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Transparency in State Debt Disclosure

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Abstract:

We develop a new measure of relative debt transparency by comparing the amount of state debt reported in the annual Census survey and the amount reported in the statistical section of the state Comprehensive Annual Financial Report (CAFR). GASB 44 requires states to start reporting their total debt in the CAFR statistical section in FY 2006. However, states are allowed to use accounting choices to exclude some dependent agencies' debt, which contributes to a gap between the two data sources. The regression results suggest that the gap tends to increase when states face greater fiscal stress or less political competition. Such patterns are not found in the pre-GASB 44 period.

Keywords: fiscal transparency; state debt; GASB; accounting choices; dependent agencies

JEL Codes: H74, H83

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Introduction

Government transparency has become an increasingly popular and important issue in the United States and in many other countries in recent decades. Since the 1980s, the administrative reforms carried out in the framework of "New Public Management" have been stressing citizen satisfaction and participation in public management, opening up public sector organizations to competition, and improving the mechanisms of accountability (Hood 1995; Rodíguez Bolívar, Alcaide Muñoz, and López Hernández 2013; Tejedo-Romero and Araujo 2015).[1] Transparency is a key factor in the mechanisms of public sector accountability. It helps improve citizens' understanding of public policies, promote public trust in government, reduce corruption, and hold officials accountable for their performance. Transparency hinges critically on the accessibility and disclosure of information, which is widely regarded as a public good contributing to the functioning of markets (Stiglitz 2000, Albalate 2013, Tejedo-Romero and Araujo 2015).

Fiscal transparency is one important aspect of government transparency (Hudspeth et al. 2015). The Organisation for Economic Co-Operation and Development (OECD) defines fiscal transparency as "full disclosure of all relevant fiscal information in a timely and systematic manner" (OECD 2002, p.7). Accessible and timely fiscal information enables citizens to evaluate the financial performance of various levels of government. For example, in response to the public's demand for more accountability from the federal government, President Obama signed the *Memorandum on Transparency and Open Government* on his first day in office in 2009 (Hudspeth et al. 2015). Recent high-profile municipal bankruptcy cases—Detroit, Michigan; San Bernardino, California; and Jefferson County, Alabama—have also prompted the public to pay more attention to fiscal transparency of state and local governments, in particular the disclosure of public debt. As a *Governing* magazine article puts it:

[1] New Public Management (NPM) is an approach to running public service organizations with private sector management models in order to improve the efficiency of the public service. It views citizens as customers and public servants as public managers. It emphasizes setting clear performance targets for public managers and assessing their performance with audits, benchmarks, and evaluations. The NPM approach is in contrast with the traditional public administration approach that uses legislation, regulations, and administrative procedures to guide policymaking and public service delivery.

> [w]hat actually sinks city and county finances is that slow, steady accretion of bad—and hidden—fiscal news that either nobody is getting or no one wants to hear. That news invariably takes the form of commitments to future spending, like bond and pension obligations, as well as other liabilities, such as deteriorating or outdated infrastructure, versus the jurisdiction's revenues to cover those commitments and liabilities. (Walters 2012)

One particularly concerning issue, which has been largely hidden from the public view until recently, is the ever-growing debt of public authorities. For example, a 2013 report by the New York Authorities Budget Office reveals that the total outstanding debt of 45 New York state public authorities in 2012 amounted to $151 billion, nearly 19 percent higher than the debt amount five years ago (Virtanen 2013). The public and the media tend to focus on the debt issuance of the primary government units and may give less scrutiny to the numerous public authorities. Ordinary citizens also often find it difficult to track changes in the public authorities' debt from one year to the next.

Despite strong public interest, to our best knowledge, there has been little research on transparency in state and local debt disclosure. This is likely partly due to a lack of data and lack of a measure of debt transparency. To fill this gap, we develop a new measure of *relative* debt transparency by comparing two datasets of state debt, one of which has recently become available.[2]

The first dataset is from each state's Comprehensive Annual Financial Reports' (CAFR) statistical section. Since fiscal year (FY) 2006, state governments have been required to report their outstanding debt in a relatively comparable manner in the CAFR statistical section. This is conducted in compliance with the newly issued Governmental Accounting Standards Board (GASB) Statement No. 44, *Economic Condition Reporting: The Statistical Section*, hereafter GASB 44.[3] Established in 1984, the GASB is the primary authority in establishing standards of accounting and financial reporting for U.S. state and local governments. Under the GASB rules, state and local governments each year compile a set of financial statements in their CAFRs as a

[2] This paper focuses on traditional debt—mostly notes and bonds. Transparency in disclosing non-traditional debt, such as public pensions and other post-employment benefits, is beyond the scope of this paper. That is an important topic that deserves a separate study.

[3] For a summary of GASB 44, please see http://www.gasb.org/st/summary/gstsm44.html.

means of revealing their fiscal position to the public. A CAFR typically consists of three sections: introduction, financial section, and statistical section. In an attempt to improve comparability and consistency in financial reporting, GASB 44 requires governments to add a new schedule of total outstanding debt to the CAFR statistical section. Nevertheless, the GASB gives governments flexibility in deciding whether and how to account for debt issued by dependent agencies. The GASB loosely defines a dependent agency as an organization that "is unable to adopt its budget, levy taxes or set rates or charges, or issue bonded debt without approval by the primary government" (GASB 1991, p.i). Examples of dependent agencies include public university systems, state infrastructure finance authorities, public housing finance authorities, state student loan authorities, and state economic development corporations. Since states make different accounting choices, significant differences emerge in how much debt of dependent agencies is reported in the CAFR statistical section.

We collect the second dataset of state debt from the U.S. Census Bureau's Annual Survey of State Government Finances. This survey gathers comprehensive information on state debt, including debt issued by dependent agencies. However, there is a significant delay in the release of the annual Census survey data, as it is time-consuming for the Census Bureau to collect, compile, check, and edit the data. It takes the Census Bureau about two years following the end of a state fiscal year to release the *preliminary* data from the survey. Another year elapses before the revised data are released. In contrast, a majority of states release their CAFRs within half a year of the end of their fiscal year. During the long delay of the Census data, the state CAFR is often the only publicly available financial document that ordinary citizens can use to learn details about a state's fiscal performance in the most recent fiscal year. In addition, even if they want to do so and try to do so, it is virtually impossible for ordinary citizens to construct the Census survey-equivalent data before the Census data are publicly released. This is because they would not know which dependent agencies' debt measures are excluded from the state CAFR statistical section, since states do not reveal such information. To add more difficulties, many dependent agencies' CAFRs are unavailable on the internet.

We calculate the gap in reported state debt between the annual Census survey and the state CAFR statistical section in past years for which both datasets are now available. We use

this gap as a measure of relative transparency in state debt disclosure. The larger this measure, the more limited the disclosure of state debt in the CAFR statistical section, and therefore the less transparent a state's financial reporting on indebtedness.

In addition to developing this new measure of relative debt transparency, this paper makes several other contributions to the literature. First, to our best knowledge, we are the first to compare at a disaggregate level the reported debt amount of the Census survey with the reported debt amount of the state CAFR statistical section. This comparison enables us to pinpoint exactly the source of the difference between the two debt measures, or in other words, what dependent agencies' debt is excluded from the state CAFR statistical section.

Second, this is the first econometric study to examine whether, what, and how fiscal, political, and economic factors affect the difference between the two state debt measures. The existing literature on fiscal transparency is relatively sparse and tends to focus on either transparency in state revenue or expenditure, or on the determinants of the adoption of governmental Generally Accepted Accounting Principles (GAAP) in the 1980s and 1990s. These previous works have so far produced mixed results regarding factors influencing fiscal transparency.

Third, this paper improves the much-needed understanding of the effects of GASB 44 on state fiscal behavior. While GASB 44 took effect more than a decade ago, there has been surprisingly little research on it. Our analysis shows that in the pre-GASB 44 period the gap between reported state debt in the Census survey and in the state CAFR is irresponsive to state fiscal stress and politics, while it increases with state fiscal stress and decreases with political competition in the post-GASB 44 period. The differences in state behavior between the two periods may be attributable to the fact that the debt measure has become more salient and accessible to ordinary citizens and voters under GASB 44, creating incentives for state governments to respond to.

Literature Review

The related empirical literature can be divided into two parts. The first part includes papers done mostly by accounting specialists in the 1980s and 1990s, focusing on the

determinants of the adoption of accrual-based governmental GAAP. Governmental GAAP are a common set of accounting principles, standards, and procedures that the GASB established for state and local governments to use to record and report their financial information. Financial reports prepared following accrual-based GAAP are generally regarded as being less vulnerable to "manipulation" and thereby more transparent than cash-based financial reports (Martin 1980, Carpenter 1991). Virtually all state governments had adopted GAAP by 1996.[4] The second part of the literature features more-recent works by several public administration and finance researchers on broader issues about fiscal transparency than the adoption of GAAP. All these previous studies provide guidance for us in developing hypotheses and considering what factors to include in our model.

1. Accounting literature

To explain the varying accounting practices among state governments, Ingram (1984) examines the differences in the incentives that affect citizens' monitoring of government behavior. He finds that coalition formation, which is measured by political competition, urbanization, personal income, and education, reduces the cost of external monitoring and thereby has a positive effect on state government accounting disclosure. The fiscal capacity of the government to bear information costs, as indicated by its own revenue, is also found to be positively associated with governmental accounting disclosure.

Carpenter (1991) shows that all forms of political competition, including electoral competition, interest-group competition, and parliamentary competition, as well as efforts to form a policy-making coalition among elected officials, have a positive influence on state governments' decisions to adopt the GAAP. Carpenter and Feroz (2001) find that the institutional environments facing state governments—including federal and local governments, the accounting profession, creditors, taxpayers, and various interest groups—create potent forces for state governments to adopt the GAAP. Similarly, Cheng (1992) confirms that state government choices in accounting disclosure depend on the political environment and

[4] See https://www.brookings.edu/wp-content/uploads/2016/12/marlowe-slides.pdf.

institutional forces, such as political competition, interest-group strength, and bureaucratic accounting/auditing ability.

2. Public administration and finance literature

Alt, Lassen, and Rose (2006) examine the effects of the political setting and the fiscal environment on fiscal transparency. They characterize fiscal transparency by a nine-part composite index of budget practices. These authors find that political competition leads to a greater measure of the fiscal transparency index and that both budget surplus and deficit are positively associated with fiscal transparency. However, they find that a higher amount of debt is associated with a lower measure of the fiscal transparency index, contradicting the results of some previous studies, such as Robbins and Austin (1986) and Carpenter (1991).

Rose and Smith (2012) assess the impact of budget stabilization funds on fiscal transparency. Their paper measures fiscal transparency using revenue forecast bias, that is, the extent to which a state underestimates its revenue as a way of providing budgetary slack. They show that the adoption of a budget stabilization fund is associated with lower revenue forecast bias, and thus greater fiscal transparency.

Hudspeth et al. (2015) use a different measure of fiscal transparency by calculating the share of state total expenditures that are funded by the general funds. One minus this share indicates how much state total expenditure has been shifted from the general funds to special funds. While the information on special funds is publicly available, the authors argue that special funds "may be subject to less scrutiny by the public or elected officials, because the monies in special funds are viewed as 'off limits' to discretionary decision." (p. 69). Using Illinois as an example, they suggest that it is also confusing and difficult for budget watchers to monitor the changes in the shares of general and special funds in total budgets over time. Their analysis shows that a one standard deviation decrease in fiscal balance as a share of total expenditures and a one standard deviation increase in per capita debt—both as proxies for fiscal stress—reduce the general fund share of total spending by 1.2 and 1.7 percentage points, respectively. As a result, they conclude that greater fiscal stress "leads to actions to conceal the fiscal condition from the public by moving expenditures out of the general funds" (p. 84). In

addition, they find no statistically significant effects of the political environment (including an indicator of divided government) on the general fund share of total spending.[5]

Complementing the above studies on U.S. states, Wehner and Renzio (2013) examine a sample of 85 countries and find that citizens and legislators are important sources of demand for fiscal transparency. Their results suggest that free and fair elections and partisan competition in democratically elected legislatures contribute to higher levels of budgetary disclosure.

Two Measures of State Total Debt

This section describes and compares how state outstanding debt in the United States is reported in two data sources: the state CAFR statistical section under GASB 44 and the annual Census survey.[6] Then, we exploit the difference between the two datasets to construct a measure of relative debt transparency.

1. State CAFR statistical section

The CAFR statistical section is important and useful for ordinary citizens, practitioners, and researchers, because it allows users to find current and historical information about

[5] There are several main differences between our paper and Hudspeth et al. (2015). First, the two papers ask different research questions and therefore have different dependent variables. Hudspeth et al. (2015) examine state expenditure transparency and use the general fund share of total spending as the dependent variable. We examine state debt transparency and use the per capita gap in reported state debt between the annual Census survey and the state CAFR statistical section as the dependent variable. Second, we take advantage of a new dataset on state debt made available only by a recent policy change, while Hudspeth et al. (2015) use a more traditional dataset on state general funds. The implementation of GASB 44 in FY 2006 requires that state governments report the total primary government debt in the CAFR statistical section, which enables us to calculate and study our gap measure. Also because of this policy change, we are able to conduct a falsification test using data from the pre-change period. Hudspeth et al. (2015) rely on the data on the state general funds from the National Association of State Budget Officers' survey since 1985. Third, the two papers use different fiscal stress variables. Hudspeth et al. (2015) use fiscal balance as a share of total expenditures and per capita debt as proxies for fiscal stress. These variables are likely to be endogenous since they are subject to state officials' control. In contrast, we use a fiscal shock variable developed by Poterba (1994). It measures the unexpected components of the state budget and therefore is widely accepted as exogenous to state officials. Fourth, the two papers find different results regarding the role of the political environment in fiscal transparency. Hudspeth et al. (2015) do not find any significant effects of the political variables (including the divided government indicator) on their measure of expenditure transparency. However, we find that transparency in state debt disclosure decreases when the state executive and legislative branches are controlled by the same political party.

[6] A recent IMF working paper recommends that governments publish multiple measures of the debt—both narrowly and broadly defined—and illustrate their interrelationships (Irwin 2015).

government finances, operations, demography, and the economy in a relatively easy and timely manner. It helps to better inform the reader about the government's activities, particularly the jurisdiction's financial trends. The National Council on Governmental Accounting (NCGA) Statement No. 1, *Governmental Accounting and Financial Reporting Principles*, provided general reporting standards for the CAFR statistical section between 1980 and 2006. However, a lack of clear, specific standards in NCGA 1 led to differences in reporting practices among state and local governments. For example, NCGA 1did not require governments to report their total outstanding debt in the CAFR statistical section. As a result, most states spread the details of the debt amount among numerous financial notes and tables outside the CAFR statistical section. This practice made it difficult for citizens and even researchers to locate and understand the accurate information about government indebtedness. While, at the time, a small number of states voluntarily reported their total outstanding debt in the CAFR statistical section, many did not use the same definition of debt or the same reporting format. This, too, made it difficult for citizens and researchers to use the CAFR data to carry out an appropriate cross-state comparison in government indebtedness.

Taking effect in FY 2006, GASB 44 was intended to "improve consistency and comparability in reporting and to provide clearer guidance regarding the applicability of the standards for the statistical section to all types of governmental entities" (GASB 2004, p.1). It requires governments to add a new schedule of outstanding debt to the CAFR statistical section and to present the new schedule in a uniform format in order to facilitate users' understanding and evaluation of governments' debt burden and debt-issuing capacity. The new schedule classifies debt into two groups—debt related to governmental activities and debt related to business-type activities—and then sums them up to "total primary government debt."[7] Within each group, specific types of outstanding debt are listed, including general obligation bonds, revenue-backed bonds, loans, certificates of participation, and capital leases. In addition, the

[7] The business-type activities are essentially the activities conducted through the enterprise funds, such as water, sewer, public utilities, and parking facilities. Debt related to business-type activities tends to be issued through revenue bonds and capital leases, rather than general obligation bonds.

new schedule provides not only current but also historical information about outstanding debt, typically for the last 10 years, in order to show changes in total indebtedness over time.

In spite of the improvements made under GASB 44, there remain some caveats to debt reporting in the CAFR statistical section. First, as the GASB considers the statistical section as providing "supplementary information," that section of the CAFR is not audited. Second, governments are allowed to apply "professional judgment" in deciding whether to consider some organizations as the so-called "component units" to be included in financial reporting (GASB 2002, p.i). The GASB loosely defines a component unit as an organization that is fiscally dependent on the primary government and that "raises and holds economic resources for the direct benefit of a governmental unit" (GASB 2002, p.i). For example, a state university system is typically treated as a component unit. However, it is less clear for public authorities such as a public housing finance authority, a student loan authority, an economic development corporation, and a clean water finance agency. As a result, component units in the CAFRs may include some, but not all, dependent agencies. This consideration may vary across states and over time.

Third, even within state-selected component units, governments have choices in what accounting approach to use to report the financial activities of these component units. States can choose either a blending or discrete presentation display to report debt issued by a component unit (GASB 1991, p.i). When using the blending method, states essentially treat a component unit the same as a primary government unit and therefore include the component unit's debt as part of primary government debt in the CAFR statistical section. In contrast, the debt of a discretely presented component unit is typically excluded from primary government debt in the CAFR statistical section. It is common for a state to use the blending method for some component units and to use the discrete presentation method for other component units within the same CAFR. Across states, the same type of component unit may be reported as a blended component unit in one state, but as a discretely presented component unit in another state. Therefore, the extent to which information about component units debt is presented in the CAFR statistical section may vary across states and over time.

This treatment of dependent agencies in the CAFRs is based on a relatively narrow definition of government that focuses exclusively on the primary government unit. Many officials argue that dependent agencies should be separated from the primary government in financial reporting, because the primary government, technically speaking, does not directly control the financial and capital resources of many dependent agencies and therefore should not be held accountable for the performance of dependent agencies. However, many practitioners and researchers counter that dependent agencies are still part of a more broadly defined government. These dependent agencies provide a wide range of important public services, such as public higher education, public infrastructure, housing assistance, and economic development. Many of them receive state appropriations and grants, and their liabilities are ultimately paid through taxes, fees, and charges. Therefore, many view it as in the public interest to include dependent agencies in the evaluation of the entire state government's financial performance.

2. Annual Census survey

The U.S. Census Bureau has been reporting the debt information of each of the 50 states in the Annual Survey of State Government Finances since the 1950s. It applies a consistent definition of debt to ensure the comparability across states and over time.[8]

There are three main differences in reporting state debt between the annual Census survey and the CAFR statistical section. First, the annual Census survey uses a broader definition of government than the one CAFR uses in order to provide a more complete picture of each state's financial status. It includes all dependent agencies that operate separately or autonomously from the primary government and whose activities the primary government administratively or fiscally controls.

The Census Bureau obtains most state financial data from CAFRs and administrative accounting records that the state central accounting or finance offices provide. However, many dependent agencies' outstanding debt is not listed in state accounting records or financial

[8] For more detailed information on the Annual Survey of State Government Finances of the U.S. Census Bureau, please see https://www.census.gov/econ/overview/go1500.html.

statements. Therefore, the Census Bureau has to resort to secondary information sources, such as dependent agencies' own CAFRs and other financial documents, to "unearth" such debt (U.S. Census Bureau 2006).

Second, the annual Census survey data are released much later than state CAFRs for the same fiscal year and thus are less useful in helping citizens to make a timely evaluation of state indebtedness. It takes the Census Bureau about two years after the end of a state fiscal year to collect, compile, test, edit, and release the *preliminary* survey data of that fiscal year.[9] Then, another year elapses before the Census Bureau releases the *revised* survey data of that fiscal year. For example, while FY 2014 ended on June 30, 2014, for almost every state, preliminary data for the FY 2014 Annual Survey of State Government Finances were not published on the Census Bureau's web site until almost two years later, on June 7, 2016.[10] The revised data from the FY 2014 Annual Survey of State Government Finances were released nearly another year later, on May 15, 2017.[11] In contrast, 38 states released their FY 2014 CAFRs within half a year of the end of their fiscal year 2014 (that is, 184 days after June 30, 2014) (Truth in Accounting 2015). All states except New Mexico released their FY 2014 CAFRs within a year of the end of their fiscal year 2014.[12] In our sample period (FY 2006–2012), the median and mean days to release state CAFRs across 50 states are 181 and 202 days, respectively.[13]

The long delay in the release of the annual Census survey data leaves state CAFRs in many cases as the only publicly available financial documents from which ordinary citizens can learn details about the state's fiscal performance in the most recent fiscal year. It is practically impossible for ordinary citizens themselves to construct a state debt measure as complete as the

[9] For example, for the FY 2014 survey, the Census Bureau did the initial mail-out in October 2014 and began the non-response follow-up in January 2015. Then, it spent four months (September–December 2015) compiling and editing the data. For more information about the data collection process and timeline, please see https://www2.census.gov/govs/state/14_methodology.pdf.

[10] Only four states have fiscal years that do not end on June 30: New York (ends March 31), Texas (ends August 31), Alabama (ends September 30), and Michigan (ends September 30). See http://www.ncsl.org/research/fiscal-policy/basic-information-about-which-states-have-major-ta.aspx.

[11] The revised data from the FY 2013 survey were also released on May 15, 2017, along with the revised data from the FY 2014 survey.

[12] Michigan and New Mexico have the lowest and highest number of days to release the FY 2014 CAFR, respectively: 90 days for Michigan and 407 days for New Mexico (Truth in Accounting 2015).

[13] We collected the 2008 and 2009 data on days to release state CAFRs ourselves, while obtaining data of the other years from Truth in Accounting.

Census Bureau's. This is not only because states do not publicize which dependent agencies' debt is omitted from the state CAFR statistical section, but also because many dependent agencies' CAFRs are not available on the internet.

Third, while CAFRs include leases as debt, the annual Census survey excludes leases. This is because the Census Bureau considers leases similar to the "pay-as-you-go" method of financing capital projects, rather than a form of traditional debt.[14] Omitting leases from the annual Census survey data makes the debt gap measure appear to be smaller than it actually is. Nevertheless, for any state in any given year, the total dollar amount of leases is relatively small compared with the total dollar amount of general obligation bonds and revenue bonds. As we show in the next subsection, leases are not a main source of the difference between the debt measures computed from the annual Census survey and the ones computed from states' CAFR statistical sections.

3. Gap between the two debt measures

Because the annual Census survey provides the most comprehensive information on state debt, its debt measure can be loosely considered as "*the universe of state debt*." Therefore, the gap between the debt measures computed from the annual Census survey and the ones computed from states' CAFR statistical sections generally indicates the amount of debt that is not reflected in the CAFR statistical section. The larger the gap measure, the less accessible and timely information about the entire government's indebtedness is available to ordinary citizens and the less transparent is the states' self-financial reporting.

We do not claim that the *entire* gap measure is politically motivated, for both conceptual and practical reasons. Based on the definition provided by the OECD (2002), fiscal transparency is an *outcome*. Like many other policy and economic outcomes, it does not have to be entirely caused by intentional behavior and, even if the behavior is intentional, the motivation does not

[14] The Census Bureau argues that "[u]nlike bonded debt, leases rarely generate any cash flow… Moreover, leases are rarely negotiable instruments, do not require voter approval or apply to debt ceiling limits, are funded by annual appropriations rather than dedicated taxes or other revenue sources (in effect, making them renewable one-year contracts), can be canceled in some cases, and often have an "interest" component that is simply an imputed amount." (U.S. Census Bureau 2006, p.252)

have to be entirely political. Hence, the gap in reported state debt could be motivated by both political and nonpolitical factors. However, regardless of the motivation, it is still the case that when the gap measure increases, less accessible and timely information about state indebtedness is available for ordinary citizens, and therefore transparency is lower. In terms of the practical reason, while our analysis focuses on the political economy angle, the variables of our interest do not and cannot explain all the variation in the gap measure. Thus, by no means are we suggesting that political motivation is the only cause of the gap.

As we discuss in the previous subsections, the gap between the debt amount reported in the Census survey and the debt amount reported in the state CAFR statistical section results mostly from two sources. First, states exclude some dependent agencies from component units in the CAFRs. Second, states typically omit outstanding debt of the discretely presented component units in reported total primary government debt in the CAFR statistical section.[15]

One might be concerned that this gap measure might capture the overall size of government, rather than the extent of debt transparency. This potential concern might be motivated by the thought that larger governments may rely more heavily on dependent agencies than smaller governments do to deliver public services. If larger states' greater reliance on dependent agencies were the case, we would expect states with larger governments to have a larger gap measure. We find, contrary to this expectation, that there is a negative correlation of –0.30 across states over 2006–2012 between the per capita gap in reported state debt and the total number of state employees.

At our request, the Census Bureau provided us with the amount of outstanding debt by category or by major issuer for several states in FY 2012. This valuable information enables us to compare at a more disaggregate level than previous studies have done the state debt amount from the Census survey and the amount from the state CAFR statistical section and to pinpoint

[15] The contribution of each source to the gap measure may vary across states and over time. We do not have data to decompose each state's gap measure by source, because (1) the Census Bureau does not publish the names of dependent agencies that they include for each state in each year and (2) states do not publish the names of dependent agencies that they exclude from the CAFR statistical section in each year. However, this does not affect the interpretation of the empirical results, since both sources are a result of governmental accounting choices.

the source of the gap. To our best knowledge, this is the first time that such a comparison has been conducted.

Table 1 provides a detailed side-by-side comparison of the Census survey with the CAFR statistical section for New Hampshire and Rhode Island as examples. On the one hand, as shown by the bolded figures, we can successfully match most of the debt categories (especially the largest ones) reported in the state CAFR statistical sections to the corresponding ones in the Census survey. In the case of New Hampshire, the two data sources correspond precisely with respect to Turnpike revenue bonds ($0.34 billion) and general obligation bonds ($1.01 billion). These overlaps account for 87.2 percent of the total primary government debt reported in the CAFR statistical section. In the case of Rhode Island, four out of five debt categories, or 82.1 percent, of the total primary government debt reported in the CAFR statistical section match exactly the amounts in the Census survey.[16] The comparison thus confirms that the Census survey does capture most of state debt reported in the CAFR statistical section.

On the other hand, the Census survey reports a much higher total amount of state debt than the state CAFR statistical section does. This is because the Census survey includes far more dependent agencies' debt than the state CAFR statistical section. In the case of New Hampshire, the debt measure from the Census is $8.03 billion, compared with the debt measure of just $1.55 billion in the state CAFR statistical section. The exact overlaps between the two ($0.34 billion in Turnpike revenue bonds and $1.01 billion in general obligation bonds) account for only 16.8 percent of the total outstanding debt reported in the Census survey. The difference between the two is mostly driven by debt issued by dependent agencies, such as the public university system, the health/education facilities authority, and the housing finance authority. Similarly, there is a large difference in the debt measure between the Census survey amount and the state CAFR statistical section amount for Rhode Island—close to $6.3 billion. Only 25.8 percent of the total outstanding debt reported in the Census survey is revealed in the CAFR statistical section.

[16] In addition, RIEDC Grant Anticipation Revenue Bonds of $342,720 (in thousands) reported in the Rhode Island CAFR statistical section (as part of Special Purpose Bonds) is close to the Economic Development Corporation (RIEDC) debt of $333,625 (in thousands) reported in the Census survey.

The gap measure for Rhode Island is also attributable largely to debt of the state's housing/mortgage finance corporation, health/education building corporation, student loan authority, clean water finance agency, and other dependent agencies.

Empirical Model

We use the following panel data model with state and year fixed effects to examine what factors affect the gap in reported state debt:

$$y_{it} = \beta_1 + \beta_2 x_{it} + \alpha_i + \delta_t + \varepsilon_{it}.$$

Here, y_{it} is the per capita gap in reported state debt, which is calculated as per capita total outstanding debt reported in the annual Census survey minus per capita total primary government debt reported in the state CAFR statistical section for state i in year t. x_{it} includes four categories of explanatory variables—fiscal stress, state politics, economic factors, and credit ratings—all discussed in the next section. α_i is state fixed effects that capture non-time-varying factors within states in the sample period, such as the balanced budget requirements, types of debt limits, and other state-specific fixed fiscal, social, and political factors that might affect the gap in reported state debt. δ_t is year fixed effects that capture time-varying macro factors shared by all states in each year, such as national economic recessions. ε_{it} is the error term. We cluster standard errors at the state level to control for both heteroskedasticity and arbitrary intra-state correlation.

We consider this regression as a plausible causal analysis regarding transparency for three reasons. First, by controlling for state fixed effects, our identification strategy relies on the variation from within states over time. In doing so, we avoid a situation in which the results are driven by cross-sectional, unobserved heterogeneity.

Second, the key explanatory variables, as defined in the next section, are either (plausibly) exogenous or pre-determined (as lag variables) from the perspective of state officials. At any given point in time, these variables are outside the direct control of state officials. This reduces the possibility of reverse causality.

Third, we conduct a falsification test, using the pre-GASB 44 data, whose results (or lack of results) provide further support for our interpretation. In the pre-GASB 44 period, states

were not required to publish the total primary government debt measure in their CAFR statistical section. Thus, they should have had less incentive to use accounting choices to obscure the government's debt position in the pre-GASB 44 period than in the post-GASB 44 period, when the total primary government debt measure had become more salient and accessible for ordinary citizens. As a result, we expect to find weaker or no results in the pre-GASB 44 period. Alternatively, if we use the same model and find similar results in both the pre- and post-GASB 44 periods, it would mean that those results have nothing to do with the implementation of GASB 44, and therefore that the causal interpretation related to transparency should not hold. Fortunately, we are able to conduct this falsification test, because states published the data of total primary government debt from five years before GASB 44 was implemented (that is, FY 2001–2005) as part of the historical data in their FY 2006 CAFR statistical sections. We find not only that there are no significant results in the pre-GASB 44 period, but also that the sign of some key explanatory variables flips.

Hypotheses and Explanatory Variables of Interest

We test several hypotheses developed from the previous literature on fiscal transparency.

1. Hypotheses and explanatory variables related to fiscal stress

According to Kido, Petacchi, and Weber (2012) and Hudspeth et al. (2015), politicians and public managers in states with relatively poor fiscal performance may have stronger incentives than those in states with healthier fiscal performance to use accounting choices to make their governments appear fiscally healthier than they actually are, in order to achieve political gains. Therefore, fiscal transparency is expected to be lower when states face greater fiscal stress.

We employ a fiscal shock variable—first developed by Poterba (1994) and subsequently widely used and accepted in the state public finance field—as a primary measure of fiscal

stress.[17] To capture the exogenous shocks to the state budget, Poterba (1994) uses data from the National Association of State Budget Officers' Fiscal Survey of the States and defines

$$\text{Fiscal Shock}_{it} = \text{Expenditure Shock}_{it} - \text{Revenue Shock}_{it},$$

where $\text{Expenditure Shock}_{it}$ and $\text{Revenue Shock}_{it}$ measure the *unexpected* component of expenditures and revenues for state *i* in fiscal year *t*, respectively.

Revenue shock "should be the difference between the revenues that would have been collected during the fiscal year, given actual economic conditions and other factors, with the tax system that was in effect at *the beginning of the fiscal year*, and the revenues that this tax system was forecast to collect at the beginning of the fiscal year" (Poterba 1994, pp. 804–805). Therefore, it is calculated as

$$\text{Revenue Shock}_{it} = (\text{Actual Revenues}_{it} - \Delta\text{Tax}_{it}) - \text{Forecast Revenues}_{it}.$$

Forecast revenues are made before or at the beginning of the fiscal year and thus considered pre-determined. ΔTax measures the revenue change that results from tax changes enacted during the fiscal year. The deduction of ΔTax corrects for the potentially endogenous tax system changes within the fiscal year and therefore helps capture the true unexpected revenue shock.

Similarly, Poterba (1994) calculates

$$\text{Expenditure Shock}_{it} = (\text{Actual Outlays}_{it} - \Delta\text{Spend}_{it}) - \text{Forecast Outlays}_{it}.$$

ΔSpend measures spending adjustments enacted after the initial budget and is negative if the state implements mid-year spending cuts.

In addition, Poterba (1994) finds that states give asymmetric responses to unexpected deficits and surpluses in the budget adjustment process. This inspires us to further decompose fiscal shock into

$$\text{Unexpected Deficit}_{it} = \max(\text{Fiscal Shock}_{it}, 0).$$

$$\text{Unexpected Surplus}_{it} = \max(-\text{Fiscal Shock}_{it}, 0).$$

The larger the fiscal shock or the unexpected deficit, the greater the fiscal stress state governments experience. Since previous research suggests that fiscal stress results in lower fiscal transparency, we expect a fiscal shock and an unexpected deficit to have a positive impact on the gap in reported state debt.

[17] According to Google Scholar, Poterba (1994) was cited 1,192 times as of April 19, 2017.

To test the robustness of the results, we also use two other measures of fiscal stress in an alternative model: the year-end state general fund balance and the rainy day fund. As a higher level of the general fund balance or the rainy day fund implies more budget slack and therefore less fiscal stress, these variables are expected to have a negative effect on the gap in reported state debt. Nonetheless, we prefer the Poterba-developed variables of fiscal shock and unexpected deficit as the primary measures of fiscal stress, because they are widely considered to be more exogenous to policymakers and are less likely to suffer an endogeneity bias than the general fund balance and the rainy day fund.[18] Thus, we use the general fund balance and the rainy day fund only as part of the robustness check.

2. Hypotheses and explanatory variables related to state politics

Previous studies, such as Baber and Sen (1984), Ingram (1984), Carpenter (1991), Alt and Lowry (1994), and Alt, Lassen, and Rose (2006), suggest that political competition encourages fiscal transparency. This is because if elected politicians and public managers work in a more politically competitive environment, they will face more pressure from political opponents for budget transparency. Political competition makes incumbents more vulnerable to claims by political rivals of irresponsible management (Baber and Sen 1984). It thus increases incentives for incumbents to engage in self-regulation and to satisfy citizens' demand for more government information, in order to increase their chances to win the next election.

Following Baber and Sen (1986), Alt and Lowry (1994), and Alt, Lassen, and Rose (2006), we measure relative political competition using an indicator of a single political party controlling both the governorship and the state legislature. This dummy variable is equal to one if the state governor and the majority of both state senators and house representatives are from the same political party. A government unified by a single party is often considered to be operating in a less politically competitive environment, because there may be fewer checks and balances between government branches in a unified government than in a divided government. Therefore, if the executive branch reduces the disclosure of information, it is less likely to

[18] It is possible that a more transparent government is more likely to adopt a rainy day fund and to accumulate a larger rainy day fund balance.

receive questions and objections from the legislature if both houses of the legislature and the governor's office are controlled by the same political party and have similar political interests. Because it reduces the cost of lowering fiscal transparency, one-party control of the state government is expected to have a positive effect on the gap in reported state debt.

According to Alt and Lowry (1994) and Alt, Lassen, and Rose (2006), Democratic governors are likely to display more fiscal transparency than Republican governors. This is because Democratic governors often prefer more government spending and therefore have stronger incentives to provide information to voters in order to convince them to support a larger government. Thus, we include a dummy variable for Democratic governor and expect it to have a negative effect on the gap in reported state debt.

In addition, Kido, Petacchi, and Weber (2012) find that state governments are more likely to use accounting choices to present a "healthier" financial picture in a gubernatorial election year than in non-election years. Politicians may act this way in order to increase their chance of winning elections.[19] Therefore, we include a dummy variable for the gubernatorial election year, and expect it to have a positive impact on the gap in reported state debt. Because the gubernatorial election cycle was pre-determined many years ago, it is widely accepted as exogenous.

3. Hypotheses and explanatory variables related to economic factors

In theory, income has an ambiguous effect on fiscal transparency. On the one hand, when residents' incomes increase, they will demand more government information so that they can feel more confident about the government using tax revenue effectively (Ingram 1984). If this assumption is true, income will have a negative effect on the gap in reported state debt. But on the other hand, higher-income citizens face higher opportunity costs of monitoring government activities and thus might desire to spend less time and effort monitoring

[19] Kido, Petacchi, and Weber (2012) argue that even if the incumbent governor does not run for reelection, the nominee of the incumbent's party (often the lieutenant governor) would benefit from a good financial performance of the state in a gubernatorial election year. Nevertheless, the extent to which the incumbent governor employs accounting choices in an election year is conditioned by other factors, such as the state's budget flexibility, its financial health, and the independence of the state auditor and comptroller.

governments (Duncombe and Yinger 2011). This could result in less pressure on government disclosure. If this were the case, income would have a positive impact on the gap in reported state debt. We include per capita income as an explanatory variable in the model and empirically determine its net effect on debt transparency.

Tejedo-Romero and Araujo (2015) and others use unemployment rates as an indicator of economic stress and find that higher unemployment rates are related to lower levels of fiscal transparency. Therefore, we include the state-level unemployment rate and expect it to have a positive effect on the gap in reported state debt. Both per capita income and the unemployment rate are outside the direct control of state officials and are unlikely to incur reverse causality.

4. Hypotheses and explanatory variables related to credit ratings

To our best knowledge, previous studies did not develop hypotheses on the role of state credit ratings in fiscal transparency. We hypothesize that state credit ratings could have a positive effect on transparency. This is because a state with a higher credit rating may have stronger incentives to protect its good reputation in the credit market and to satisfy investors' demand for government information than a state with a lower credit rating. Therefore, we introduce two dummy variables for the AAA and A credit ratings by Standard and Poor's (S&P).[20] To avoid potential endogeneity problems, we use a one-year lag of both variables, rather than the contemporaneous variables, in one model specification. We expect the one-year lag of the AAA credit rating variable to have a negative impact on the gap in reported state debt, whereas we expect the one-year lag of the A credit rating variable to have a positive impact on the gap in reported state debt.

[20] We choose Standard and Poor's ratings because the data are available for all 50 states in the sample period, whereas Moody's and Fitch have no ratings for some states in some years. Among states with data from all three credit rating agencies, the three ratings are highly correlated.

Data

Table 2 provides summary statistics and the data sources. The per capita gap in reported state debt averages close to $2,200 across states in the sample period, with a standard deviation of over $1,800.

Figure 1 presents the average per capita gap of each state in the sample period, grouped into five categories. It shows that there is large variation in the gap measure between states, while there is no obvious spatial pattern. There is also no obvious pattern in terms of the characteristics exhibited by the lowest-gap and highest-gap states. For example, North Dakota and Montana, both energy-producing states, are in the lowest-gap and highest-gap category, respectively. California and Massachusetts, both high-income and politically left-leaning states with a large population, are in the lowest-gap and highest-gap category, respectively.

As we use a model with state fixed effects, the within-states over-time variation is more relevant and important for the estimations than the between-states variation. To explore whether there is a pattern in the evolution of the gap measure, Figure 2 presents each state's per capita gap at three distinct points of time. We choose the year 2007, the year before the Great Recession; the year 2009, when states were deep in the fiscal crisis caused by the Great Recession; and the year 2012, when fiscal stress was significantly eased during the economic recovery. Across these years, most states stay in the same gap category as defined in Figure 2. This suggests that the cross-sectional pattern of the gap measure is relatively stable over time, although each defined gap category in Figure 2 has a wide range. Nevertheless, there is suggestive evidence that the gap measure grows when fiscal stress is higher and drops when fiscal stress is lower. In Figure 2, the number of states in the highest-gap category increases from six in 2007 to eight in 2009 and then declines to five in 2012. Conversely, the number of states in the lowest-gap category decreases from 16 in 2007 to 15 in 2009 and then increases to 18 in 2012.

Figure 2 likely underrepresents the changes over time in the gap measure, because each gap category is defined with a wide range and it ignores the changes in the gap measure for states that do not switch between the categories. Therefore, we examine the average per capita gap over all 50 states in each year. Figure 3 shows that the average per capita gap increases from

2006 to 2009 and then decreases after the Great Recession. This pattern is again consistent with the hypothesis that the gap in reported state debt increases under more severe fiscal stress.

Results

Table 3 presents the results from several regression specifications, all with state and year fixed effects and clustered standard errors.[21] Model 1 is the baseline model, which produces two significant results. First, fiscal shock is positive and significant at the 1 percent level.[22] In terms of the coefficient magnitude, the per capita gap in reported state debt increases on average by $70 for a $1,000 increase in the per capita fiscal shock. Alternatively, for a one standard deviation increase in per capita fiscal shock (that is, $570), the per capita gap in reported state debt increases on average by about $40 (that is, 0.07×$570=$40), which is about 2 percent of the sample mean of the per capita gap in reported state debt (that is, $40/$2,170=2 percent). This result is consistent with the hypothesis that fiscal stress has a negative effect on fiscal transparency, although the effect is relatively small.

Second, one-party control is positive and significant at the 5 percent level. The coefficient suggests that, holding everything else equal, the per capita gap in reported state debt is, on average, $260 higher when the state executive and legislative bodies are unified under one party (that is, when there is less political competition) than when the state has a divided government (more political competition). The $260 increase is equivalent to about 12 percent of the sample mean of the per capita gap in reported state debt. This result is aligned with the hypothesis that less political competition contributes to lower fiscal transparency.

Other explanatory variables in the model are not statistically significant at the conventional level. One might be concerned that the reason that per capita income and the

[21] We also try an OLS without state fixed effects. Fiscal shock and one-party control turn negative, and only the former is statistically significant. However, these results suffer an obvious omitted variable bias. They are likely driven by cross-sectional, unobserved heterogeneity, which we control for by using state fixed effects in the model.

[22] We also run separate regressions of the two components of the gap measure (that is, total state debt reported in the annual Census survey and total primary government debt reported in the CAFR statistical section) on the same explanatory variables as those shown in Table 3. First, we find that both debt measures increase with fiscal shock. The coefficients on fiscal shock in both regressions are positive and statistically significant at the 5 percent or lower level. Second, we find that the Census's debt measure increases more than the CAFR measure in response to fiscal shock. The estimated coefficients on fiscal shock in the two regressions are 0.10 and 0.03, respectively.

unemployment rate are insignificant is likely because they are correlated with each other. However, even after we drop one of them from Model 1, the other variable remains insignificant. Similarly, one may be concerned that the correlation with one-party control likely causes the Democratic governor variable to be insignificant. In response, we try dropping the one-party control variable and still find the Democratic governor variable insignificant.[23]

Model 2 tests the robustness of the results to the measure of fiscal stress. It replaces fiscal shock with two common alternatives—the general fund balance and the rainy day fund. Previous studies view that, in general, the larger the general fund balance and the rainy day fund, the less fiscal stress facing state governments. Consistent with the expectation, the rainy day fund is found to be negative and significant at the 1 percent level in Model 2. The general fund balance is also negative, but smaller and not statistically significant. The difference in the results between the rainy day fund and the general fund balance variables is consistent with Hou (2005), who shows that the rainy day fund is a better representation of state fiscal slack than the general fund balance.

One might argue that there could be a missing variable for staff resource constraint, which is correlated with fiscal stress. When facing fiscal stress, state governments often implement layoffs. Therefore, they may be short of staff members to prepare and assemble the complete information for the CAFRs, causing the gap measure to increase. If this is the case, the fiscal stress variables (fiscal shock and rainy day fund) may simply pick up the impact of the constraint on staff resources, even though the staff resource constraint itself may not reflect political motives. To test this alternative hypothesis, we include a direct measure of state staff resource, state government employees per capita, along with the fiscal shock variable in Model 3. Opposite to the prediction of the alternative hypothesis, the coefficient on state government

[23] The high R-squared in the baseline model is due to the state fixed effects. The R-squared in a model with only state fixed effects and no year fixed effects or other covariates is already 0.9769. Adding the year fixed effects raises the R-squared to 0.9794. Then, adding the baseline covariates slightly increases the R-squared to 0.9824.

employees is positive and highly insignificant. More importantly, the inclusion of state government employees does not affect the coefficients on fiscal shock and one-party control.[24]

Model 4 adds a one-year lag of the S&P AAA credit rating and the one-year lag of the S&P A credit rating to test whether state governments consider the ratings in their choices of financial reporting practices.[25] While the signs of both rating variables are consistent with our hypothesis, neither variable is statistically significant at the conventional level. One potential reason for the insignificant results is that there is relatively small variation in credit ratings within states during the sample period.

The next three models test the sensitivity of the results in Model 1 to potential outliers. First, although the amount of debt reported in the annual Census survey is almost always larger than that in the state CAFR statistical section, there are a few exceptions in the dataset. Model 5 drops eight observations with negative values (all small) for the dependent variable. The regression results are very similar to what is reported in Model 1. Second, Model 6 drops four observations whose absolute value of the standardized residual in Model 1 is greater than 3—a common threshold for potential outliers. Again, the results are qualitatively similar to those in Model 1. Third, while the year fixed effects help control for national economic shocks, one might still be concerned that the results may be driven by a unique national event—the Great Recession. To address this concern, Model 7 drops observations from 2008 and 2009, the two years of the Great Recession. The results in Model 7 are qualitatively similar to those in the baseline model.[26]

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[24] We also try adding state government employees per capita to Model 2. The coefficient on this new variable is positive and highly insignificant. The coefficients on other variables, including the rainy day fund and one-party control, do not change.

[25] One might hypothesize that state governments may use accounting choices to reduce the amount of reported debt, not only for political gains, but also for a better credit rating. We test this hypothesis by running a regression of the indicator of AAA credit rating on the gap in reported state debt and the other explanatory variables used in Model 1, including state and year fixed effects. The coefficient on the gap measure is not statistically significant at the conventional level. This implies that unlike ordinary citizens, credit rating analysts are highly trained professionals and are not easily manipulated; they could find the necessary information to develop accurate credit ratings, even if the information is difficult to locate.

[26] We also explore other model specifications. For example, to account for a potential nonlinear relationship between the gap in reported state debt and the explanatory variables, we use log(gap in reported state debt) as a dependent variable in one alternative model. Both fiscal shock and one-party control remain positive and statistically significant at the conventional level. We prefer the linear model because it is easier to interpret its coefficients. In another

In order to gain a deeper understanding of the role of fiscal stress in debt transparency, we follow Poberta (1994) and further split fiscal shock into unexpected deficit and unexpected surplus. The reason that state governments may react asymmetrically to an unexpected deficit and unexpected surplus is that they may face more political pressure to defend their financial management practices and to improve the public perception of state financial health in a deficit environment than in a surplus environment. Furthermore, we include both the contemporaneous form of unexpected deficit and unexpected surplus and their one-year lags in the regressions in Table 4. We include the lag variables because it may take time for state governments to make adjustments to deal with fiscal stress and therefore the effect of fiscal shock may last more than one year.

As shown in Model 1 of Table 4, both the unexpected deficit and the unexpected surplus are statistically significant at the 10 percent or lower level, with the expected sign. The gap in reported state debt increases with the unexpected deficit (that is, with more fiscal stress) and decreases with unexpected surplus (that is, with less fiscal stress). The absolute value of the coefficient on the unexpected deficit variable is statistically significantly greater than the absolute value of the coefficient on the unexpected surplus variable. This result suggests that the effect of a fiscal shock on the gap in reported state debt is not symmetric; state governments react to an unexpected deficit more strongly than to an unexpected surplus.

The results in Model 1 also show that the gap in reported state debt increases not only with the current-year unexpected deficit, but also with the previous-year unexpected deficit. Similarly, the gap in reported state debt decreases with both the current-year and the previous-year unexpected surplus. The asymmetric effect of a fiscal shock is also found in the lag variables. The absolute value of the coefficient on the previous-year unexpected deficit is twice as large as that of the coefficient on the previous-year unexpected surplus.

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alternative model, we add the one-year, two-year, and three-year leads of the gubernatorial election year dummy variable to account for the potential dynamics of the electoral cycle effect. This is because state governors may take actions ahead of the election year in order to improve the chance of winning the election for themselves or for their political party's nominees. However, neither the current election year variable nor the lead variables are statistically significant at the conventional level.

In addition, the effect of an unexpected deficit on the gap measure appears to weaken over time. The coefficient on the previous-year unexpected deficit is less than half the coefficient on the current-year unexpected deficit; the difference between the two is statistically significant.

Model 2 in Table 4 replaces the fiscal shock variables with the state rainy day fund and the general fund balance as well as their one-year lags to test the robustness of the results to the measures of fiscal stress. Similar to the results in Model 1, Model 2 shows that the rainy day fund's effect on the gap in reported state debt lasts more than one year.

Next, we explore the role of fiscal rules in debt transparency. According to Milesi-Ferretti (2003), fiscal rules may create constraints or incentives for the use of creative accounting by governments and consequently have implications for fiscal transparency. For example, Bunch (1991) and Bifulco et al. (2012) find that state governments use public authorities to circumvent constitutional debt limits. Costello, Petacchi, and Weber (2017) show that stronger balanced budget requirements (BBR) lead state governments to be more likely to engage in alternative fiscal actions, such as asset sales and inter-fund transfers, when they face fiscal problems. These actions could potentially result in less information disclosure and lower fiscal transparency.

To measure related state fiscal rules, we use debt limitation variables from Kiewiet and Szakaly (1996) and BBR variables from Hou and Smith (2006) and the National Conference of State Legislatures (2010). Because these variables do not change during our sample period, we cannot include them directly as independent variables, since they will be absorbed by state fixed effects. We instead interact these variables with the fiscal shock, unexpected deficit and surplus, and one-party control variables to test whether debt limitations and BBR influence the effect of fiscal stress and political competition on debt transparency. We find that most of the interaction terms are statistically insignificant. The few significant interaction terms are too large to be believable; we suspect that they may be caused by multicollinearity problems since our sample is not large. In addition, we run split sample regressions as an alternative approach. We use the debt limitation or BBR variables to divide the sample and then run the same regressions as in Model 1 in Table 3 and Model 1 in Table 4 on each subsample. When

comparing the results between subsamples, we again do not find clear patterns. Future research is warranted to examine the effects of institutional factors on governmental financial disclosure.

Falsification Test

So far, this paper has made an implicit assumption that the results exist only because states respond to the incentives and constraints created under GASB 44. In other words, the assumption has been that state governments would not have acted this way without the implementation of GASB 44 in FY 2006. Fortunately, we are able to test this assumption directly by using data from the pre-GASB 44 period. GASB 44 requires states to report some historical information along with the current year's information. Therefore, state governments included the past five years' data on total primary government debt in their FY 2006 CAFR statistical section, whereas these data did not exist in the earlier years' CAFR statistical sections. These older data were constructed in the same manner as, and are therefore comparable with, the FY 2006 and later data. Using these older data, we run the same Models 1 and 2 as those shown in Table 3 to test whether the same patterns exist in the earlier period without GASB 44. A positive answer would invalidate the assumption of the previous analysis. In this sense, one may consider this exercise as a falsification test.

Table 5 reports the results of the regressions based on data from 2001 to 2005 (the pre-GASB 44 period). It shows that none of the explanatory variables are statistically significant at the 10 percent level. More importantly, the signs of the fiscal shock and one-party control variables are opposite to their signs in the post-GASB 44 period. These results suggest that the relationships that we find in the post-GASB 44 period did not exist in the pre-GASB 44 period, which is consistent with our assumption underpinning the previous analysis.

The results of this falsification test help strengthen our argument that the gap in reported state debt is indeed a measure of transparency. One might argue that the gap measure does not reflect transparency, but instead the flexibility of states to issue different types of debt. Under the constraints of the BBR and/or debt limit, states may have the flexibility to issue more debt through dependent agencies to deal with fiscal stress or fund partisan agendas. If that is the case, those strategic behaviors in issuing state debt should exist in both pre- and post-GASB

44 periods, since the flexibility of states to issue different types of debt did not change. However, that is not what we find in this paper. One might also argue that the gap measure does not reflect transparency, but instead the lack of state staff resources. There may be fewer staff members to track down all the relevant debt information during fiscally stressed periods. Again, if that is the case, the gap measure should increase with fiscal stress in both the pre- and post-GASB 44 periods, since the relationship between fiscal stress and state staff resources did not change. However, that is also not what we find in this paper. Therefore, the falsification test provides strong evidence against such alternative explanations unrelated to transparency.

In addition, the combination of Table 3 (specifically, Models 1 and 2) and Table 5 can be framed as a split sample regression analysis, which can shed light on the impact of GASB 44. In such a framework, the "full" sample from 2001–2012 is divided into two "subsamples." The first subsample is in the pre-GASB 44 period from 2001–2005, when the state self-reported debt measure is not salient and accessible to ordinary citizens. The second subsample is in the post-GASB 44 period from 2006–2012, when the state self-reported debt measure is more salient and accessible to ordinary citizens because of the implementation of GASB 44. Using the same model specifications on the two subsamples (that is, Tables 3 and 5, Models 1 and 2), we can interpret the differences in the results between the two periods as an indication that state governments changed how they account for dependent agencies' debt in the state financial documents in response to the GASB 44's new requirements.

We recognize that this split sample regression analysis is likely not as ideal as a difference-in-differences approach. However, because every single state was treated by GASB 44 in FY 2006 and onwards, it is impossible to create a control group for the difference-in-differences analysis. Given this consideration and the data we have, this split sample regression analysis is the best possible alternative available to gain some understanding of the impact of GASB 44.

Conclusion

Because there is a much longer delay in the release of the annual Census survey data than in the release of state CAFRs, in many cases ordinary citizens can only rely on state CAFRs

to gauge state financial performance in the most recent fiscal year. Using these two data sources, this paper introduces a measure of relative transparency in state debt disclosure. It is defined as the gap in reported state debt between the annual Census survey and the state CAFR statistical section after the implementation of GASB 44 in FY 2006. We discuss this issue and show that the gap measure results mostly from governments' using accounting choices to exclude some dependent agencies' debt from the CAFR statistical section.

The regression results show that the gap in reported state debt tends to increase with an unexpected deficit. The effect of an unexpected deficit lasts more than one year while declining over time. A state is also likely to experience a larger gap in reported state debt when its government is under one political party's control than when it has a divided government. These results suggest that fiscal stress and political competition create opposite effects on state debt transparency.

Ordinary citizens can use the new gap measure to assess the information they glean from their state's CAFR statistical section as a rough indicator of the condition of their state government finances, discounting or inflating their overall impression based on the new gap measure.

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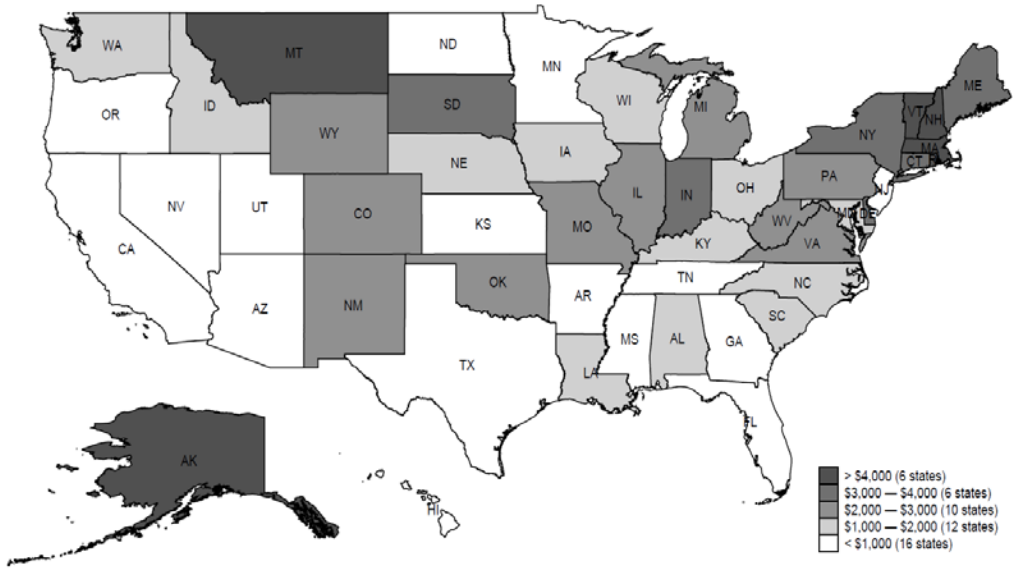
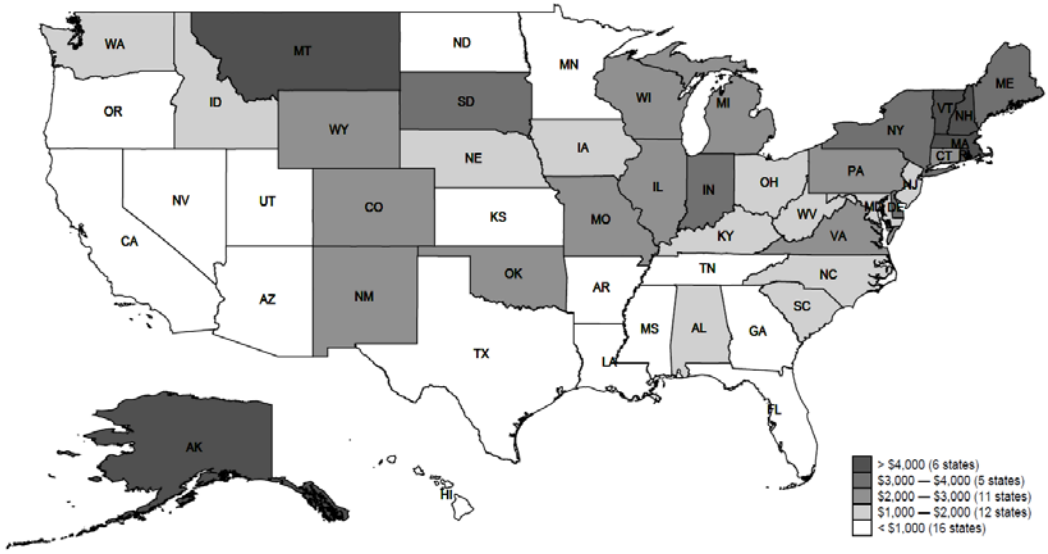
Figure 1. Average Per Capita Gap in Reported State Debt across States
(FY 2006—2012)



Source: Authors' calculations.
Note: The average per capita gap in reported state debt is in 2012 dollars.

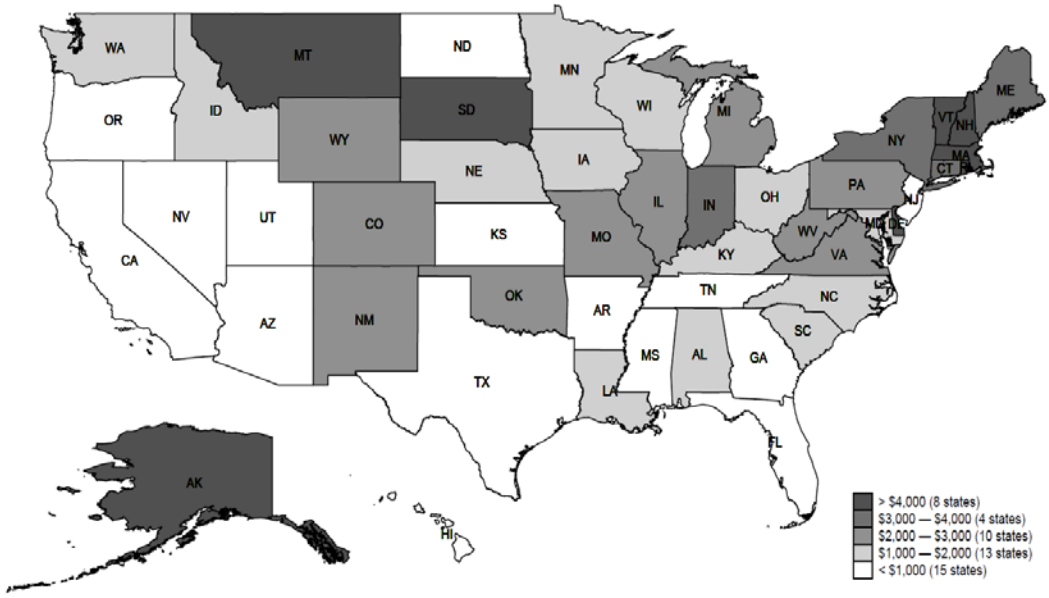
Figure 2. Per Capita Gap in Reported State Debt across States in FY 2007, 2009, and 2012

Panel A. Per Capita Gap in Reported State Debt across States in FY 2007



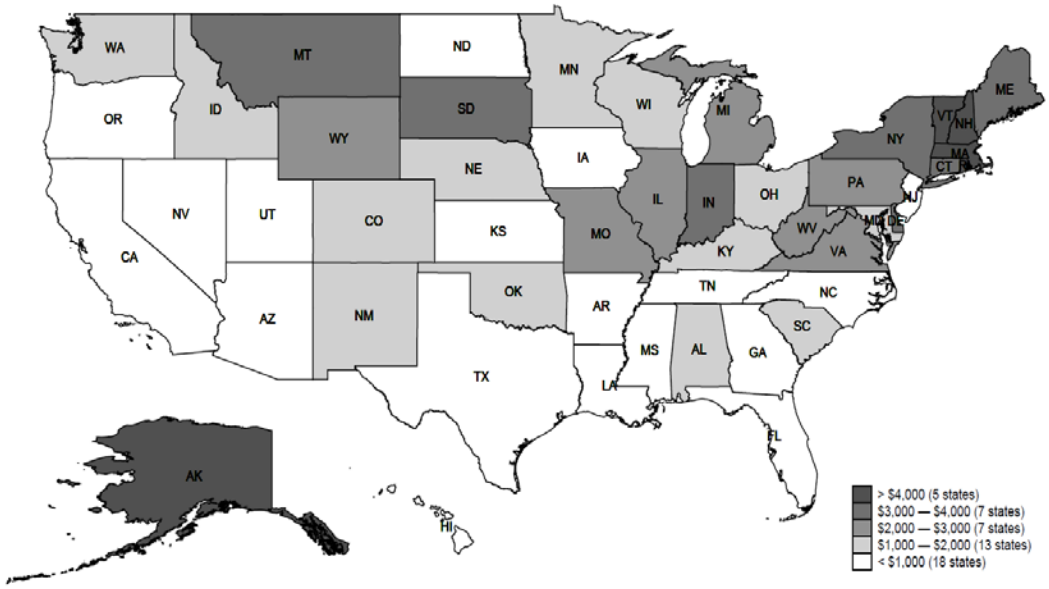
Source: Authors' calculations.
Note: The per capita gap in reported state debt is in 2012 dollars.

Panel B. Per Capita Gap in Reported State Debt across States in FY 2009



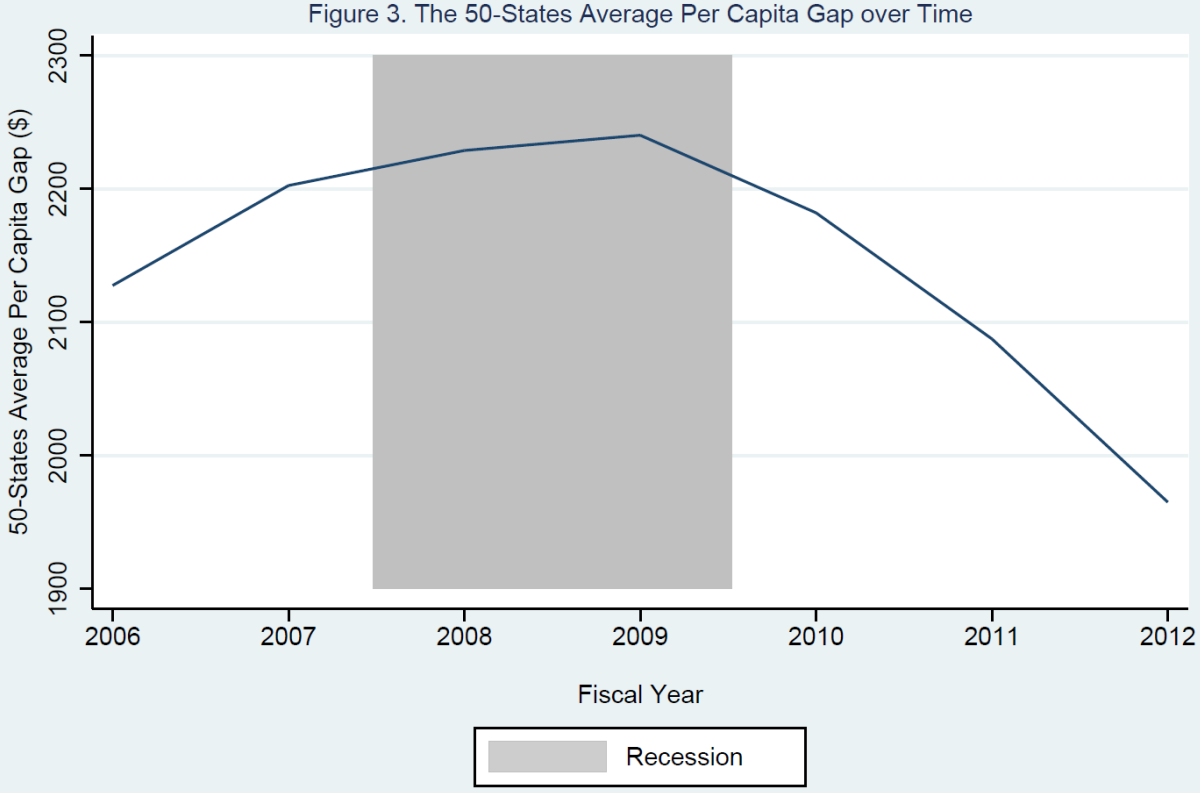
Source: Authors' calculations.
Note: The per capita gap in reported state debt is in 2012 dollars.

Panel C. Per Capita Gap in Reported State Debt across States in FY 2012



Source: Authors' calculations.
Note: The per capita gap in reported state debt is in 2012 dollars.

Figure 3. The 50-States Average Per Capita Gap over Time



Source: Authors' Calculations.

Table 1. Comparing Reported Debt Categories between the Census Survey and the State CAFR Statistical Section (FY 2012, in thousand dollars)

(1) New Hampshire

Census Survey		CAFR Statistical Section	
Turnpike-Revenue Bonds	**343,791**	*Business-Type Activities*	
General Obligation Bonds Payable	**1,007,530**	**Revenue Bonds**	**343,791**
University System Revenue Bonds	437,300	Capital Leases	424
IPEDs-Higher Education	48,193	*Governmental Activities*	
Business Finance Authority	28,586	**General Obligation Bonds**	**1,007,530**
Health/Education Facilities Authority	3,262,930	Federal Highway Grant Anticipation Bonds	194,995
Housing Finance Authority	442,590	Capital Leases	2,856
Municipal Bond Bank-Guaranteed	4,690	Total Primary Government Debt	1,549,596
Municipal Bond Bank-Non-Guaranteed	916,200		
Industrial Revenue Bonds	578,039		
Highway Fund	115,200		
General Fund and Self Supporting Fund	844,800		
Total Outstanding Debt	8,029,849		

(2) Rhode Island

Census Survey		CAFR Statistical Section	
Lease Obligation-RICCA-CAFR	**250,510**	*Business-Type Activities*	
General Obligation Bonds-CAFR	**1,110,585**	**Revenue Bonds**	**250,510**
Certificate Of Participation-CAFR	**233,800**	*Governmental Activities*	
Tobacco Finance Corporation-CAFR	**779,426**	**General Obligation Bonds**	**1,110,585**
Housing/Mortgage Finance Corporation	1,503,903	**Capital Lease**	**233,800**
Housing/Mortgage Finance Corporation	30,886	**Revenue Bonds (Blended Component Units)**	**779,426**
Housing/Mortgage Finance Corporation	68,000	Special Purpose Bonds	519,060
Health/Education Building Corporation	3,005,229	Total Primary Government Debt	2,893,381
Industrial Facilities Corporation	65,500		
Student Loan Authority	565,855		
Economic Development Corporation (RIEDC)	333,625		
IPEDs-Higher Education	299,817		
IPEDs-Higher Education	2,924		
Resource Recovery Corporation	12,160		
Clean Water Finance Agency	706,985		
Non-major Component Units-CAFR	242,585		
Total Outstanding Debt	9,211,790		

Sources: U.S. Census Bureau; New Hampshire and Rhode Island FY 2012 CAFRs.

Note: Rhode Island special purpose bonds include RIEDC grant anticipation revenue bonds of $342,720 (in thousands), RIEDC Rhode Island motor fuel tax revenue bonds of $70,350 (in thousands), and RIEDC historical tax credit bonds of $105,990 (in thousands).

Table 2. Summary Statistics and Data Sources (2006–2012)

Variable	Mean	Standard Deviation	Minimum	Maximum	Data Source
Gap in reported debt (000s)	2.17	1.81	–0.70	8.26	State CAFRs and U.S. Census Bureau's Annual Survey of State Government Finances
Fiscal shock (000s)	–0.03	0.57	–7.43	3.64	National Association of State Budget Officers (NASBO), Fiscal Survey of States
Unexpected deficit (000s)	0.08	0.23	0.00	3.64	NASBO, Fiscal Survey of States
Unexpected surplus (000s)	0.10	0.50	0.00	7.43	NASBO, Fiscal Survey of States
General fund balance (000s)	0.14	0.35	–2.24	3.12	NASBO, Fiscal Survey of States
Rainy day fund (000s)	0.37	2.02	–0.17	21.71	NASBO, Fiscal Survey of States
One-party control	0.56	0.50	0.00	1.00	University of Kentucky, Center for Poverty Research
State government employees	0.02	0.01	0.01	0.06	U.S. Bureau of Labor Statistics
Democratic governor	0.52	0.50	0.00	1.00	University of Kentucky, Center for Poverty Research
Election year	0.29	0.46	0.00	1.00	Books of the States
Unemployment (%)	6.75	2.37	2.60	13.80	U.S. Bureau of Labor Statistics
Income (000s)	42.65	6.34	32.40	62.91	U.S. Bureau of Economic Analysis
AAA credit rating, one-year lag	0.20	0.40	0.00	1.00	Standard & Poor's
A credit rating, one-year lag	0.04	0.20	0.00	1.00	Standard & Poor's

Source: Authors' calculations.

Notes: 1. The number of observations is 343 (=49 states × 7 years). Nebraska is dropped from the analysis because it has a nonpartisan, unicameral legislature.

2. The monetary variables (including gap in reported debt, fiscal shock, unexpected deficit, unexpected surplus, general fund balance, rainy day fund, and income) are all in per capita terms and inflated to 2012 dollars. State government employees are also in per capita terms.

Table 3. Regression Results from Fixed-Effects Models (2006–2012 except for Model 7)

	Dependent variable: Gap in reported debt (000s)						
Variable	**(1) Baseline**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Fiscal shock (000s)	0.07***		0.07***	0.07***	0.08***	0.25***	0.20***
	(0.01)		(0.01)	(0.01)	(0.01)	(0.03)	(0.02)
General fund balance (000s)		–0.02					
		(0.03)					
Rainy day fund (000s)		–0.14***					
		(0.01)					
One-party control	0.26**	0.19**	0.26**	0.27**	0.21**	0.15***	0.27**
	(0.11)	(0.08)	(0.11)	(0.11)	(0.09)	(0.06)	(0.11)
State government employees			33.89				
			(47.91)				
Democratic governor	0.07	0.08	0.07	0.07	0.03	0.05	0.11
	(0.08)	(0.08)	(0.08)	(0.08)	(0.06)	(0.05)	(0.10)
Election year	–0.01	–0.03	–0.01	–0.00	–0.01	–0.00	0.02
	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)	(0.05)
Unemployment (%)	0.04	0.01	0.04	0.04	0.05	0.02	0.04
	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)	(0.05)
Income (000s)	0.02	0.02	0.01	0.02	0.01	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
AAA credit rating,				–0.01			
one-year lag				(0.06)			
A credit rating,				0.21			
one-year lag				(0.17)			
Constant	0.60	0.63	–0.18	0.58	0.66	0.67	0.18
	(0.89)	(0.79)	(1.44)	(0.88)	(0.92)	(0.82)	(1.24)
State & year fixed effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	*343*	*343*	*343*	*343*	*335*	*339*	*245*
R-squared	*0.98*	*0.99*	*0.98*	*0.98*	*0.98*	*0.99*	*0.98*

Source: Authors' calculations.

Notes: 1. Nebraska is dropped from the analysis because it has a nonpartisan, unicameral legislature.

2. Standard errors clustered at the state level are included in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

3. The monetary variables (including gap in reported debt, fiscal shock, general fund balance, rainy day fund, and income) are all in per capita terms and inflated to 2012 dollars. State government employees are also in per capita terms.

4. Model 1 is our baseline model. Model 5 drops 8 observations with negative values for the dependent variable. Model 6 drops 4 observations whose absolute value of standardized residual in Model 1 is greater than 3. Model 7 drop 98 observations from 2008 and 2009, the two years in the Great Recession.

Table 4. Testing Asymmetric and Dynamic Effects of Fiscal Shock (2006–2012)

	Dependent variable: Gap in reported debt (000s)	
Variable	**(1)**	**(2)**
Unexpected deficit (000s)	0.29***	
	(0.04)	
Unexpected deficit, one-year lag (000s)	0.14**	
	(0.06)	
Unexpected surplus (000s)	–0.06*	
	(0.03)	
Unexpected surplus, one-year lag (000s)	–0.07***	
	(0.02)	
General fund balance (000s)		–0.04
		(0.03)
General fund balance, one-year lag (000s)		0.01
		(0.02)
Rainy day fund (000s)		–0.08***
		(0.01)
Rainy day fund, one-year lag (000s)		–0.06***
		(0.02)
One-party control	0.23**	0.19**
	(0.09)	(0.08)
Democratic governor	0.07	0.08
	(0.08)	(0.08)
Election year	–0.01	–0.03
	(0.04)	(0.03)
Unemployment (%)	0.02	0.01
	(0.04)	(0.03)
Income (000s)	0.01	0.02
	(0.02)	(0.02)
Constant	0.76	0.63
	(0.92)	(0.79)
State & year fixed effects	*Yes*	*Yes*
Observations	*343*	*343*
R-squared	*0.98*	*0.99*

Source: Authors' calculations.

Notes: 1. Nebraska is dropped from the analysis because it has a nonpartisan, unicameral legislature.

2. Standard errors clustered at the state level are included in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

3. The monetary variables (including gap in reported debt, unexpected deficit, unexpected surplus, general fund balance, rainy day fund, and income) are all in per capita terms and inflated to 2012 dollars.

Table 5. Regression Results from Falsification Tests (2001–2005)

	Dependent variable: Gap in reported debt (000s)	
Variable	**(1)**	**(2)**
Fiscal shock (000s)	–0.04	
	(0.31)	
General fund balance (000s)		0.14
		(0.34)
Rainy day fund (000s)		–0.03
		(0.19)
One-party control	–0.13	–0.13
	(0.08)	(0.08)
Democratic governor	0.01	0.01
	(0.09)	(0.08)
Election year	–0.03	–0.03
	(0.06)	(0.06)
Unemployment (%)	0.08	0.08
	(0.07)	(0.07)
Income (000s)	–0.06	–0.06
	(0.08)	(0.08)
Constant	3.61	3.61
	(3.19)	(3.08)
State & year fixed effects	*Yes*	*Yes*
Observations	244	245
R-squared	0.98	0.98

Source: Authors' calculations.

Notes: 1. Nebraska is dropped from the analysis because it has a nonpartisan, unicameral legislature. There is a missing value for fiscal shock in Pennsylvania in 2004 because that state did not report that year's relevant information to the NASBO survey.

2. Standard errors clustered at the state level are included in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

3. The monetary variables (including gap in reported debt, fiscal shock, general fund balance, rainy day fund, and income) are all in per capita terms and inflated to 2012 dollars.