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Does the Stringency of State Tax and Expenditure Limitations Discourage Political Manipulation in Fiscal Reserves?

Research Article

Abstract: *This article examines how state tax and expenditure limitations (TELs) affect the size of fiscal reserves over election cycles. Using a panel data set of 47 U.S. states from 1986 to 2013, we find that the persistent pattern of electoral cycles in general fund balances (GFBs) disappears in states with stricter TELs. Regarding a budget stabilization fund balances (BSFs), the preelection and election downward effect diminishes and becomes statistically insignificant while the postelection upward effect increases and becomes significant in states with stricter TELs. Our findings reveal that the stringency of TELs not only eliminates electioneering's impact on GFBs but also coincides with increases in BSFs, particularly in postelection years. Consistent with the principal–agent theory, politicians tend to use a budget stabilization fund (BSF) as a secondary saving account to circumvent stronger TELs and save more BSFs after elections.*

Evidence of Practice

- Our promising finding is that the states with more stringent TELs spend less GFBs as elections approach. The finding implies that the stricter TELs can discourage the political game with GFBs in preelection and election years.
- However, states with stricter TELs tend to save BSFs more than necessary after elections. This finding raises a concern that politicians can avoid the restrictiveness of TELs and use a BSF as a secondary saving account, reinforcing the existing ending balances for their electoral gain.
- The attempt to reform current TELs to be more stringent can open another door for politicians to play with BSFs. Hence, the states that plan to increase their TEL stringency should inform voters of its possible impact on levels of BSFs. This helps voters choose politicians who do not use "gamesmanship."
- Our research also suggests that the restrictive uses of BSFs can safeguard against opportunistic saving behavior in postelection years. In our empirical results, states that adopted BSF with the withdrawal formula have lower BSFs after elections than the states with more discretionary withdrawal rules.

Accumulating budget surpluses during periods of economic expansion is vital to stabilizing the economy and smoothing out fiscal shocks of economic recession (Barro 1979; Hou 2013). Also, surpluses saved during the expansion periods generate additional benefits such as preventing future cash flow problems, preparing for contingency needs, and improving government credit ratings (Rose and Smith 2012). We argue that advocates of state countercyclical policies overlook the rational election behavior of leaders who use surpluses for their own benefit.

The Pew Charitable Trusts ([PEW] 2014) reports, however, that only a handful of states had sufficient fiscal reserves by the late 2010s and most states had failed to tie their reserves to the forecasted revenue volatility. PEW (2014) also reports that state leaders did not consider revenue volatility when they had to decide when and how much to save in reserves. Instead, they simply transferred available surplus to the reserve accounts at the end of every fiscal year. This left the states unprepared to cope with the fiscal stresses of the Great Recession of 2008. Hou (2013) argues that if state governments need to smooth financial operations, especially for lean years, the governments should design and implement fiscal policies to maintain sizable reserves.

Why do state leaders not implement precautionary savings? Are precautionary savings difficult to implement in practice? Political budget cycle (PBC) theory argues that incumbents manipulate state budgets to maximize a chance to win their reelections by exploiting reserves during elections (Nordhaus 1975). According to the PBC theory, incumbents tend to increase spending as their elections approach and delay tax increases until

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later. Consequently, deficits increase as elections near and decrease afterward, at least until the next election approaches. Even if the economy is good, incumbents may save "too little" for these reasons as a result.

Although reserves seem vulnerable to political manipulation, fiscal policy experts argue that it is still important for states to save reserves to deal with economic uncertainty. Thus, limiting the opportunistic behavior of leaders facing reelection will be beneficial for states to accumulate reserves. Prior studies suggest that this opportunistic behavior is "context conditional" (Franzese Jr 2002). This means that states' own institutional arrangements may make engineering PBC easier or more difficult, or more or less meaningful (Alt and Lassen 2006).

As an example of institutional restrictions, state politicians have to face binding Tax and Expenditure Limits (TELs) on their decisions on reserves. Scholars claim that a high level of general fund surpluses accumulated in the 1970s had provoked citizens' hostility and accordingly, citizens had proposed TELs as a means to restrict state and municipal governments' authority over tax, spending, and surplus decisions (Hall and Kanaan 2020; Hou and Brewer 2010). According to these scholars, the limits might play an important role in shaping opportunistic saving behavior. However, they do not examine whether TELs reduce electioneering and restore the countercyclical role of reserves.

Due to the lack of research, we do not know how TELs affect PBC in reserves, which is the focus of this article. State TELs as institutional conditions may discourage the opportunistic behavior. If TELs are sufficiently stringent in tightening politicians' fiscal flexibility, it may be more difficult for them to manipulate the reserves for winning (re)election. To test this hypothesis, we use the panel data of 47 states from 1986 to 2013. Two different types of reserves are examined: GFBs and BSFs.

In our investigation, we find strong evidence that TEL stringency significantly affects states' saving pattern over electoral cycles. The more restrictive the TELs are, the less "gamesmanship" politicians can play with GFBs as elections approach. We also find that politicians in states with stricter TELs tend to use stabilization funds as alternative saving accounts to avoid the TELs and save more revenues in the funds after elections. In these ways, our research contributes to the understanding of TELs control of the manipulation of state reserves.

The article is structured as follows. It next reviews literature related to this study. Then it discusses theoretical arguments with hypotheses. Next it develops the empirical models and estimation method after which it reports empirical results. Finally, the article discusses the implications and identifies the possibilities for future research.

Literature Review

Here we review literature related to fiscal reserves, politics, and TELs. According to public finance theory, reserves—GFBs and BSFs—should be useful for countercyclical and other financial management purposes. PBC theory argues that politicians use reserves for election rather than for fiscal policy purposes. As a result of politics, reserves are unstable over electoral cycles and, in practice, not effective in solving fiscal crises. According to the literature, TELs treat GFBs as excessive revenues, thereby precluding politicians from using them to further their election prospects. On the other hand, TELs leave BSFs to function as the only countercyclical instrument. However, some researchers raise the possibility that politicians can adopt and implement stabilization funds to increase their political discretion for winning elections rather than prepare them for handling fiscal stress. Based on the literature review, we question whether reserves, coming from the general fund or BSF, can function as a countercyclical instrument if politicians manipulate them for electoral gain. We discuss the literature here and pose research questions found in the literature in the subsequent section.

The Roles of Fiscal Reserves

Public finance theory (Musgrave 1959) argues that economic stabilization is one important, necessary function of government, particularly when signs of economic depression emerge. Hansen and Perloff (1944) provide details of the "rational" countercyclical fiscal policy: In recessions, tax rates should be cut, and public spending should be increased by withdrawing reserves and incurring public debt. Since tax increases and spending cuts are politically difficult to adopt and temporary fiscal adjustments are insufficient to cover deficits, withdrawal from reserves will be the best means to eliminate such deficits (Hou and Duncombe 2008).

Two countercyclical reserve instruments have been most frequently used: GFBs and BSFs. First, state governments use GFBs as working capital for covering forecasting errors and one-time expenses but more importantly for stabilizing budget fluctuations (Hou and Brewer 2010). Second, states use BSF ("a rainy-day fund") as the second, reinforcing instrument exclusively for supplementing insufficient revenues in recessions (Hou 2013). BSF is often bounded by law with legal mandates on its deposits and limits on BSF withdrawals. In general, states with BSF deposit a portion of GFBs in their stabilization funds and reserve the remainder in the general fund. The capability of states to eliminate fiscal stress and smooth cyclical fluctuations depends on reserves coming from the general fund and BSF (Wagner 2003).

According to prior studies, BSFs are effective in stabilizing budget volatility while GFBs are not always effective. Many relevant studies provide empirical results that BSFs can alleviate fiscal stress caused by economic business cycles (Douglas and Gaddie 2002; Hou (2004, 2006, 2013); Levinson 1998; Sobel and Holcombe 1996). Specifically, Hou (2004, 2006, 2013) shows that BSFs have the effect of closing state expenditure gaps during the downturn years and boosting spending even in nondownturn years.

McGranahan (2002) and Zahradnik and Ribeiro (2003) also directly relate BSFs to the capability of states to overcome recessions and suggest that the proper perception and structure of BSF can enhance its effectiveness as stabilization funds. For example, McGranahan (2002) remarks that states should prepare a sufficient amount of BSFs for longer-term rather than short-term deficits. Additionally, Gonzalez and Paqueo (2003) show evidence implying that strict BSF deposit and withdrawal rules (e.g., requiring deposits to BSF, supermajority approval for withdrawal) help states to save

higher levels of BSFs and reduce the volatility of social spending. Similarly, Knight and Levinson (1999) and Wagner (2003) present findings that states with strict BSF rules tend to increase total savings available from GFBs and BSFs. Furthermore, one study implies that local governments' higher percentage of stabilization funds to an operating budget can be one of the major forces to restrain overrides of revenue limits in Massachusetts (Wei and Butler 2020).

With regard to GFBs, Hou (2006) does not find any evidence that general fund unreserved undesignated balances have a significant effect on closing the budget gaps. Hou (2013) also suggests that the conventional countercyclical role of GFBs may disappear when states institutionalize BSF. Previous studies attribute the reason for the ineffective countercyclical role of GFBs to state politics. The studies suggest that policy makers' political motivations make it hard for states to accumulate as much GFBs in expansion periods as they need to close deficits in contraction periods (Hou and Brewer 2010; Rodríguez-Tejedo 2012; Rose 2006).

In general, the deposit and withdrawal of state general fund are decided by political decision makers' discretion (Wagner 2003). It makes the GFBs more politically operable to a large extent (Hou 2004). Also, BSFs are not free from political operation. For example, Hou (2004) shows that weak restrictions on the BSF (e.g., funding by appropriation, use by executive discretion) allow politicians to easily access BSF. Continuously, even strict restrictions on BSF deposits (e.g., funding by formula) do not change levels of BSFs. Hou (2004, 55) mentions that "some other invisible forces" determine BSFs. The political interference may play an active role in affecting BSFs.

Although state politics inevitably affects reserves, recent studies on fiscal reserves have not mainly dealt with the election effect. Rather, they have usually treated fiscal reserves as one control variable, except for two studies: Rose (2006, 2008). Thus, our study adds to the reserve literature by identifying how reelection-minded politicians affect the reserve policy. We discuss this opportunistic saving behavior in detail next.

Political Hurdles for States' Saving: Political Budget Cycle Theory

PBC theory examines the effect of politics on fiscal policies including reserves.[1] The theory argues that politicians make different fiscal policy choices between preelection/election periods and postelection periods (Drazen and Eslava 2010). As a result, levels of fiscal instruments (e.g., tax, spending, debt, reserve) in preelection and election periods differ from the levels in postelection periods. The rise and fall in levels of the instruments over the years of politicians' electoral terms—namely, an electoral cycle—create PBC.[2]

PBC theory is established on the political business cycle theory introduced by William Nordhaus (1975). According to him, incumbent politicians tend to manipulate macroeconomic outcomes (e.g., unemployment rate) to obtain electoral gains. The theory considers politicians as opportunistic as well as identical in their preferences to remain in power. At the same time, the voters are considered as "myopic" and nonrational, voting only for politicians who show good economic performances as elections near. Thus, politicians implement expansionary monetary policies before and during elections expecting to receive more votes.

Scholars, however, question the assumption about the voters and claim that voters are able to directly observe politicians' performance even with a lag and act based on voters' rationality (Rogoff 1987). Furthermore, scholars show that PBC is more prominent in fiscal instruments than macroeconomic outcomes since fiscal instruments are under the direct control of politicians while economic outcomes are not (Dubois 2016). Then, since the 1990s, scholars have assumed that voters are rational and emphasized the temporary information asymmetries between voters and politicians about the politicians' competence to explain PBC (De Haan and Klomp 2013). In addition, rather than focusing on macroeconomic business cycles, scholars have paid more attention to budget cycles. They have used as dependent variables fiscal instruments including revenues (e.g., Ehrhart 2013), spending (e.g., Drazen and Eslava 2010), debts (e.g., Baskaran et al. 2016), and reserves (e.g., Rose 2006, 2008).

Regarding the relationship between electoral cycles and fiscal reserves, prior studies suggest that reelection-minded politicians reduce a level of total fiscal reserve in preelection and election periods and increase it in postelection periods. Persson and Tabellini (2003) provide empirical evidence that a government has deficits in preelection periods while surpluses in postelection periods. Likewise, PBC significantly appears in most studies examining the aggregate level of reserves measured by total revenue minus expenditures (Kneebone and McKenzie 2001) or total revenue minus expenditures (Hou and Smith 2010).

The existing literature also provides similar results over components of reserves: GFBs and BSFs. First, prior studies show that GFBs shrink in preelection and election periods. As election years approach, depleting reserves to cut taxes or to increase spending is politically appealing to such important voters as elderly people, health care providers, parents, teachers, or taxpayers (Lauth 2003). In this case, politicians are more likely to use GFBs, which is observable to voters and thus becomes an easy target for political manipulation (Hou and Duncombe 2008). In fact, Rose (2006) confirms that PBC exists in GFBs, showing that GFBs decline in election years but grow two years after the election year.

Second, prior studies also show that politicians tend to manipulate BSFs. Hou, Moynihan, and Ingraham (2003) suggest that legal restrictions on the deposit and withdrawal of BSF can preclude political manipulation. However, Rose (2008, 170) shows that this suggestion may be "merely suggestive" and anecdotally describes that politicians opportunistically manage BSFs with shortsightedness and irresponsibility. In her statistical results, BSF rules directly restricting politicians' behavior (e.g., formula, appropriation, supermajority) have little effect on the reduction of the political manipulation in BSFs. Instead, rules involving more politicians in the decision-making process (e.g., withdrawal by a governor's approval) are effective in eliminating the opportunistic behavior because the rules allow politicians to monitor one another. The results imply that the strict formula rule does not completely exclude political intervention. Thus, the decisions on BSFs appear to be more a political process than a pure budgetary process.

Since this opportunistic behavior can lead to inefficiency in allocating resources, it is necessary to restrict the political manipulation of GFBs and BSFs. Recent PBC scholars suggest that politicians' incentive to generate PBC can vary by political and institutional contexts or combination of those conditions (Franzese Jr 2002). As for the political context, the effect of electoral cycles on fiscal reserves depends on the democracy (Brender and Drazen 2008; Persson and Tabellini 2003), party differences (Kneebone and McKenzie 2001), transparency (Alt and Lassen 2006), and polarization of political parties (Alt and Lassen 2006).

In addition to the political contexts, Alt and Lassen (2006) normatively argue that the manipulation depends on the institutional arrangement. Subnational state politicians face such legal constraints as TELs on their freedom, and many states choose their own specific type of TELs. States' own specific TELs can restrain politicians' discretion on managing reserves in a different manner; accordingly, the political manipulation can vary. However, PBC literature has not explored the role of TELs as the contextual determinant of politicians' ability and incentive to manipulate reserves. Hence, our research can fill this gap by examining the occurrence of PBC depending on the level of TEL stringency. In the next section, we provide an overview of state TELs, and relevant empirical studies.

The Impact of Tax and Expenditure Limitations on Fiscal Reserves

TELs are constitutional or statutory restrictions intended to make policy makers more accountable for budget practices. Voters who sought tax relief and wanted to limit their states' discretion of resource allocation obliged states to establish TELs in the 1970s and 1980s. Thirty-three states had state-level TELs by 2013 and showed considerable variation in several aspects: (1) the method of codification, (2) approval method, (3) growth factor, (4) base of the growth limit, (5) treatment of any surplus revenues, (6) provision for waiver of the limit, and (7) exemptions.

The stringency of TELs differs depending on the base to which TELs are applied: revenue, expenditure, or both. In general, revenue limits are more stringent than expenditure limits. Revenue limits often require revenues in excess of the limits to be refunded, whereas expenditure limits typically allow excessive revenues to be carried forward into the next years through budget reserves (Kallen 2017). Furthermore, expenditure limits typically do not restrain all spending categories; the limits often cover only general fund expenditures, not special funds (e.g., education, tobacco settlement funds). This implies that political decision makers can always avoid expenditure limits by shifting their spending to special funds not restrained by the limits (Bae, Moon, and Jung 2012; Kallen 2017). Both limits are the strictest due to the limits' broad coverage.

The presence of TELs directly affects a state's saving behavior. For example, Hou and Duncombe (2008) state that the presence of expenditure limits significantly increases the total savings. In addition, Hou and Smith (2010) decompose reserves into several types and show the impact of TELs on each reserve. They find that expenditure limits significantly increase the chance of having a surplus in total balance at the end of a fiscal year while revenue limits significantly decrease the chance.

The authors do not provide a solid conclusion about the different directions between TELs and reserves over the type of TELs. The literature on TEL legislation provides the reason for the different results. As mentioned, because expenditure limits are less restrictive than revenue limits, policy makers may circumvent TELs in an easier way and save more reserves in states with expenditure limits, resulting in a higher chance of having a surplus than in states with revenue limits. These findings suggest that the stringency of TELs can affect savings behavior.

In fact, Maher et al. (2017) examine the impact of TEL stringency on fiscal reserves. According to their research, the stringency has a negative association with a level of GFBs but no significant relationship to a level of BSFs. The results are not surprising given that stringent TELs are intended to give more pressure to policy makers to reduce government size as well as to be accountable for fiscal decisions consistent with the restrictions. Since stringent TELs restrain politicians' decisions directly on usages of a general fund rather than stabilization funds, policy makers are more likely to reduce the level of GFBs in states with stricter TELs.

Meanwhile, the results of Maher and his colleagues (2017) regarding the insignificant effect of TEL stringency on BSFs seem inconsistent with previous studies at a glance. According to Wagner and Sobel (2006), since states with TELs are more likely to experience fiscal stress, the states are more apt to adopt stabilization funds as a means to evade TELs and expand reserves. Moreover, states with stringent TELs, which require some or all of any budget surplus to be refunded to citizens (e.g., Oregon's Measure 86), are more likely to adopt a statutory BSF while being less likely to adopt stringent rules on BSF deposit and withdrawal. This result may present the plausibility that states with stringent TELs are likely to save more BSFs under less strict BSF rules. However, Wagner and Sobel (2006) do not provide empirical evidence of this.

In fact, the findings of Maher et al. (2017) and Wagner and Sobel (2006) reach the same conclusion: politics ultimately matters in saving decisions on BSF. Hou and Duncombe (2008) mention that "adopting BSF is one thing, increasing savings is another" (54). It is the politician (as a policy maker) in a state government adopting BSF who may choose whether or not to save any money in the funds. In line with this point, Maher et al. (2017) also suggest that political will and incentive structures are keys to understanding the relationship between TELs and state reserves. However, the literature on TELs has not examined the effect of the limits on the politics, especially whether TELs and their stringency can remove the political manipulation. So far, much of the research on TELs has focused on whether TELs matter in outcomes such as the levels of revenue and spending as well as economic growth (e.g., Bae, Moon, and Jung 2012; McDonald et al. 2020). Thus, our study broadens the scope of TEL research by examining the impact of TELs on opportunistic saving behavior. Hence, turning back to our point, it is essential to consider both institutional and political factors when examining reserves.

The Effect of Tax and Expenditure Limitation Stringency on Opportunistic Saving Behavior

Here we demonstrate how TEL stringency affects the relationship between an electoral cycle and state fiscal reserves (GFBs and

BSFs).[3] Since prior studies have not examined whether TELs can reduce electioneering and restore the countercyclical role of reserves, our research fills the literature gaps by investigating the subject. We establish our logic based on Rose (2006) and apply the public choice theory (principal–agent [PA] model) to explain the TEL adoption and implementation. Although the heterogeneity in the focus of the TELs (e.g., limit on revenue, spending, and both) and the structure of BSF might be important, we simplify our assumptions to make the study manageable.

The adoption and execution of fiscal policies involve delegation—namely, the principal–agent relationship (von Hagen 2002). According to the PBC model, as principals, voters value politicians' competence, that is, the ability to finance services with a smaller amount of revenue (Rose 2006). Voters compensate the competent politicians in the form of voting to make them work as their agents. In fact, politicians draw down reserves (GFBs and BSFs) to provide public services during election periods, whereas they may use fewer revenues and save more for the future election in postelection periods (Hou and Duncombe 2008; Lauth 2003).

However, this manipulation unnecessarily distorts costs, making fiscal reserves unstable over electoral cycles (Alt and Rose 2007). Hence, the adjustment can keep governments from operating a stable revenue stream that facilitates "careful planning and cost-savings" (Clair 2012, 62). In fact, rational voters recognize that this is a rent-seeking behavior that is the result of a lack in fiscal discipline on the part of the politicians. Thus, voters bring politicians' fiscal decisions under control enforcing states to adopt artificial constraints such as TELs.

We argue that the equilibrium depends on the TEL stringency. When TELs are stringent enough to require spending to be financed entirely with taxes (without increasing spending and/or taxes or using up reserves), politicians are not able to signal their competence through adjusting reserves, especially GFBs, over electoral cycles. The stringency of TELs directly affects levels of GFBs (Maher et al. 2017). Consequently, politicians no longer derive any electoral gain from the manipulation of GFBs (Rose 2006). This means that the stringent TELs make politicians more aware of the true budget constraint as well as make them reduce the excessive spending and saving (von Hagen 2002). PBC in GFBs should be eliminated in states with the stringent TELs.

To achieve the intended goals, voters should be able to monitor politicians' decisions on reserves. Yet, the politicians are likely to find ways to circumvent these decisions due to expensive and imperfect monitoring. If politicians are able to avoid the stringent TELs by using the alternative source, BSFs, as Wagner and Sobel (2006) discuss, then the stream of BSFs will change accordingly. Even under the stringent TELs, fiscal policies that politicians choose often deviate from the interests of voters (Gilligan and Matsusaka 2001). It is a continuous tug of war between politicians and voters.

Specifically speaking, the more difficult it is for governments to increase the size of spending, tax, and GFBs or to replace their current TELs with new ones, the more effective the TELs are in discouraging the manipulation of GFBs over electoral cycles. It is because the more stringent limits (e.g., growth limits on revenue and/or spending and refund of surplus) directly restrain the usage of GFBs and have fewer loopholes to operate either large surpluses or deficits in their general fund. Thus, in states with more stringent TELs, politicians spend less GFBs in preelection and election periods and save less GFBs in postelection periods.

However, politicians use BSFs to evade the stringent TELs and secure fiscal flexibility by placing savings outside the jurisdiction of the stringent limits. Empirical research suggests that BSFs decrease in election years and increase in nonelection years (Rose 2008). If political manipulation is not present, there would not have been any effect of TEL stringency on BSFs. The main reason is that TELs do not directly constrain BSFs itself (see Maher et al. 2017). In the world of politics, however, under the more stringent TELs, politicians have a stronger incentive to save higher levels of BSFs, especially in postelection periods for future spending in elections.

Since BSFs could be more invisible and less transparent to voters and more insulated than GFBs by BSF deposit and withdrawal rules, the political costs of using BSFs are significantly low (Hou and Duncombe 2008; Rose and Smith 2012). Hence, creative politicians are expected to use "gimmicks" (e.g., adoption of new stabilization funds, a temporary transfer from special funds) not restricted by the strict TELs, and saving more BSFs in postelection periods. Then, politicians are expected to strategically treat BSFs as "revenue" as elections approach. In consequence, states with more stringent TELs spend more BSFs in preelection and election periods while saving more BSFs in postelection periods as opposed to a counterpart given states' certain BSF rules.

Based on our theoretical arguments, three testable hypotheses emerge:

> **Hypothesis 1:** TEL stringency will change opportunistic saving behavior, such that fiscal reserves decrease in preelection and election periods while increasing in postelection periods.
>
> **Hypothesis 1-1:** States with more stringent TELs will spend less GFBs in preelection and election periods but save less in postelection periods than states with less stringent TELs.
>
> **Hypothesis 1-2:** States with more stringent TELs will spend more BSFs in preelection and election periods whereas saving more in postelection periods than states with less stringent TELs.

Figure 1 presents the hypothetical time path of GFBs and BSFs in high- and low-TEL–stringency systems.

Empirical Framework

Data and Variables

To examine how electoral cycles in GFBs and BSFs vary by TEL stringency, we use the panel data set for 47 U.S. states from 1986 to 2013. The state of Alaska is omitted because it has huge reserve funds supported by severance taxes (Hou 2013). In addition, our model includes states with a four-year gubernatorial election cycle,

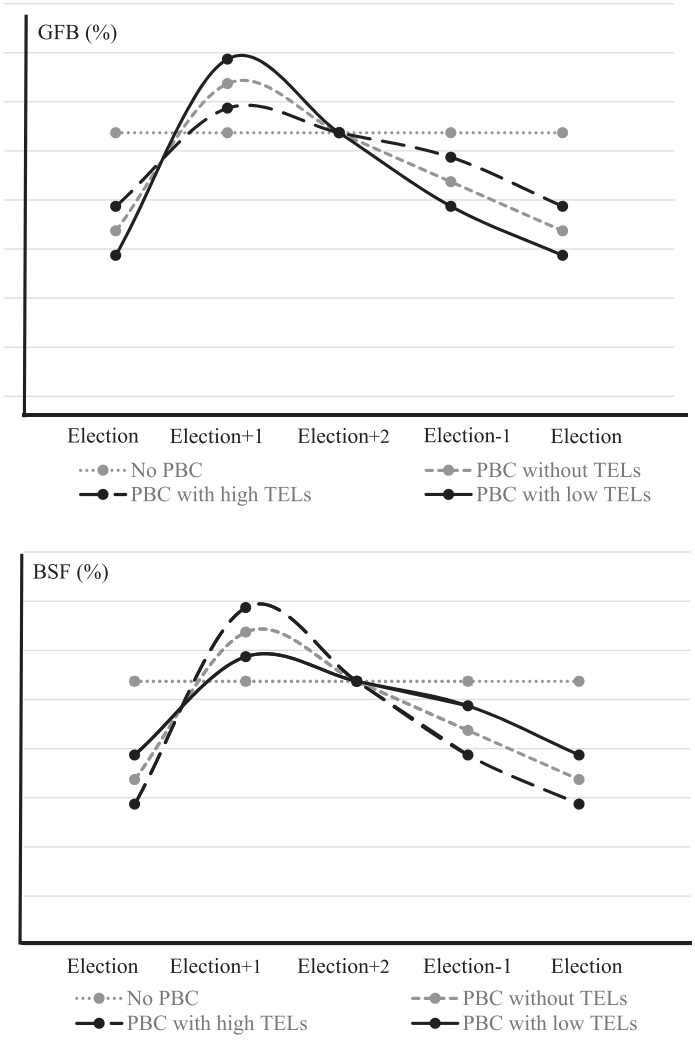

Figure 1 Hypothetical Political Budget Cycles in General Fund Balances and Budget Stabilization Fund Balances

which provides "more traction" (Rose and Smith 2012, 192) than a two-year cycle. We omit two states of New Hampshire and Vermont that have a two-year cycle during the whole sample period. As for Rhode Island that switched from a two-year to four-year cycle during the sample period, we include only the time period when it had a four-year cycle, 1994 to 2013.

The dependent variables are actual GFBs and BSFs because actual reserves show the impact of any (endogenous) policy changes enacted during the year (Rose 2008). These variables are measured as a percentage of general fund expenditures. The data come from the National Association of State Budget Officers' (NASBO) annual reports, *Fiscal Survey of States*.

Dummy variables are created for a gubernatorial election cycle. Three dummy variables are *preelection* (one year before election), *election* (election year), and *postelection* (one year after election). The data come from the *Book of States*. One issue related to our panel data is the imprecise alignment between a fiscal year for the reserve data and a calendar year for the electoral cycle data as Peltzman (1992) indicates.[4] Thus, to correct the data alignment issue, when the election occurs in the calendar year *t*, $Reserve_{t+1}$ is represented as the reserve in the year of election and $Reserve_t$ is represented as the reserve in one year before the election year. For example, when a gubernatorial election occurs in the calendar year 2000, the reserve collected in the fiscal year 2001 represents the reserve in the election (calendar) year 2000 while the reserve in the fiscal year 2000 represents the reserve in one year prior to the election.[5]

Then we create interaction terms between the election cycle dummies and the measure of state TEL stringency to examine how the "time profile" of reserves differs across TELs. We use the stringency index of state TELs developed by Amiel et al. (2014) and gather data from Amiel et al. (2014) and Kallen (2017).[6] The index ranges from 0 (*no TEL*) to 33 (*most restrictive*). The index can provide richer information to reflect changes in the index within states and to compare across states and over time.

We include control variables in the model that affect state fiscal reserve policies. First, to control the economic condition, we use the annual unemployment rate. Because recessions are more likely to drop reserves, the variable is expected to produce negative signs on GFBs and BSFs.

Second, to isolate the state fiscal capacity effect, we use the personal income in the natural log form and intergovernmental revenue transferred from the federal or local governments to total general revenues. We expect that a high level of personal income representing a high fiscal capacity has positive signs on GFBs and BSFs. In addition, since a heavy reliance on intergovernmental revenue means the poor and unstable fiscal condition, a state with a higher share of intergovernmental revenue needs more GFBs and BSFs to stabilize resources for funding its public services, consequently having positive signs (Maher et al. 2017).

Third, to control the revenue volatility effect, we use the variable of revenue volatility for each state. Revenue volatility is an important factor in the current research and has a positive relationship with reserves in prior studies (Maher et al. 2017). Here, revenue volatility is calculated as the absolute deviations of the residuals from the state's own revenue growth trend regression model. We expect that a state with a higher level of revenue volatility saves more GFBs and BSFs to prepare for the uncertainty in its revenue stream.

Fourth, to control the demographic effect, we include three variables: the population in the natural log form, the annual poverty rate, and the sum of the proportion of school-aged population—measured by the fraction of population aged under 18 to total—and the proportion of elderly population—measured by the proportion of population aged 65 and over to total. Higher levels of these variables represent the greater demand for government social services. Since the higher demand for services needs more revenues, the variables may produce positive signs.

Fifth, to control the effect of a state's partisanship, our model includes one dummy variable for a Democratic governor and two continuous variables for the domination of the upper and lower house by Democrats. The domination of the house by Democrats is measured by a fraction of the number of Democrats' seats to the total number of Democrats plus Republicans in each house.

Given that Democrats tend to spend more on social welfare than Republicans, we expect that GFBs and BSFs will be lower when a governor is a Democrat and Democrats are the majority in the houses (Giligan & Matsusaka 2001).

Sixth, to control the effect of a state's historical and political traditions, our model includes the index for citizen ideology (Berry et al. 1998). The index ranges from 0 to 100 with 0 indicating the most conservative and 100 representing the most liberal. Because states with higher liberal political ideology demand more government services, it will show negative signs.

Finally, to control the effect of state budgetary institution, we include a dummy variable for strict balanced budget requirements (BBRs). A value of one on the stringent BBRs variable represents that a state may not carry over deficits into the next fiscal year. States with strict BBRs are expected to have positive relationships with GFBs and BSFs because the states can hold down the possibilities of annual deficits and have high savings levels (Rose 2006).[7]

Empirical Specification

Before presenting our empirical specifications, we describe how the magnitude of PBC is measured. It is measured by the length of an electoral term on the *x*-axis and the amplitude of reserves on the *y*-axis (Alt and Rose 2007). First, the length of one PBC is the number of years from one election to the next. We use a four-year gubernatorial term, and the election schedule is predetermined in the U.S. context; thus, the length of one PBC is fixed, and PBC occurs every four years. Second, the amplitude of one PBC indicates the difference in estimated reserves between the peak and the trough of the cycle. If PBC exists, the time path of reserves from one election to the next looks like a reverse "V" shape. If PBC does not exist, the path will be flat, presenting no significant difference in levels of reserves across cycles of elections. If TEL stringency as a contextual variable empirically makes no difference, unconditional PBC will present. If the TEL stringency empirically makes a difference, the amplitude of one PBC becomes smaller or larger than the one of unconditional PBC.

We develop two empirical models to examine how the role of TEL stringency plays in PBC in fiscal reserves. The first model allows the electoral cycle effect to differ between high and low TEL-stringency systems. To encompass the effects, we split states into two groups: $h_i = 1$ for high TEL-stringency states and 0 otherwise and vice versa for l_i.[8] Those equal to and above the median of the TEL-stringency level are high TEL-stringency states and those below the median are low TEL-stringency states. The first empirical model is as follows,

$$y_{it} = \alpha y_{it-1} + \beta C_{it} + h_{it}\left[\delta_1 preelection_{it} + \delta_2 election_{it} + \delta_3 postelection_{it}\right] + l_{it}\left[\theta_1 preelection_{it} + \theta_2 election_{it} + \theta_3 postelection_{it}\right] + \lambda_t + v_i + u_{it} \quad \text{(Model 1)}$$

where i is the state and t is the year indicator, and y_{it} is the dependent variable (GFBs and BSFs); y_{it-1} is one-year lagged dependent variable; C_{it} is a vector of control variables; $preelection_{it}$, $election_{it}$, and $postelection_{it}$ represent years in the electoral cycle; λ_t is the fixed effect of year t; v_i is the fixed effect of state i; and u_{it} is a disturbance term.

For robustness checks, our article also employs the second model including the continuous TEL-stringency index (tel_{it}) interacting with the electoral cycle dummy variables as follows:

$$y_{it} = \alpha y_{it-1} + \beta C_{it} + \delta_1 preelection_{it} + \delta_2 election_{it} + \delta_3 postelection_{it} + \rho_1 tel_{it} + tel_{it} * \left[\theta_1 preelection_{it} + \theta_2 election_{it} + \theta_3 postelection_{it}\right] + \lambda_t + v_i + u_{it} \quad \text{(Model 2)}$$

where tel_{it} is the TEL-stringency index in i state and t year.

To examine both models, we use the system-generalized method of moments (GMM) estimation. The ordinary linear squares (OLS) estimation with the lagged dependent variable generates biased and inconsistent results (Arellano and Bond 1991). In this case, the system GMM solves the problems by combining the first differenced and levels equations. Using the system GMM, we include lags of the dependent variable from at least two periods (t–2) and earlier as instrumental variables for the difference in the dependent variable ($y_{i,\,t-1} - y_{i,\,t-2}$) to remove the correlation between the dependent variable and error term.

Empirical Results

Given the purpose of this study, it is important to note the considerable variation in two types of reserves, GFBs and BSFs (see appendix A).

In table 1, we examine electoral effects on reserves by conditioning their magnitude on TEL stringency. The coefficients of lagged dependent variables show significant and positive signs in all regressions, confirming that the dynamic model is proper for our data set. Besides, we confirm that dependent variables are subject to considerable inertia. We run the Arellano and Bond (1991) test for the absence of second-order serial correlation, and no second-order serial correlation in the first-differenced error is confirmed in all the regressions.

The results regarding GFBs are presented in columns 1 and 2 while the estimations about BSFs are reported in columns 3 to 6. We report empirical results of model 1 with the binary TEL-stringency index for GFBs in column 1 and BSFs in column 3. We also show the estimated results of model 2 including the continuous TEL-stringency index for GFBs in column 2 and BSFs in column 4. In columns 5 and 6, we include additional factors that may affect BSFs to check the robustness of the previous specifications reported in columns 3 and 4.

Hypothesis 1 suggests that TEL stringency affects the opportunistic saving pattern. In line with our expectation, we identify that higher TEL-stringency states spend less GFBs in preelection and election periods. In addition, we find that higher stringency states withdraw less BSFs in preelection and election periods while saving more BSFs in postelection periods. We look into the results in detail. Here, we report the results about GFBs first and BSFs second. We report the robustness check for BSFs estimations in the next section.

In hypothesis 1-1, we expect that the effect of an electoral cycle on GFBs differs for high(er) and low(er) TEL-stringency states. Consistent with our theoretical expectations, there is no indication of changes in GFBs over an electoral cycle in the high TEL-

Table 1 Conditional Electoral Effects on General Fund Balances and Budget Stabilization Fund Balances: Stringency of Tax and Expenditure Limitations

Variables	(1) GFBs—Model 1		(2) GFBs—Model 2		(3) BSFs—Model 1		(4) BSFs—Model 2		(5) BSFs—Robust		(6) BSFs—Robust	
Lagged dependent	0.22***	(0.06)	0.18***	(0.05)	0.53***	(0.14)	0.53***	(0.14)	0.54***	(0.14)	0.54***	(0.15)
Preelection*high TELstringency	−0.72	(0.54)			0.01	(0.24)						
Election*high TEL stringency	−0.21	(0.52)			−0.13	(0.24)						
Postelection*high TEL stringency	−0.52	(0.50)			0.45*	(0.27)						
Preelection*low TEL stringency	−1.03**	(0.41)			−0.28	(0.34)						
Election*low TEL stringency	−1.32*	(0.75)			−0.53**	(0.27)						
Postelection*low TEL stringency	−0.17	(0.55)			0.24	(0.39)						
Preelection			−1.43***	(0.39)			−0.87***	(0.33)	−1.18***	(0.45)	−0.91*	(0.52)
Election			−1.77**	(0.86)			−0.61*	(0.33)	−0.79**	(0.30)	−0.80*	(0.48)
Postelection			−0.37	(0.56)			−0.22	(0.33)	−0.51	(0.32)	−0.15	(0.50)
TEL stringency			−0.07	(0.14)			0.01	(0.04)	0.03	(0.06)	−0.04	(0.05)
Preelection*TEL stringency			0.05*	(0.03)			0.04*	(0.02)	0.04*	(0.03)	0.06**	(0.03)
Election*TEL stringency			0.09**	(0.05)			0.03*	(0.02)	0.04*	(0.02)	0.05*	(0.03)
Postelection*TEL stringency			−0.01	(0.04)			0.04**	(0.02)	0.05**	(0.02)	0.05**	(0.02)
Unemployment	−1.18**	(0.46)	−1.10**	(0.44)	−0.53**	(0.26)	−0.53***	(0.20)	−0.73**	(0.28)	−0.79***	(0.29)
Personal income	0.29**	(0.11)	0.30***	(0.11)	0.13	(0.09)	0.12	(0.09)	0.12*	(0.06)	0.10	(0.08)
Intergovernmental revenue	−0.25	(0.25)	−0.21	(0.23)	0.17	(0.20)	0.17	(0.14)	0.25	(0.21)	0.19	(0.23)
Population	0.23	(0.60)	0.24	(0.56)	0.46**	(0.23)	0.58**	(0.29)	0.12	(0.08)	0.45	(0.29)
School aged & elderly population	0.49	(0.31)	0.47*	(0.28)	−0.04	(0.06)	−0.03	(0.10)	−0.05	(0.06)	−0.03	(0.11)
Poverty	0.03	(0.12)	0.02	(0.11)	−0.14*	(0.08)	−0.14**	(0.07)	−0.16*	(0.08)	−0.15*	(0.09)
Revenue volatility	1.09**	(0.52)	1.25**	(0.50)	0.58*	(0.31)	0.57**	(0.25)	0.70**	(0.28)	0.59**	(0.30)
Strict BBRs	0.63	(1.38)	0.62	(1.32)	0.20	(0.85)	0.52	(0.91)	−0.79	(0.93)	0.53	(0.84)
Citizen ideology	−0.04	(0.07)	−0.03	(0.06)	−0.01	(0.04)	−0.02	(0.03)	−0.01	(0.03)	−0.04	(0.03)
Democratic governor	0.51	(0.62)	0.30	(0.55)	−0.05	(0.25)	−0.04	(0.29)	−0.03	(0.27)	−0.14	(0.27)
Democrats in upper house	−0.02	(0.04)	−0.01	(0.04)	−0.02	(0.02)	−0.02	(0.02)	−0.05	(0.24)	−0.02	(0.03)
Democrats in lower house	−0.04	(0.04)	−0.04	(0.05)	0.01	(0.03)	0.01	(0.03)	0.02	(0.03)	−0.01	(0.04)
BSF deposit from special revenue									−0.32	(0.30)		
BSF deposit from general fund surplus									0.20	(0.19)		
BSF deposit by appropriation									−0.47	(0.34)		
BSF use by supermajority									−0.86*	(0.42)	−0.87*	(0.52)
BSF use for shortfall									−0.83**	(0.37)	−0.85*	(0.47)
BSF use by appropriation									−0.80**	(0.37)	−0.96**	(0.46)
Preelection*BSF use by supermajority											−0.04	(0.06)
Election*BSF use by supermajority											0.01	(0.06)
Postelection*BSF use by supermajority											0.05	(0.05)
Preelection*BSF use for shortfall											−0.05	(0.04)
Election*BSF use for shortfall											−0.01	(0.03)
Postelection*BSF use for shortfall											0.11**	(0.05)
Preelection*BSF use by appropriation											−0.02	(0.05)
Election*BSF use by appropriation											0.08	(0.07)
Postelection*BSF use by appropriation											0.15*	(0.08)
Constant	45.81	(101.2)	68.27	(105.2)	−68.86*	(41.0)	−100.5**	(45.5)	9.33	(44.7)	50.28	(44.7)

*Significant at 10 percent.
**Significant at 5 percent.
***Significant at 1 percent.
Robust standard errors are in parentheses.

stringency states while GFBs are lower in preelection and election years relative to the base year= two years after elections in the low TEL-stringency states, as shown in column 1. In states with low TEL stringency, political manipulation still occurs in GFBs. The results suggest that low TEL stringency may have less effect on reducing the manipulation than high TEL stringency.

The results of model 2 are presented in column 2. The results indicate that TEL stringency does not directly affect GFBs. Preelection and election years prompt significant decreases in GFBs when the TEL-stringency level is zero, confirming the previous literature (e.g., Rose 2006, 2008). However, the coefficient of postelection years is not statistically significant, suggesting the level of GFBs in postelection years is not different from the one in the base year.

The interaction terms, *preelection*tel stringency* and *election*tel stringency*, are statistically significant and positive, suggesting that the preelection- and election-downward effect shrinks and becomes insignificant as the level of TEL stringency increases. However, the coefficient *postelection*tel stringency* is not statistically significant. Hence, the results imply that politicians' fiscal decisions on GFBs are bounded by TELs only in preelection and election years, not after elections, thus, partially supporting hypothesis 1-1.

These results can be seen as a higher stringency score leads to an increase in GFBs, which contradicts the prior studies related to TELs. These results may reflect the aggregation of TELs. To test this more carefully, we report the marginal effects of an electoral cycle for each value of TEL stringency (see columns 1 to 3 of appendix B) based on the estimations of column 2 of table 1.

According to our calculation, the marginal effects of preelection and election on GFBs are negative and significant only for low values of TEL stringency (values 1 to 14 for preelection and values 1 to

7 for election), implying that politicians tend to spend GFBs in preelection and/or election years for states with low TEL stringency. The marginal effect of postelection years on GFBs is negative and insignificant from the lowest (0) to the highest (33) values of the stringency. Within the range, the marginal effects of preelection and election years decrease as the TEL-stringency level becomes higher, indicating a weaker manipulation in preelection and election years in states with more stringent TELs.

The marginal effects of preelection and election years become insignificant from the stringency levels of 15 and 8, respectively. The results suggest that both preelection and election effects disappear in states with the middle to the highest stringency level. Then, the marginal effects of preelection and election years become positive from the high stringency value (30) and the middle value (19), respectively, but both effects are statistically insignificant. Our findings imply the effectiveness of TELs in reducing attempts to increase GFBs when the stringency of TELs is sufficiently high. The high TEL stringency can eliminate efforts to manipulate GFBs, especially, before and during elections. Thus, our findings are in line with TEL literature and partially support hypothesis 1-1 due to the insignificant coefficient of *postelection*tel stringency*.

Turning to the BSFs estimation, model 1 is shown in column 3 of table 1. Hypothesis 1-2 suggests that higher TEL-stringency states withdraw more BSFs in preelection and election years while saving more BSFs in postelection years, as opposed to lower TEL-stringency states. As expected, in high TEL-stringency states, BSFs are significantly higher by 0.45 percent in postelection years than in base years, implying that high TEL-stringency states tend to save more BSFs after elections. However, unexpectedly, in low TEL-stringency states, BSFs are significantly lower by 0.53 percent in election years. Our results indicate that low TEL-stringency states tend to spend more BSFs in election years, inconsistent with hypothesis 1-2. The reason for this unexpected result is straightforward. Recall the significant negative interaction term (*election*low tel-stringency*) in GFBs as shown in column 1 of table 1. Since politicians need to finance the spending increased in elections, they withdraw more GFBs and spend more BSFs to supplement GFBs in low TEL-stringency states. Low TEL-stringency states tend to transfer out of BSFs as "revenue," which is not subject to TEL oversight.

The results of model 2 are reported in column 4 of table 1. Similar to the results in GFBs, preelection and election years are associated with significant reductions in BSFs when the level of TEL stringency is zero. However, we cannot confirm that states tend to increase BSFs in postelection years due to the insignificant coefficient on *postelection*. TEL stringency does not directly affect the BSFs level consistent with the result of Maher et al. (2017). This insignificant effect also might be due to the aggregation of the heterogeneity in the focus of TELs. The significant interaction terms reveal that the effect of an electoral cycle on BSFs varies with the degree of TEL stringency, supporting hypothesis 1.

According to our marginal effect analysis (see columns 4 to 6 of appendix B), the marginal effects of preelection and election on BSFs are negative and significant only for low values of TEL stringency (values 1 to 12 and values 1 to 4, respectively). In contrast, the marginal effect of postelection is positive and significant from the middle to the highest stringency values (values 13 to 33) while the effects of preelection and election become insignificant. These results are consistent with the estimates of model 1, but partially support our hypothesis 1-2. The results show the message of our study: If the TEL-stringency level is high enough (values of 13 to 33), the manipulation in preelection and election years disappears, but BSFs are saved more in postelection years.

Figure 2 illustrates the actual time path of GFBs and BSFs in high and low TEL-stringency states. The persistent pattern of electoral cycles in GFBs disappears in high TEL-stringency states, but it appears in states with the low TEL stringency or without TEL, although the manipulation level is slightly reduced under the low TEL stringency compared to no TEL. On the other hand, states with the high TEL stringency tend to manipulate more BSFs in postelection years. Also, states with low TEL stringency or no TEL present decreases in BSFs before and during elections, though the magnitude of the manipulation is smaller in states with the low TEL stringency than in states without TEL.

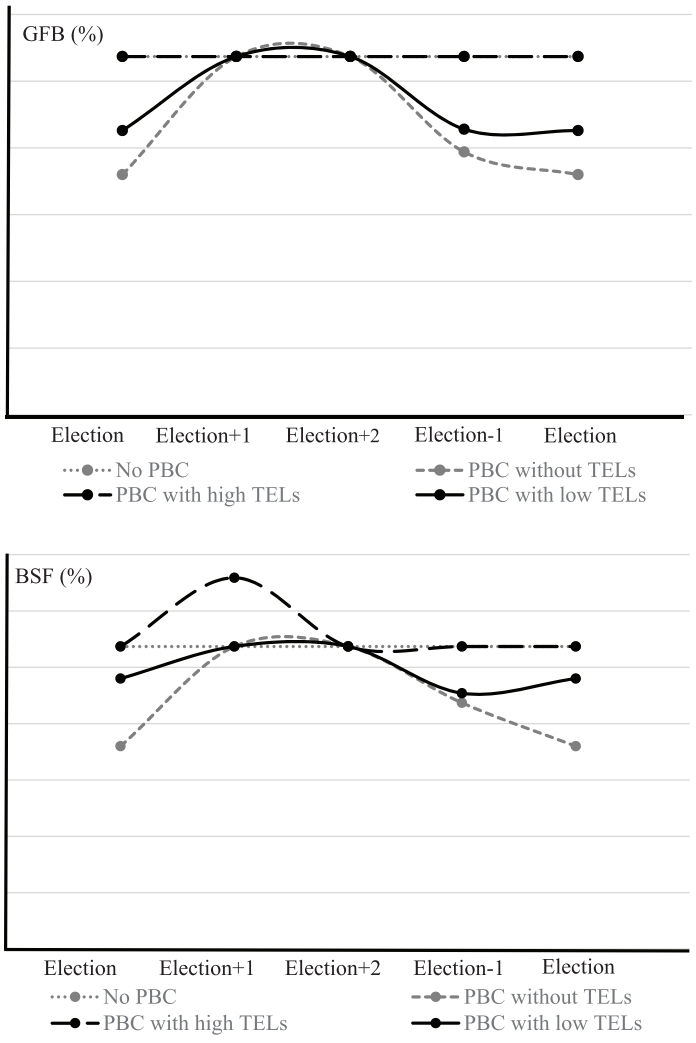

Figure 2 Actual Political Budget Cycles in General Fund Balances and Budget Stabilization Fund Balances

Some control variables explain the differences among states in GFBs and BSFs: States with a higher unemployment rate have lower levels of GFBs and BSFs; a higher personal income is positively associated significantly with GFBs but not with BSF; states with a larger population are significantly associated with higher BSF but not with GFBs; states with a higher percentage of the school-aged and elderly population are significantly related to a higher GFBs but not to BSFs; states with a high poverty rate are significantly associated with a decrease in BSFs but not with GFBs; states with a high revenue volatility save more GFBs and BSFs; GFBs and BSFs do not seem to be affected by intergovernmental revenue, strict BBRs, citizen ideology Democratic governor, and dominance of Democrats in upper and lower houses.

Robustness Checks: Control Variables in Budget Stabilization Fund Models

Our reference models (models 1 and 2) are basic specifications that include only essential variables. Thus, one may raise concerns about omitted variable bias, such as a state's own specific restrictions on BSF deposit and withdrawal. Hence, in this section, we investigate whether our findings are robust for the inclusion of control variables for BSF restrictions.

We use four types of deposit rules. They are presented in the order from less to more political control: (1) deposit from a general fund by a predetermined formula, (2) deposit from special revenues, (3) deposit from general fund surplus, and (4) appropriation (Hou 2004). The rule of "deposit by formula" indicates that monies are automatically transferred into BSF if the predetermined economic conditions are met. The rule of "deposit from special revenues" indicates that a state can use special revenues (e.g., tobacco settlement receipts) to fund its BSF as a supplement. The rule of "deposit from general fund surplus" denotes that a state is required to save a portion of any general fund surplus. Lastly, the rule of "deposit by appropriation" indicates that a state is not required to save any money in BSF, but leaders save money at their discretion through appropriation (Hou 2004; Wagner 2003).

Regarding withdrawal rules, we use four categories. The rules are presented in the order from less to more political interference: use (1) by a predetermined formula, (2) by supermajority, (3) for revenue shortfall, and (4) by appropriation. The rule of use by formula indicates that the use of BSF is automatic through transfers when predetermined economic conditions exist. The rule of use by supermajority indicates that a supermajority vote of the legislature is required in order to use BSF. The rule of use for revenue shortfall denotes that a state is permitted to withdraw BSF only for the purpose of covering a revenue shortfall. The rule of use by appropriation indicates that a state may use BSF at the discretion of the legislature (Hou 2004; Wagner 2003). (Appendix A includes summary statistics of these rules.)

In our regression, three dummy variables for the deposit rules are included: deposit from special revenues, from general fund surplus, and by appropriation. As to the use rules, three dummy variables are included: use by supermajority, for shortfall, and by appropriation. The "formula" is the default for both cases. Because the formula rule is the most stringent, other deposit and use rules are expected to allow for executive and legislative discretion and provide the easier access to BSF, consequently leading to decreases in BSF relative to the default (Hou 2004). Data of the BSF rules come from previous studies (Hou 2004; Knight and Levinson 1999; Randall and Rueben 2017; Rose and Smith 2012; Wagner and Sobel 2006), National Conference of State Legislatures and NASBO.

We present estimations with these BSF rules in column 5 of table 1. The results are robust for the inclusion of BSF rules as control variables. The coefficients of the interaction terms remain largely unchanged. Regarding the sources of BSF, coefficients of all three estimates are statistically insignificant. As for the use of BSF, as expected, the coefficients of the three rules are statistically significant and negative, indicating that these variables reduce BSFs relative to the use by formula. Our findings suggest that the use rule by formula obviously helps better keep BSFs than other rules.

Furthermore, we include interaction terms between BSF withdrawal rules and an electoral cycle in order to examine whether opportunistic behavior differs depending on a state's specific BSF withdrawal rules. The results are reported in column 6 of table 1. The results remain robust to the inclusion of interaction terms. The rules for shortfall and by appropriation lead to increases in BSFs after elections relative to the rule by formula. Since the formula rule generally precludes political interference and better secures BSFs (Hou 2004), the states with the formula rule tend to save more BSFs than states with the shortfall or appropriation rules. However, our findings indicate that the states with the formula rule save less BSFs after elections. The results are not unexpected. Because politicians in the states with the shortfall or appropriation withdrawal rule can easily approach BSF than they can in the states with the formula withdrawal rule, the politicians are more likely to strategically use BSFs and save excessively more than necessary after elections.

Conclusion

Building on prior studies, we find empirical evidence of PBC in GFBs and BSFs. In our estimates, both GFBs and BSFs fall before and during elections. This implies that politicians tend to signal their fiscal competency to voters by using fiscal reserves as expected. However, this dynamic changes when TEL stringency is considered. We find that the more stringent the TELs, the more they dampen the political manipulation in GFBs, especially in preelection and election years. However, politicians can evade the limits and save more revenue in separate stabilization funds after elections. Robustness checks confirm our findings as solid and reliable.

Overall, our findings reveal that stringent TELs seem effective in limiting politicians' fiscal decisions, which are biased toward a lower level of GFBs as elections approach. Stringent TELs effectively restrict alternative policy choices by making overriding the limits and by not allowing exemptions difficult. However, stringent TELs generate the principal–agent issue in the end: politicians under stringent TELs appear to nullify the limits and accumulate more BSFs after the elections. Our results are in line with Wagner and Sobel (2006) and find that state governments driven by politicians' self-interest incentives might end up avoiding stringent TELs and strategically maintaining BSFs in postelection years. Although we do not clearly confirm whether politicians spend BSFs for budget stabilization in bust years or for other political purposes, TEL

stringency causes states to use BSFs as the alternative device to protect savings from citizen pressure and to expand state reserves after elections (Hou and Duncombe 2008).

Many scholars and practitioners still debate whether it is necessary to make TELs more stringent in order to restrain politicians' decisions on fiscal policies. In practice, some states have attempted to reform their TELs to be more stringent. For instance, the state of Hawaii recently tried to increase the stringency of its TEL, but the attempt was not realized. Although the state proposed a constitutional amendment to require a supermajority vote to raise taxes (HB 423), this was not included on the ballot in 2016. As of 2013, in fact, 17 states still had not adopted any kind of TELs. Even some states adopting TELs have enacted less binding limits and thus cannot remove the political manipulation of fiscal reserves based on our results.

This study helps to understand the issue raised in the debate regarding whether it is better to adopt more stringent TELs. If a state wishes to limit politicians' decisions and make them more accountable for managing GFBs, our answer is clearly that it does. However, an important caveat is that the effort to adopt or implement more stringent TEL can unnecessarily cause a state government to accumulate more BSFs than the amount needed for solving fiscal stress. If politicians withdraw the revenue from the funds and use it for "purposes other than stabilization" (Rose and Smith 2012, 187), BSF may become "a hidden, legally protected savings haven" at best (Hou and Brewer 2010, 916). Therefore, it is crucial for a state to assess its current stringency level of TEL and set an appropriate level since adopting more stringent TEL has pros and cons.

Meanwhile, the more stringent TELs are, the more the states should monitor the source of the increase in BSFs. Will politicians transfer the year-ending balances in a general fund or special funds to BSF? Or do they use "gimmicks" (e.g., underestimation of revenue) to increase revenues and reserves? Given that most of states with TELs have enacted expenditure limits, it is highly possible that politicians can circumvent the strict expenditure limits by shifting funding allocations from a general fund to BSF. It is also highly plausible that the opportunistic saving behavior will vary according to the institutional attributes of TELs focusing on revenues, expenditures, or both. For example, if the TELs focus on revenues, then any surplus is treated as excess revenue above the revenue limit, and the rules kick in. Most likely, the surplus of a general fund will be removed or returned to the taxpayers. In such a case, a decrease in GFBs will motivate politicians to circumvent the revenue limit and save more BSFs for the next election. On the other hand, TELs focusing on expenditures have a potentially different outcome when a state has a general fund surplus at the end of the fiscal year because the expenditure limit does not come into play. However, this subject is beyond the scope of our research, thus remaining for future tasks.

In addition, the heterogeneity in the structure of BSF across states may matter in outcomes. States have different BSF rules limiting politicians' access to reserve funds (e.g., purposes of BSF, maximum balance allowable). Those differences may change the "games" with BSFs. For instance, states without the stringent BSF rules (e.g., supermajority vote requirement for use, replenishment requirement rule) have the fiscal flexibility to use their reserves when needed in crises such as the COVID-19 pandemic; thus, they may open the door for politicians to manipulate reserves. This should be dealt with in future research.

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Notes

1. Two types of theories can explain the political impact on fiscal reserves (Alesina, Roubini, and Cohen 1997): partisan theory and PBC theory. Partisan theory argues that differences in political ideology result in differences in reserve policy. On the other hand, PBC theory hypothesizes that all governments behave opportunistically for winning reelection regardless of political ideology. The past literature indicates that PBC theory explains such fiscal policy as reserves better while partisan theory tends to take account more for the macroeconomic outcomes (Dubois 2016; Ehrhart 2013). Thus, we discuss fiscal reserves using PBC theory here.
2. PBC is linked with political manipulation. Without considering elections, politicians' fiscal choices are not different before and after elections. Levels of reserves remain virtually unchanged over electoral cycles if an election effect is negligible. However, because voters observe changes in reserve policy with a lag (Nordhaus 1975), politicians have incentives to deliberately change levels of reserves over electoral cycles. Thus, the shift of reserves over the cycles indicates political manipulation. PBC literature treats an electoral cycle and PBC exchangeable.
3. The reason that we use GFBs and BSFs is that historically, the adoption of TELs is closely related to a decrease in GFBs and the creation of BSF. As discussed earlier, TELs restrict states' taxing and spending power, which caused a drastic reduction in GFBs; then states opted to adopt BSF as a second fiscal instrument to protect savings from political pressure and eventually evade TELs (Hou and Brewer 2010; Knight and Levinson 1999; Wagner and Sobel 2006). Due to the close relationship, we thus use BSFs as well as GFBs to examine the effect of TELs on reserves.
4. The NASBO data are annually gathered and measured over the fiscal year beginning July 1 and ending June 30 for most states. There are exceptions: The fiscal year in the states of Alabama and Michigan begins October 1 and ends September 30; the fiscal year in the state of New York begins April 1 and ends March 31; and the fiscal year in the state of Texas begins September 1 and ends August 31. On the other hand, the (general) gubernatorial election for most states is measured over the calendar year and held in November.
5. We do not adjust the alignment in the states of Alabama and Michigan because the gap between their first month of the fiscal year and the election month is close.
6. We also update the stringency index score for the state of Oregon based on our review. In 2012, Oregon amended its constitution through Measure 77, allowing suspension of spending limitation on the general fund during a catastrophic disaster period. This change results in less stringency of the TEL-stringency measure in Oregon from 2012 to 2013.
7. The unemployment rate, personal income, intergovernmental revenue, revenue, demographic, and political data are gathered from the Bureau of Labor Statistics, Bureau of Census and Bureau of Economic Analysis. BBRs data are collected from NASBO and the *Book of States*. The citizen ideology data come from Richard Fording's website: https://rcfording.com/state-ideology-data/. All monetary figures are adjusted in year 2005 dollars.
8. As Alt and Lassen (2006) suggest, we employ year dummies in a gubernatorial electoral cycle interacting with both high- and low-stringency TELs instead of just one of them in order to make it easy to present the estimation results.

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Appendix A. Summary Statistics

Variables	*M*	*SD*	*Min*	*Max*
General fund balances (GFBs)	5.374	6.726	–18.542	60.388
Budget stabilization fund balances (BSFs)	3.406	5.249	–11.7	54.525
Preelection year	0.25	0.433	0	1
Election year	0.249	0.433	0	1
Postelection year	0.251	0.434	0	1
TEL-stringency index	8.616	8.5545	0	33
Unemployment	5.750	1.908	2.3	13.608
Personal income (ln)	18.675	1.029	16.340	21.263
Share intergovernmental revenue	0.294	0.063	0.146	0.521
Population (ln)	15.145	0.965	13.025	17.462
School-aged & elderly population	0.385	0.021	0.153	0.515
Poverty rate	0.130	0.036	0.029	0.272
Revenue volatility	0.041	0.040	0.0001	0.324
Strict balanced budget rules (BBRs)	0.172	0.377	0	1
Citizen ideology	50.054	14.818	8.450	93.912
Democratic governor	0.477	0.497	0	1
Democrats in upper house	0.538	0.175	0.086	0.974
Democrats in lower house	0.542	0.166	0.129	0.951
BSF deposit by formula	0.196	0.397	0	1
BSF deposit from general fund surplus	0.561	0.496	0	1
BSF deposit by special revenue	0.561	0.496	0	1
BSF deposit from appropriation	0.192	0.394	0	1
BSF use by formula	0.091	0.288	0	1
BSF use by supermajority	0.176	0.381	0	1
BSF use for revenue shortfall	0.456	0.498	0	1
BSF use by appropriation	0.284	0.451	0	1

Appendix B. Marginal Effect of an Electoral Cycle on General Fund Balance and Budget Stabilization Fund Balance Depending on Tax and Expenditure Limitations Stringency

Tax and Expenditure Limitations	General Fund Balance Case						Budget Stabilization Fund Balance Case					
	(1) Preelection		(2) Election		(3) Postelection		(4) Preelection		(5) Election		(6) Postelection	
1	−1.38***	(0.38)	−1.67**	(0.82)	−0.37	(0.54)	−0.83***	(0.32)	−0.57*	(0.32)	−0.17	(0.31)
2	−1.34***	(0.37)	−1.58**	(0.79)	−0.37	(0.51)	−0.79***	(0.30)	−0.54*	(0.30)	−0.13	(0.30)
3	−1.29***	(0.37)	−1.48*	(0.76)	−0.37	(0.49)	−0.75***	(0.29)	−0.50*	(0.29)	−0.09	(0.28)
4	−1.24***	(0.37)	−1.39*	(0.73)	−0.37	(0.47)	−0.71***	(0.27)	−0.47*	(0.28)	−0.04	(0.27)
5	−1.19***	(0.37)	−1.30*	(0.70)	−0.38	(0.45)	−0.68***	(0.26)	−0.43	(0.26)	0.00	(0.26)
6	−1.14***	(0.37)	−1.20*	(0.68)	−0.38	(0.43)	−0.64***	(0.25)	−0.40	(0.25)	0.04	(0.24)
7	−1.09***	(0.37)	−1.11*	(0.66)	−0.38	(0.42)	−0.60***	(0.25)	−0.36	(0.25)	0.09	(0.23)
8	−1.04***	(0.38)	−1.01	(0.64)	−0.38	(0.41)	−0.56***	(0.24)	−0.33	(0.24)	0.13	(0.23)
9	−0.99***	(0.38)	−0.92	(0.63)	−0.38	(0.40)	−0.52**	(0.23)	−0.29	(0.23)	0.17	(0.22)
10	−0.94***	(0.39)	−0.83	(0.61)	−0.39	(0.40)	−0.48**	(0.23)	−0.26	(0.23)	0.22	(0.21)
11	−0.89**	(0.40)	−0.73	(0.60)	−0.39	(0.40)	−0.44*	(0.23)	−0.23	(0.22)	0.26	(0.21)
12	−0.84**	(0.41)	−0.64	(0.60)	−0.39	(0.40)	−0.40*	(0.23)	−0.19	(0.22)	0.31	(0.21)
13	−0.80**	(0.43)	−0.55	(0.60)	−0.39	(0.41)	−0.36	(0.23)	−0.16	(0.22)	0.35*	(0.21)
14	−0.75*	(0.44)	−0.45	(0.60)	−0.39	(0.42)	−0.32	(0.24)	−0.12	(0.22)	0.39*	(0.21)
15	−0.70	(0.46)	−0.36	(0.60)	−0.40	(0.44)	−0.28	(0.25)	−0.09	(0.23)	0.44*	(0.22)
16	−0.65	(0.48)	−0.26	(0.61)	−0.40	(0.45)	−0.25	(0.26)	−0.05	(0.23)	0.48*	(0.23)
17	−0.60	(0.49)	−0.17	(0.62)	−0.40	(0.47)	−0.21	(0.27)	−0.02	(0.24)	0.52*	(0.23)
18	−0.55	(0.51)	−0.07	(0.64)	−0.40	(0.49)	−0.17	(0.28)	0.02	(0.25)	0.57**	(0.24)
19	−0.50	(0.53)	0.02	(0.66)	−0.40	(0.52)	−0.13	(0.29)	0.05	(0.26)	0.61**	(0.25)
20	−0.45	(0.55)	0.11	(0.68)	−0.41	(0.54)	−0.09	(0.30)	0.08	(0.27)	0.65**	(0.26)
21	−0.40	(0.57)	0.21	(0.70)	−0.41	(0.57)	−0.05	(0.32)	0.12	(0.28)	0.70***	(0.28)
22	−0.35	(0.59)	0.30	(0.73)	−0.41	(0.60)	−0.01	(0.34)	0.15	(0.29)	0.74***	(0.29)
23	−0.30	(0.61)	0.40	(0.76)	−0.41	(0.63)	0.03	(0.35)	0.19	(0.30)	0.78***	(0.30)
24	−0.25	(0.64)	0.49	(0.79)	−0.41	(0.66)	0.07	(0.37)	0.22	(0.32)	0.83***	(0.32)
25	−0.21	(0.66)	0.59	(0.82)	−0.42	(0.69)	0.11	(0.39)	0.26	(0.33)	0.87***	(0.33)
26	−0.16	(0.68)	0.68	(0.85)	−0.42	(0.72)	0.15	(0.40)	0.29	(0.35)	0.91***	(0.35)
27	−0.11	(0.70)	0.77	(0.89)	−0.42	(0.75)	0.19	(0.42)	0.33	(0.36)	0.96***	(0.37)
28	−0.06	(0.73)	0.87	(0.92)	−0.42	(0.79)	0.22	(0.44)	0.36	(0.38)	1.00***	(0.38)
29	−0.01	(0.75)	0.96	(0.96)	−0.42	(0.82)	0.26	(0.46)	0.39	(0.40)	1.05***	(0.40)
30	0.04	(0.77)	1.06	(1.00)	−0.43	(0.85)	0.30	(0.48)	0.43	(0.41)	1.09***	(0.42)
31	0.09	(0.80)	1.15	(1.04)	−0.43	(0.89)	0.34	(0.50)	0.46	(0.43)	1.13***	(0.44)
32	0.14	(0.82)	1.24	(1.08)	−0.43	(0.92)	0.38	(0.52)	0.50	(0.45)	1.18***	(0.46)
33	0.19	(0.85)	1.34	(1.11)	−0.43	(0.96)	0.42	(0.54)	0.53	(0.46)	1.22***	(0.47)

Note: Robust standard errors are in parentheses.
*Significant at 10 percent.
*Significant at 5 percent.
***Significant at 1 percent.