capita. The net revenues without considering the revenues from asset sales are on average \$3.7 per capita. The positive net revenues are largely driven by the beginning (1998-2000) and latter sample periods (2005-2006) when most states were running surpluses.

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<sup>18</sup> We hand collect the book values of the assets sold for the asset proceeds test from schedules reconciling the Statement of Revenues and Expenditures for the Governmental Fund to the government-wide Statement of Activities in the CAFRs. This reconciliation schedule is required by the GASB Statement 34, which was implemented by most state governments for fiscal years beginning after June 15, 2001. While states are required to disclose the reconciliation, the level of detail is discretionary. Therefore, we only perform the asset proceeds test for the subset of states that report the book values of assets sold (117 state-year observations).

In figure 1 we plot the per capita state asset sales and the aggregate state general fund balances as a percentage of state spending from 1998 to 2006. The figure indicates that states face unusual fiscal difficulties between 2001 and 2004, coinciding with the recession. Nearly every state was in fiscal crisis during this period and had enacted spending cuts. The average spending cuts during this period is \$152 million, which is larger than the average spending cuts of \$6.6 million in the remainder of the sample period ( $p$ -value  $< 0.0001$ , untabulated). During 2001-2004, states are on average running deficits of \$108 million or \$18 per capita. Figure 1 also shows that during fiscal downturns, state asset sales increased dramatically. The per capita asset sales reached its highest in 2002 to \$11. Overall, figure 1 shows that when states face financial difficulties, selling off assets is one of the fiscal adjustments they utilize to bring in revenues.

Returning to Table 1, we find that 74% of our sample has strong balance budget restrictions that do not allow states to carry forward deficits. The average annual long-term debt issuance is \$484 per capita and states on average receive \$1200 per capita from the federal government. An average state's population is about 5.6 million people. During our sample period the states' GDP growth and personal income growth are both about 5% and the average unemployment rate is about 4.7%. Table 1 also shows that the average expenditures in the general fund are about \$10 billion or \$1,800 per capita. The average personal income per capita is about \$31,000. During the sample period, states have an average surplus of \$9.7 per capita. This average surplus is again mostly driven by the beginning and latter sample periods. During the recessionary period of 2001-2004, states on average were running a deficit of \$10.5 per capita. For our measure of expense shifting, by construction EXP\_RESID has a mean value of zero. LEADEXP\_RESID has a mean value of -0.871, which is not statistically different from

zero ( $p$ -value = 0.91). LEADEXP\_RESID is our proxy for expenditure shifting. By requiring the lead value, we reduce our sample size by 50 (1 year of data).

Table 2 presents Pearson correlations among main variables. We find that asset sales are negatively correlated with the net revenues in the general fund, suggesting that states are more likely to sell assets when they are in financial difficulties. Asset sales are positively related to a state's dependence on credit markets, its revenue limitations, and revenue uncertainty and are negatively related to a state's population size. Federal funding is negatively correlated with a state's net revenues, suggesting that states are more likely to receive federal aid when they have fiscal trouble.

#### **4.2 The relation between asset sales and balanced budget requirements**

Table 3 presents the regression results of equation (1). The model explains a reasonable portion of the variation in asset sales, with an adjusted  $R^2$  of 0.39. We find that the coefficient on NETREV is negative and significant (-0.091,  $t$ -statistic of -2.249) and that the coefficient on the interaction term NETREV\*STRONGBBR is negative and significant (-0.145,  $t$ -statistic of -2.028). This result suggests that in general states facing deficits are more likely to sell public assets to increase revenues and that states who cannot carry deficits into the next fiscal cycle sell more public assets in response to deficits than states who do not face such strong balanced budget restrictions. For states with weak anti-deficit rules, a \$100 per capita deficit induces an asset sale of \$9.1. This amount is more than doubled in states with strong anti-deficit rules. For states that cannot carry the deficits forward, a \$100 per capita deficit leads to an asset sale of \$23.6. We find that the coefficient on STRONGBBR is not significant. This is not surprising, because balance budget restrictions are not binding unless the state incurs a deficit.

Our other control variables are generally related to asset sales in the way we expect. Specifically, we find DISSUE to be positively associated with asset sales, suggesting that states relying more on the credit markets may need to maintain higher liquidity and, therefore, are more likely to use asset sales to bring in cash. We also find asset sales are related to a state's revenue attributes. States with less diversified revenue streams and states with more volatile revenues are more likely to sell public assets to raise revenues. Finally we find that asset sales are more likely to happen when the state has higher unemployment rates.<sup>19</sup>

Overall, Table 3 provides evidence that states sell assets when the net revenues in their general funds are low. The requirement to balance the budget intensifies states' incentives to use asset sales to fill the budget holes.<sup>20</sup>

#### **4.3 Cross-sectional variation in the relation between asset sales and balanced budget requirements**

In Table 4, Panel A, we investigate whether the relationship between asset sales, NETREV, and STRNGBBR is influenced by limitations on a state's ability to raise debt. We expect that for states facing limitations on the amount of debt they can issue, they are more likely to have incentives to seek other fiscal adjustments, such as asset sales, to solve financial difficulties. To determine whether a state has imposed legal limits on state debt issuances, we follow the budgetary report issued by NASBO in 2008 (NASBO 2008). We partition the sample

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<sup>19</sup> One concern with the finding is that our control variables do not capture the constraints on asset sales. Specifically, states that incur large asset sales in prior years may have fewer assets available for sale and therefore, are less likely to use asset sales to curb balanced budget restrictions. To investigate this possibility, we collect data on states' capital assets in 2004 and 2005. We focus on these 2 years to reduce the data collection cost. We find that on average the amount of the assets sold constitutes only 2% of the total capital assets. Therefore, it is unlikely that states face constraints on selling assets because they do not have enough assets available for sale.

<sup>20</sup> Given our small sample size, one concern with our regression analysis is that one state or year could influence our overall results. To address this concern, in all regressions we calculate the Cook's Distance to identify any outlying observations. In untabulated analysis, we then run robust regressions, eliminating any outliers; our results and inferences remain unchanged.

into two groups and run our regressions within each group. Table 1 shows that 62% of the sample has some form of limits on debt issuance.

Table 4, Panel A reports the regression results. Column [1] reports the results for the sub-sample of states that have limits on debt issuances. For this sample, we find that NETREV is negative and significant (-0.088,  $t$ -value = -2.33), and so is the coefficient on the interaction term NETREV x STRONGBBR (-0.272,  $t$ -value = -2.95). The estimates suggest that for states with debt limits but with weak balanced budget requirements, a \$100 per capita deficit in the general fund is associated with \$8.80 per capita in asset sales. This result is magnified for states facing strong balanced budget provisions; a \$100 per capita deficit in the general fund is associated with \$36 per capita of asset sales.

In contrast, the results in column [2] show that for the sub-sample of states without debt limits, NETREV and NETREV\*STRONGBBR are insignificantly related to ASALE. Analysis of the difference in the coefficients across column [1] and column [2] reveals that the coefficients on NETREV and NETREV\*STRONGBBR are statistically different for the subsample of states with debt limits versus the states without debt limits. Taken together, the results in Table 4, Panel A suggest that states that have limits on raising debt are more likely to sell off assets in a downturn than states without debt limits. This result is further magnified for states that have strict budget requirements.

In Panel B of Table 4, we investigate the relation between asset sales and balanced budget restrictions by partitioning the sample into states with rainy day funds that are sufficient to cover a revenue shortfall and states that do not have sufficient rainy day funds. Rainy day funds are mechanisms used by various states to save surpluses in prosperous times to cover shortfalls in economic downturns. We expect that the propensity to sell assets to meet shortfalls

will be lower in states that have rainy day funds that are sufficiently large enough to fill revenue shortfalls.

The results in column [1] show that states with rainy day funds that are not sufficient to fill a revenue shortfall are more likely to sell assets; the effect is stronger for states that have strong budget requirements. A \$100 per capita revenue shortfall results in a \$12.40 per capita sale of assets for states with insufficient rainy day funding. In states with strong BBRs, the impact of a \$100 per capita revenue shortfall increases the magnitude of asset sales to \$39.20 per capita. The results in column [2] suggest that when states have sufficient rainy day funds, there is no relation between a revenue shortfall and the propensity to sell assets. For this subsample, the coefficients on NETREV and NETREV\*STRONGBBR are both insignificant. A t-test for the difference in coefficients across the two subsamples confirms that NETREV and NETREV\*STRONGBBR are statistically different from each other. Overall, the results suggest that the propensity to sell assets to meet revenue shortfalls is mitigated when states have a rainy day fund to fill the revenue gap.

Finally, in Panel C of Table 4, we investigate the relation between revenue shocks, asset sales, and balanced budget requirements for subsamples of states that have negative shocks and positive shocks. Specifically, we partition the sample into states that have negative NETREV and states that have positive NETREV. Based on our previous discussion, we would expect the asset sale behavior only for states that have revenue shortfalls. Column [1] of Panel C shows that states with negative revenue shocks and strong balanced budget requirements are more likely to sell assets. In contrast, column [2] shows that states with positive net revenues do not sell assets, regardless of the strictness of the balanced budget requirements. These results

validate our hypothesis that states sell assets when their revenues fall short of their expenditures and are more likely to do so when there are strict balanced budget requirements in place.

Overall, Table 4 provides consistent evidence that states tend to sell public assets when facing financial difficulties and this behavior is intensified when they also face fiscal rules limiting their ability to borrow. The fact that we find consistent evidence across subsamples where we expect states to be more likely to sell assets mitigates the concerns that our main results are driven by omitted correlated variables.

#### **4.4 The relation between gains and losses from asset sales and balanced budget restrictions**

Table 5 presents the results from our regression model of the asset sales price as a percentage of the book value of the assets at the time of the sale. Column [1] shows that NETREV is positive and significant (0.002,  $t$ -statistic= 2.06) and the interaction between NETREV and STRONGBBR is positive and marginally significant (0.001,  $t$ -statistic=1.87). These results suggest that states in poor financial health are more likely to sell assets at a loss, compared to states not facing financial difficulties. Further, the coefficient on the interaction term is consistent with our hypothesis that states facing strong anti-deficit rules are more likely to sell capital assets in fire sales when their financial condition deteriorates in order to meet the budget requirements. These results are economically significant. For states with weak BBR restrictions, a \$100 per capita deficit results in a 20% reduction in the ratio of the proceeds from asset sales to the book value of the assets sold. For states with strong BBRs, a \$100 per capita deficit results in a 30% reduction in this ratio. Thus, the impact of strong BBRs represents a 50% reduction in the asset sale proceeds, relative to states with weak BBR rules.

We also find that states with more uncertain revenues (REVUNCERTAIN) are more likely to sell assets at a loss than states with more stable revenues. This suggests that states

might sell assets as a source of revenue when alternative sources are less certain. While we do not find that other control variables relate to the asset sale relative to book value, overall our model explains a reasonable portion of the variation in our dependent variable, with an adjusted R-square of 0.257.

Overall, the results in Table 5 suggest that states are more likely to sell assets at a loss when they have negative financial shocks and such effect is intensified when the states also face strong balanced budget provisions. The evidence is consistent with the idea that states may engage in sub-optimal fire sales to meet their strict balanced budget requirements.

#### **4.5 The relation between expenditure shifting and balanced budget restrictions**

Table 6 reports the regression results of equation (3). The coefficient on LAGEXP is 0.990, suggesting that expenditures are sticky, tracking previous year's values closely. The positive coefficient on LAGSURPLUS (0.822, *t*-statistic of 6.336) suggests that state governments increase expenditures following surpluses and reduce them following deficits. The magnitude of the coefficient suggests that a \$100 surplus from last year is associated with \$82 expenditures in the current year. The positive coefficient on state personal income (0.005, *t*-statistic of 2.230) and the negative coefficient on state unemployment rate (-14.633, *t*-statistic of -3.906) suggest that general fund expenditures are procyclical. States tend to increase expenditures when the general economic conditions are good and reduce expenditures when the economic conditions are bad.

Our expenditure model explains a significant portion of the variation in EXP, with an adjusted R<sup>2</sup> of 0.95. The strength of the results is reassuring in that our independent variables control for the factors determining the normal level of expenditures and that the residuals are

reasonable estimates for the discretionary portion of the expenditures, which may be resulted from shifting.

We expect that state governments are more likely to shift expenditures when they face financial difficulties. Similar to the analyses on asset sales, we measure state governments' financial conditions using the net revenues in their general funds. We define the net revenues (NETREV\_NOSHIFT) as the per capita total general fund revenues minus the predicted EXP from equation (3). Since the residual from equation (3) does not enter the calculations of net revenues, NETREV\_NOSHIFT is free from the influence of expenditure shifting and our regression does not capture a mechanical relationship.

Table 7 reports the regression results of balanced budget restrictions and expenditure shifting. We find that the coefficient on NETREV\_NOSHIFT is not statistically significant ( $t$ -statistic of 0.100). However, the sum of the coefficients on NETREV\_NOSHIFT and NETREV\_NOSHIFT\*STRONGBBR is negative and significant ( $p$ -value = 0.01). This result suggests that states that have weak balanced budget rules do not shift expenditures when their net revenues in the general funds are low. In contrast, states that have strong balanced budget rules tend to defer payments when facing low net revenues. Overall, Table 7 suggests that when a state cannot carry deficits forward, they tend to shift payments to the future when its net revenues in the general fund are low. We do not find similar shifting behavior for states that can carry the deficits to the next fiscal cycle.

One concern with the findings in Table 7 is that we do not differentiate between expenditure shifting and expenditure deferring. When states face financial difficulties, they may defer some discretionary spending to future years and our expenditure model will capture such behavior as expenditure shifting. To investigate this concern, we exclude deferrable expenditures

from our analysis. Clemens (2012) finds that non-construction capital expenditures and expenditures related to utilities are more likely to be deferred when states enact midyear spending cuts. These expenditures largely correspond to maintenance and equipment purchase related to gas and water supply systems, electric power systems, and public mass transit systems. In untabulate analysis we exclude these expenditures and rerun the test. We find that our results are not sensitive to excluding deferrable expenditures. Specifically, the coefficient on the interaction term NETREV\_NOSHIFT\*STRONGBBR is negative and significant ( $t$ -statistic of -1.80) and the sum of the coefficients on NETREV\_NOSHIFT and NETREV\_NOSHIFT\*STRONGBBR is negative and significant ( $p$ -value = 0.013). This result suggests that our findings are not simply driven by states deferring expenditures to future fiscal years.

We conduct additional robustness test using debt limits as an alternative proxy for budget restrictions and we find similar results. Specifically, we find that NETREV\_NOSHIFT is not significant, but the sum of the coefficients on NETREV\_NOSHIFT\*DEBTLIMIT is negative and significant ( $p$ -value = 0.04). These results suggest that when facing financial difficulties, states tend to delay their payments to the next fiscal cycle if they have legal limitations on debt issuances. We do not find similar evidence on expenditure shifting for states that do not have such debt limits.

#### **4.6 The tradeoff between asset sales and expenditure shifting**

In Table 8 we report the results of our tests examining the tradeoff between a state's decision to shift expenses into the future and the decision to sell assets to meet strong balanced budget requirements. We partition our sample based on whether our expense-shifting model classifies the firm as an expense shifter in year  $t+1$  (i.e. the residual of the model is positive) or a

non-shifter. We then examine the relationship between asset sales and balanced budget restrictions both within and across this partition.

In the first column of Table 8, we report the results of our asset sales model for states that are unlikely to have shifted expenses. Consistent with the results we report in Table 3, we find that in states with strong BBRs, asset sales are more likely (larger) when there is a deficit shock. The coefficient on  $\text{NETREV}*\text{STRONGBBR}$  is negative and significant (-0.199,  $t$ -statistic of -1.71). In the second column, we tabulate the results for states that were likely to shift expenses and also find that in states with strong BBRs, asset sales are more likely (larger) when there is a deficit shock. However, the magnitude of the coefficient on  $\text{NETREV}*\text{STRONGBBR}$  decreases (-0.094,  $t$ -statistic of -1.96). We then test whether the coefficients on  $\text{NETREV}*\text{STRONGBBR}$  are different across our partition, and find that the effects of balanced budget restrictions on asset sale behavior are weaker in states that are likely to have shifted expenses into the future. Thus, these results imply that accounting discretion is a substitute for asset sale behavior.

## **5. Conclusions**

This paper investigates the consequences of balanced budget requirements. Almost all states in the U.S. have some form of balanced budget provisions to curb deficit spending by state governments. The widespread use of these provisions suggests that balanced budget restrictions are perceived to be net beneficial as a control mechanism. Previous research finds that strong balanced budget requirements result in greater reductions in expenditures in periods in which a state experiences a fiscal shock. We add to this literature, providing evidence that when states face fiscal problems they tend to sell off public assets, these sales generate relatively lower proceeds, and states tend to shift expenditures to the future to meet the balanced budget provisions. We also find that there is a trade-off between asset sales and the use of accounting

discretion; on average, states sell fewer assets when they use accounting discretion to avoid balanced budget requirements. These results are robust to different measures of the states' fiscal condition and an alternative proxy for budgetary constraints.

The paper contributes to the accounting literature along a number of dimensions. First, given the heightened interests in the accountability of state and local governments, our paper is timely in that we provide evidence that state governments sell assets and shift expenditures to meet budget constraints. Our paper also adds to the literature on the consequences of using budget as a control mechanism and the literature on real earnings management, both of which have largely focused on the for-profit sector. We extend these literatures by identifying the specific actions (asset sales and expenditure shifting) governmental entities engage in when they face fiscal problems and by providing evidence that such behaviors are more prominent when they also face strong balanced budget requirements. We also find results which suggest that there is a trade-off in these activities, whereby states use accounting discretion to avoid balanced budget restrictions to avoid having to sell off assets.

The results of the paper should be of interest to policymakers, governmental entities, and more broadly, organizations that have enforced balanced budget provisions. They should consider whether behaviors such as asset sales and expenditure shifting are optimal, especially when asset sales may be done at fire sale prices. They should also consider whether they need additional mechanisms constraining these behaviors when enacting balanced budget requirements.

## References

- Alt, James E., and Robert C. Lowry. "Dividend government, fiscal institutions, and budget deficits: Evidence from the states." *American Political Science Review* 88, no. 4 (1994): 811-828.
- Bartov, E. (1993). The Timing of Asset Sales and Earnings Manipulation. *The Accounting Review* , 68 (4), 840-855.
- Bouwens, J., Kroos, P., 2011. Target ratcheting and effort reduction. *Journal of Accounting and Economics* 51, 171-185.
- Chaney, B.A., P.A. Copely, and M. Stone. (2002) The Effects of Fiscal Stress and Balanced Budget Requirements on the Funding and Measurement of State Pension Obligations. *Journal of Accounting and Public Policy* 21 (4,5): 287-313.
- Clemens, J. (2012) "State Fiscal Adjustment During Times of Stress: Possible Causes of the Severity and Composition of Budget Cuts." *Working Paper, University of California at San Diego*
- Copeland, Ronald M., and Robert Ingram. "The association between municipal accounting information and bond rating changes." *Journal of Accounting Research* 20 (1982): 275-289.
- Core, John, Wayne R. Guay, and Rodrigo S. Verdi. "Agency problems of excess endowment holdings in non-for-profit firms." *Journal of Accounting and Economics* 41 (2006): 307-333.
- Gold, Steven D. "Recent developments in state finances." *National Tax Journal* 36 (1983): 1-29.
- Gore, Angela K. "Why Do Cities Hoard Cash? Determinants and Implications of Municipal Cash Holdings." *The Accounting Review* 84, no. 1 (2009): 183-207.
- Herrmann, D., Inoue, T., & Thomas, W. B. (2003). The Sale of Assets to Manage Earnings in Japan. *Journal of Accounting Research* , 41 (1), 89-108.
- Hou, Yilin, and Daniel L. Smith. "A framework for understanding state balanced budget requirement systems: Reexamining distinctive features and an operational definition." *Public Budgeting & Finance* 26 (2006): 22-45.
- Leone, A. J. and S. Rock. (2002). Empirical Tests of Budget Ratcheting and its effect on Manager;s Discretionary Accrual Choices. *Journal of Accounting and Economics* 33 (1): 43-67.
- Moody's. "General Obligation Bonds Issued by U.S. Local Governments." 2009.

- NASBO. "Budget processes in the states." Washington, D. C., 2008.
- NCSL. "NCSL Fiscal Brief: State Balanced Budget Provisions." Washington, D.C. , 2010.
- Perry, S., & Grinaker, R. (1994). Earnings Expectations and Discretionary Research and Development Spending. *Accounting Horizons* , 8 (4), 43-51.
- Petersen, Mitchell A. "Estimating standard errors in finance panel data sets: Comparing approaches." *Review of Financial Studies* 22 (2009): 435-480.
- Poterba, James M. "Capital Budgets, Borrowing Rules, and State Capital Spending." *Journal of Public Economics* 56 (January, 1995): 165-87.
- Poterba, James M, 1996. "Budget Institutions and Fiscal Policy in the U.S. States," *American Economic Review*, American Economic Association, vol. 86(2), pages 395-400, May.
- Rogers, William. "Regression standard errors in clustered samples." *Stata Technical Bulletin* 13 (1993): 19-22.
- Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics* , 42, 335-370.
- U.S. General Accounting Office. "Budget issues: State balanced budget practices." Washington, D.C., 1985.
- U.S. General Accounting Office. *Balanced Budget Requirements: State Experiences and Implications for the Federal Government*. Washington, D.C.: GAO, 1993.
- Zimmerman, J. (2001). Conjectures Regarding Empirical Managerial Accounting Research. *Journal of Accounting and Economics* 32: 411-427.

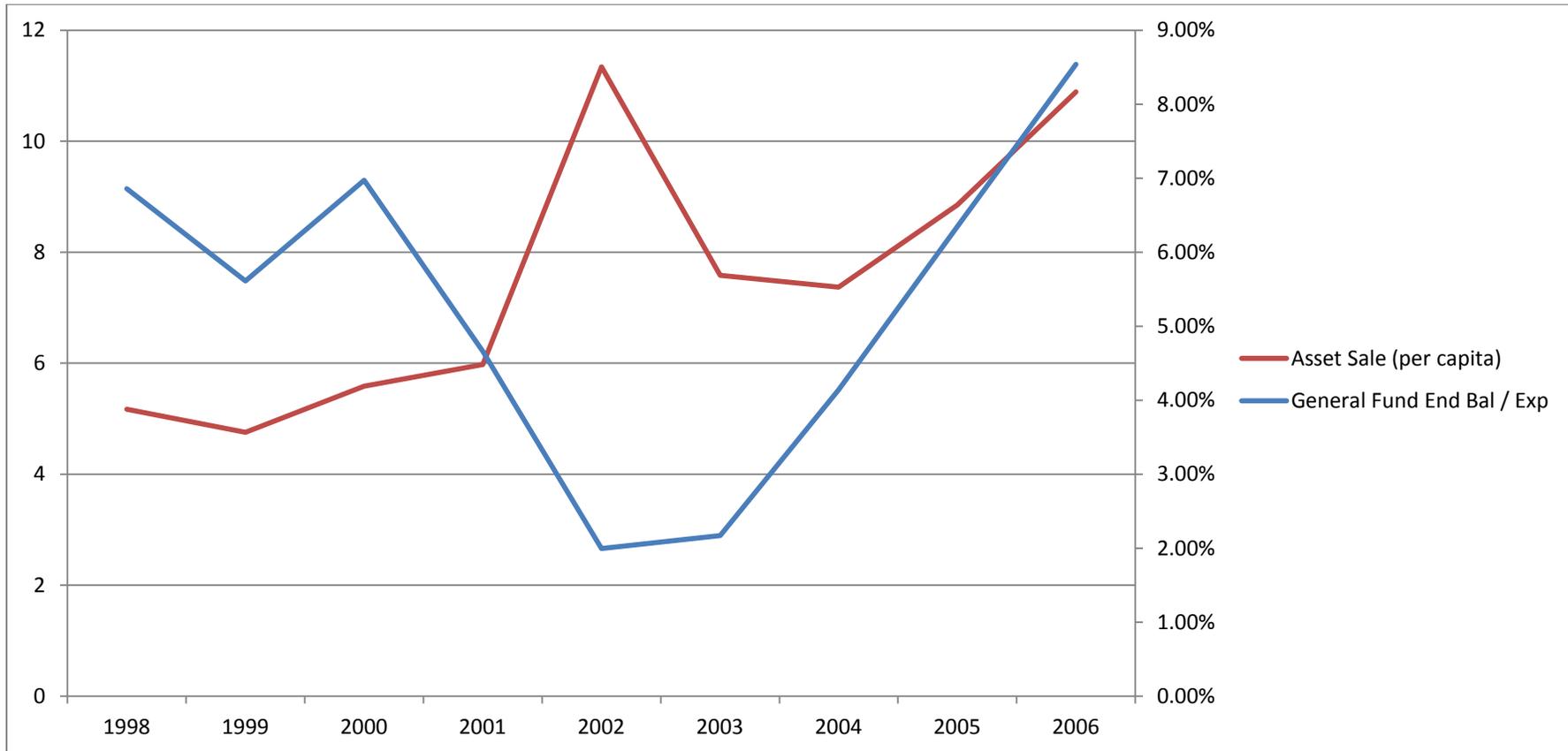
## Appendix I

ASALE =	Per capita revenues from asset sales;
ASALE/BV=	Annual revenues from asset sales divided by the book value of the assets sold
DISSUE =	Per capita long-term debt issued during the year;
D Limit =	Dummy variable equal to 1 if the state has any limits in place for debt service as defined by (NASBO 2008);
EXP =	Per capita total expenditures in the general fund;
EXP_RESID =	Current year residual from equation (3);
FEDCONT =	Per capita revenues from the federal government;
GDPGROWTH =	The state's GDP growth in percentage;
Insufficient Rainy =	Dummy variable equal to 1 if the state's rainy day fund plus NETREV is less than zero;
LAGEXP =	Lagged per capita total expenditures in the general fund;
LAGSURPLUS =	Lagged total revenues in the general fund minus lagged total expenditures in the general fund all deflated by lagged state population;
LEADEXP_RESID =	Lead one year residual from equation (3);
LNPOP =	The natural logarithm of the state population;
NETREV =	Per capita difference between the revenues and the expenditures in the general fund after subtracting out the revenues from asset sales;
NETREV_NOSHIFT =	Per capita total general fund revenues minus the predicted EXP from equation (3);
PI =	State personal income per capita;
PIGROWTH =	The state's personal income growth in percentage;
REVLIMITED =	Decile ranking of a state-year's revenue concentration index, where the concentration index is the product of the portion of total revenue from each revenue source;
REVUNCERTAIN =	Decile ranking of the coefficient of variation of the states' total revenues;
STRONGBBR =	Dummy variable equal to one if the state is legally prohibited from carrying any deficit forward as defined by (NCSL 2010);

UNEMPLOYMENT =	The state's unemployment rate in percentage.

**Figure 1: Time Series Trends of Asset Sales and State Fiscal Conditions**

This figure presents the time series trends of asset sales and state general fund balances as a percentage of expenditures.



**Table 1: Descriptive Statistics**

This table presents summary statistics on the main variables used in the analyses.

	N	Mean	Median	Std Dev
Asset Sales (in thousands)	449	14,152	2,324	37,174
Asset Sales (per capita)	449	7.514	0.613	38.120
Asset Sales/BV	117	0.704	0.169	0.996
NETREV (per capita)	449	3.685	3.733	79.058
STRONGBBR	449	0.742	1	0.438
Debt Limit	449	0.619	1	0.486
DISSUE (per capita)	449	484	386	350
REVLIMITED	449	4.499	4	2.879
REVUNCERTAIN	449	4.506	5	2.876
FEDCONT (per capita)	449	1,201	1,127	455
Population (in thousands)	449	5,681	4,063	6,241
LNPOP	449	8.163	8.310	1.011
GDPGROWTH (%)	449	5.461	5.173	2.567
UNEMPLOYMENT (%)	449	4.661	4.6	1.131
PIGROWTH (%)	449	5.479	5.548	2.418
Expenditures (in thousands)	399	10,310,010	5,913,000	12,770,142
Expenditures (per capita)	399	1,801	1,615	707
PI (per capita)	399	31,435	30,824	5,227
SURPLUS (per capita)	399	9.725	4.806	71.661
EXP_RESID	399	0	5.571	146.517
LEADEXP_RESID	349	-0.871	0.318	137.659

**Table 2: Correlations**

This table present Pearson correlation coefficients among the main variables used in the analyses. Bold text indicates significance at the 0.10 level or better.

	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
ASALE [1]	0.035	0.068	<b>0.105</b>	<b>-0.471</b>	<b>0.289</b>	<b>0.179</b>	<b>0.182</b>	<b>0.345</b>	<b>-0.228</b>	<b>0.134</b>	<b>0.144</b>	0.024
LEADEXP_RESID [2]	1	0.019	-0.004	-0.037	-0.026	-0.052	-0.020	-0.077	0.045	0.053	-0.005	<b>0.094</b>
STRONGBBR [3]		1	<b>-0.086</b>	-0.033	<b>-0.185</b>	<b>0.286</b>	<b>0.104</b>	<b>0.078</b>	<b>-0.327</b>	<b>0.100</b>	-0.059	0.077
Debt Limit [4]			1	-0.035	0.001	<b>0.162</b>	0.041	<b>0.121</b>	0.003	0.033	0.032	0.030
NETREV [5]				1	-0.050	<b>-0.153</b>	-0.073	<b>-0.116</b>	<b>0.089</b>	<b>0.098</b>	<b>-0.150</b>	<b>0.268</b>
DISSUE [6]					1	<b>-0.109</b>	-0.033	<b>0.345</b>	<b>-0.228</b>	-0.007	<b>0.134</b>	<b>-0.096</b>
REVLIMITED [7]						1	0.076	<b>0.121</b>	<b>-0.512</b>	0.012	-0.048	0.001
REVUNCERTAIN [8]							1	<b>0.269</b>	<b>-0.083</b>	<b>0.181</b>	-0.065	<b>0.165</b>
FEDCONT [9]								1	<b>-0.430</b>	<b>0.165</b>	<b>0.246</b>	-0.022
LNPOP [10]									1	<b>-0.085</b>	<b>0.264</b>	-0.073
GDPGROWTH [11]										1	<b>-0.209</b>	<b>0.612</b>
UNEMPLOYMENT [12]											1	<b>-0.396</b>
PIGROWTH [13]												1

**Table 3: The Relation between Asset Sales and Balanced Budget Restrictions**

This table reports the regression results of equation (1):

$$ASALE = \alpha_0 + \alpha_1 NETREV + \alpha_2 STRONGBBR + \alpha_3 NETREV * STRONGBBR + \theta Controls + \varepsilon \quad (1)$$

All variables are defined in Appendix I. *t*-statistics are in brackets and are calculated based on heteroscedastic consistent standard errors clustered by state and year. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively (two-tailed).

	Dependent Variable = ASALE
	[1]
Intercept	-54.085
	[-1.031]
STRONGBBR	3.430
	[0.878]
NETREV	-0.091**
	[-2.249]
NETREV x STRONGBBR	-0.145**
	[-2.028]
DISSUE	0.023**
	[2.077]
REVLIMITED	1.255**
	[2.012]
REVUNCERTAIN	0.915**
	[2.262]
FEDCONT	0.011
	[0.833]
LNPOP	-1.155
	[-0.399]
GDPGROWTH	0.953
	[1.434]
UNEMPLOYMENT	3.746*
	[1.677]
PIGROWTH	2.279*
	[1.766]
Observations	449
Adjusted R-squared	0.388

**Table 4: Cross-Sectional Variation in the Relation between Asset Sales and Balanced Budget Restrictions**

This table reports the regression results of equation (1) based on cross-sectional variation in states facing debt limits, states that have revenue shortfalls, and states that have insufficient rainy day funds. In panel A, we test equation (1) separately for samples of states that face debt limits and those that do not. Column [1] reports the results of equation (1) for states facing debt limits, and column [2] reports the results of equation (1) for states without debt limits. In panel B, we test equation (1) separately for states with insufficient rainy day funds and for states with rainy day funds that are sufficient to cover a revenue shortfall. Column [1] reports the results of equation (1) for states with insufficient rainy day funds while column (2) reports the results for states with sufficient rainy day funds. Finally, panel C tests equation (1) separately for states that have positive NETREV and for states that have negative NETREV. Column [1] reports the results of equation (1) for states where NETREV is negative, and column [2] reports the results of equation (1) for states where NETREV is positive. All variables are defined in Appendix I. *t*-statistics are in brackets and are calculated based on heteroscedastic consistent standard errors clustered by state and year. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively (two-tailed).

**Panel A: The relation between asset sales and balanced budget restrictions, conditional on debt limits**

	Dependent Variable = ASALE	
	Debt Limit=1	Debt Limit=0
	[1]	[2]
Intercept	-48.048	-14.777**
	[-0.75]	[-2.37]
STRONGBBR	6.790	-1.232
	[1.16]	[-0.90]
NETREV	-0.088**	-0.023
	[-2.33]	[1.10]
NETREV x STRONGBBR	-0.272***	0.015
	[-2.95]	[0.92]
DISSUE	0.026**	0.006***
	[2.68]	[3.03]
REVLIMITED	1.758**	0.903**
	[2.05]	[2.30]
REVUNCERTAIN	0.966	0.377*
	[1.51]	[1.95]
FEDCONT	0.003	0.003***
	[0.18]	[2.63]
LNPOP	-2.668	1.016*
	[-0.57]	[1.77]
GDPGROWTH	1.468	0.262
	[1.54]	[0.67]
UNEMPLOYMENT	4.794	-0.601
	[1.65]	[-1.01]
PIGROWTH	2.983*	0.046
	[1.93]	[0.38]
T-Test for difference in NETREV		[-3.22]
T-Test for difference in NETREV*STRONGBBR		[-2.67]
Observations	278	171
Adjusted R-squared	0.504	0.129

**Panel B: The relation between asset sales and balanced budget restrictions, conditional on available rainy day funds.**

	Dependent Variable = ASALE	
	Insufficient Rainy=1	Insufficient Rainy=0
	[1]	[2]
Intercept	-132.312	-2.719
	[-1.66]	[-0.12]
STRONGBBR	-34.003	1.107
	[-0.34]	[0.42]
NETREV	-0.124*	-0.030
	[-1.94]	[-1.49]
NETREV x STRONGBBR	-0.268**	-0.058
	[-2.46]	[-1.27]
DISSUE	0.050**	0.006*
	[2.10]	[1.76]
REVLIMITED	2.746	0.515**
	[1.56]	[2.04]
REVUNCERTAIN	3.229	0.474*
	[1.59]	[1.64]
FEDCONT	0.055***	0.002
	[2.82]	[0.22]
LNPOP	2.211	-1.907
	[0.31]	[1.21]
GDPGROWTH	-3.155	0.878
	[-0.73]	[1.55]
UNEMPLOYMENT	-1.186	1.604
	[-0.19]	[1.16]
PIGROWTH	7.508**	0.360*
	[2.45]	[1.73]
T-Test for difference in NETREV		[-0.85]
T-Test for difference in NETREV*STRONGBBR		[-4.52]
Observations	81	368
Adjusted R-squared	0.703	0.106

**Panel C: The relation between asset sales and balanced budget restrictions, conditional on revenue shortfalls**

	Dependent Variable = ASALE	
	NETREV <0	NETREV >=0
	[1]	[2]
Intercept	-77.580	12.651
	[-0.97]	[1.59]
STRONGBBR	-18.775	-1.600
	[-0.28]	[-0.59]
NETREV	-0.056	-0.027
	[-0.83]	[-0.86]
NETREV x STRONGBBR	-0.396***	0.016
	[-2.56]	[0.71]
DISSUE	0.030**	0.003
	[2.06]	[0.49]
REVLIMITED	1.967**	0.090
	[2.23]	[0.37]
REVUNCERTAIN	1.972**	0.467
	[2.27]	[1.48]
FEDCONT	0.011	-0.003
	[0.62]	[1.07]
LNPOP	0.228	-1.894*
	[0.03]	[-1.94]
GDPGROWTH	1.100	0.128
	[0.68]	[0.42]
UNEMPLOYMENT	3.862	0.771*
	[0.81]	[1.81]
PIGROWTH	2.764*	0.530
	[1.82]	[1.19]
T-Test for difference in NETREV		[-0.41]
T-Test for difference in NETREV*STRONGBBR		[-2.82]
Observations	195	254
Adjusted R-squared	0.570	0.068

**Table 5: The Relation between Asset Sales as a Percentage of the Book Value and Balanced Budget Restrictions**

This table reports the regression results of the following regression:

$$ASALE/BV = \alpha_0 + \alpha_1 NETREV + \alpha_2 STRONGBBR + \alpha_3 NETREV * STRONGBBR + \theta Controls + \varepsilon \quad (2)$$

All variables are defined in Appendix I. *t*-statistics are in brackets and are calculated based on heteroscedastic consistent standard errors clustered by state and year. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively (two-tailed).

	Dependent Variable = ASALE/BV
Intercept	1.497
	[1.21]
STRONGBBR	-0.272
	[1.32]
NETREV	0.002**
	[2.06]
NETREV x STRONGBBR	0.001*
	[1.87]
DISSUE	0.000
	[0.11]
REVLIMITED	0.010
	[0.32]
REVUNCERTAIN	-0.079***
	[-2.79]
FEDCONT	-0.001
	[-1.24]
LNPOP	-0.068
	[-0.53]
GDPGROWTH	-0.001
	[-0.02]
UNEMPLOYMENT	-0.075
	[-0.48]
PIGROWTH	0.029
	[0.90]
Observations	117
Adjusted R-squared	0.257

**Table 6: Measuring Inter-temporal Shifting of Expenditures**

This table reports the regression results of equation (3):

$$EXP = \beta_0 + \beta_1 LAGEXP + \beta_2 PI + \beta_3 FEDCONT + \beta_4 UNEMPLOYMENT + \beta_5 LAGSURPLUS + \varepsilon \quad (3)$$

All variables are defined in Appendix I. *t*-statistics are in brackets and are calculated based on heteroscedastic consistent standard errors clustered by state and year. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively (two-tailed).

	Dependent variable = EXP
Intercept	-120.237
	[-1.152]
LAGEXP	0.990***
	[58.645]
PI	0.005**
	[2.230]
FEDCONT	0.076
	[1.239]
UNEMPLOYMENT	-14.633***
	[-3.906]
LAGSURPLUS	0.822***
	[6.336]
Observations	399
Adjusted R-squared	0.957

**Table 7: The Relation between Inter-temporal Shifting of Expenditures and Balanced Budget Restrictions**

This table reports the regression results on the relation between expenditure shifting and balanced budget restrictions. All variables are defined in Appendix I. *t*-statistics are in brackets and are calculated based on heteroscedastic consistent standard errors clustered by state and year. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively (two-tailed).

	Dependent Variable = LEADEXP_RESID
Intercept	-77.391
	[-0.823]
STRONGBBR	12.804
	[0.875]
NETREV_NOSHIFT	0.016
	[0.100]
NETREV_NOSHIFT x STRONGBBR	-0.397*
	[-1.917]
DISSUE	0.001
	[0.016]
REVLIMITED	-2.677
	[-0.888]
REVUNCERTAIN	-1.416
	[-0.806]
FEDCONT	-0.012
	[-0.412]
LNPOP	1.951
	[0.200]
GDPGROWTH	0.118
	[0.029]
UNEMPLOYMENT	6.845
	[1.167]
PIGROWTH	10.691***
	[3.590]
Observations	349
Adjusted R-squared	0.115

**Table 8: The Relation between Inter-temporal Shifting of Expenditures and Asset sales**

This table reports the regression results on the relation between Asset sales and balanced budget restrictions where the data has been partitioned based on whether the firm shifted expenditures into the next period (ExpShift =1) or not (ExpShift=0). All variables are defined in Appendix I. *t*-statistics are in brackets and are calculated based on heteroscedastic consistent standard errors clustered by state and year. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively (two-tailed).

Variable	ExpShift =0	ExpShift=1
	[3]	[4]
Intercept	-33.710	-51.845
	[-0.58]	[-1.32]
STRONGBBR	3.105	0.355
	[0.70]	[0.10]
NETREV	-0.078	-0.102***
	[1.04]	[-2.93]
NETREV x STRONGBBR	-0.199*	-0.094*
	[-1.71]	[-1.96]
DISSUE	0.033	0.013
	[1.41]	[1.13]
REVLIMITED	0.600	1.256**
	[1.02]	[2.00]
REVUNCERTAIN	1.431***	0.232
	[3.91]	[0.45]
FEDCONT	0.002	0.021
	[0.21]	[1.18]
LNPOP	-1.747	-2.026
	[-0.43]	[-0.56]
GDPGROWTH	0.646	1.214
	[1.46]	[1.44]
UNEMPLOYMENT	2.986	3.047
	[0.99]	[1.29]
PIGROWTH	1.233	3.414**
	[0.66]	[2.39]
T-Test for difference in NETREV*STRONGBBR		[-1.92]*
Observations	186	213
Adjusted R-squared	0.429	0.398