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Monitoring Mechanisms and Budget Variances: Evidence from the 50 Largest US Cities

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Abstract

I examine how the association between the current period's budget variance and the subsequent period's budget is affected by various governmental monitoring mechanisms. Specifically, I consider the following governance and monitoring mechanisms: governance structure, state/city budget-limiting regulations, and voter-initiated monitoring. I find that city budgets ratchet in the top 50 populous cities in the US. I also document evidence of asymmetric ratcheting—the current period's favorable budget variances result in budget increases in the following year that are larger than the decreases associated with unfavorable variances of the same magnitude. Consistent with the political budget cycle hypothesis that budget pattern alters during pre-election periods, I find the asymmetric ratcheting pattern becomes invisible in times of election, particularly when an incumbent runs for re-election. Given this evidence of the opportunistic budgetary pattern, I hypothesize and find that some monitoring mechanisms mitigate the sensitivity of the subsequent period's budget with respect to the current period's budget variance.

Keywords: budget ratcheting; agency problem; monitoring mechanisms; revenue budget ratcheting; governance structure

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1. Introduction

This study examines how the association between the current period's budget variance and the subsequent period's budget is affected by various governmental monitoring mechanisms. In particular, I test the following three governance and monitoring mechanisms: governance structure, rule-based monitoring, and competition-based monitoring. The first monitoring mechanism is the governance structure—whether the city has a strong-mayor or council–manager form of government (Zimmerman, 1977). The second mechanism is the budget-limiting regulations imposed by upper jurisdictions and city charter/codes (Poterba, 1994; Bohn & Inman, 1996). The third monitoring mechanism is political competition (DeAngelo, 1988).

This study has three primary objectives: (1) to demonstrate the relation between the current period's budget variance and the subsequent period's budget, (2) to test the political budget cycle hypothesis as the opportunistic fiscal expansionary policies of elected officers prior to their election, and (3) to investigate how different types of monitoring mechanisms are associated with the budgetary pattern between the current period's budget variance and the subsequent period's budget.

I first consider the association between the current period's budget variance, the difference between the actual and the budgeted revenues, and the subsequent period's budget. I define asymmetric budget ratcheting as a phenomenon where positive variances

in performance from the current period's budget lead to greater absolute changes in the subsequent period's budget than the changes associated with negative budget variances of the same magnitude (Leone & Rock, 2002). Prior studies both theoretically and empirically find that budget ratcheting incentivizes agents to build slack into the next period's budget in order to make the next period's target more achievable (Weitzman, 1980; Leone & Rock, 2002; Bouwens & Kross, 2011).

This opportunistic behavior by top managers becomes more visible when these behaviors can generate personal benefits (Fama & Jensen, 1983; DeAngelo, 1988; Agrawal & Knoeber, 1996; Jensen, 2003; Bouwens & Kross, 2011). Since elected officers are not expected to be financially compensated based on their performance, the only time one can observe an increase in elected officers' incentive level is during local elections.[1] Therefore, to examine opportunistic budgetary patterns in governmental accounting, I borrow the term "political budget cycle" from the political science literature. It proposes that incumbents manipulate budgetary policy in order to enhance their chances of re-election (Nordhaus, 1989; Shi & Svensson, 2006; Alt & Lassen, 2006; Brender & Drazen, 2008). However, the documented evidence shows only mixed results, and there has been no empirical evidence supporting the general notion of a political budget cycle at the municipal level in the US (e.g., Brender, 2003; Drazen & Eslava, 2007; Shi & Svensson, 2006). One may say that given the comparatively limited revenue-generating ability of municipalities, the political budget cycle hypothesis should have less support at the city level (Blais & Nadeau, 1992). On the contrary, others may argue that due to the relatively weak monitoring mechanisms in municipalities, the opportunistic political budget cycle hypothesis should be more strongly supported at the city level (Alt & Lassen, 2006).[2] I hypothesize and find that in periods when incumbents prepare for upcoming mayoral elections, the current period's budget variance is less likely to be fully reflected in the subsequent period's budget (i.e., DeAngelo, 1988).

According to agency theory, it is generally agreed that incentive alignment is a more powerful mechanism than monitoring to ensure that agents act in the interests of owners (Beatty & Zajac, 1994; Tosi et al., 1997). Yet, in a governmental setting in the US, elected city officers' compensations are mostly fixed and do not vary with respect to performance. In the absence of financial incentive alignment between voters and elected city officers, the only systematic mechanism the principal (the voters) can rely on to encourage a higher level of effort and disclosure from the agent (the elected city officer) is enhancing monitoring. I therefore believe that the context of governmental budgetary data provides a cleaner opportunity for me to empirically examine the role of monitoring in the budget ratcheting framework.

In particular, I consider three major types of systematic monitoring mechanisms widely adopted in the top 50 largest US cities. First, I consider city governance structural monitoring mechanisms. I hypothesize that the council–manager form of government provides better monitoring compared to the strong-mayor form of government (Zimmerman, 1977). Second, I investigate rule-based monitoring mechanisms (budgetary institutions). I hypothesize that cities with more restrictive budgetary institutions tend to show less opportunistic budgetary patterns. Third, I investigate external monitoring mechanisms based on political competition in mayoral elections. Based on Mayper et al. (1991), I hypothesize that severe political competition in the local political arena provides better monitoring compared to less competitive cases.[3] I extend this research on the "ratcheting effect" by connecting it to political arrangements, such as mayoral elections and monitoring mechanisms.

My findings confirm that city budgets show a ratcheting pattern. On average, a 1 percent favorable budget variance (actual revenues exceed budgeted revenues by 1 percent) results in a 0.59 percent budget increase in the subsequent year, yet a 1 percent unfavorable budget variance in the current period results in only a 0.21 percent budget decrease in the

subsequent year. I also find that during the pre-election period, a current period's favorable budget variance is not reflected in the following period's budget, while an unfavorable budget variance is fully reflected in the following period's budget. From this finding, I conclude that the political budget cycle is visible at the city government level in the US. My primary analysis regarding monitoring mechanisms and their association with the budgetary pattern finds the following: under certain environments (when cities have the council–manager form of governance, stricter budget-limiting regulations, or barely elected mayors) the current period's favorable budget variance is more fully reflected onto the subsequent period's budget, and under certain circumstances (when cities have the council–manager form of governance, weaker budget-limiting regulations, or a mayor who won the mayoral election by a large margin), the unfavorable budget variance in the current period is more fully reflected onto the next period's budget.

My study makes important contributions to the extant literature on both budget ratcheting and agency theory. First, to the best of my knowledge, it is the first empirical study to directly examine the association between the current period's budget variance and the subsequent period's budget in the public sector revenue using US city data.[4] Second, my study shows direct empirical evidence of the political budget cycle hypothesis suggesting the existence of opportunistic budgetary policies during pre-election periods. Third, my results explain the role of different types of monitoring mechanisms in the budgetary process and provide explanations regarding the extent that each monitoring mechanism mitigates the next period budget's sensitivity to the current period's budget variances.

2. Motivation and Hypothesis Development

Jensen (2003) points out the counterproductive effects associated with using budgets (or targets) in an organization's performance measurement. He primarily focuses on two factors: agents lie in the formulation of budgets, and agents manipulate the realization of targets and thereby eventually destroy the value of the organization. Similar notions of the negative effect of using budgets in performance evaluations are much older (see Yunker, 1973; Weitzman, 1976). Nevertheless, it is also true that in a governmental setting, budget information is widely used to evaluate the elected officers' performance (Ingram & Copeland, 1981; Brender, 2003; Brender & Drazen, 2008).

In the agency theory literature, an emphasis is given to the incentive contracting as a first-best solution to the agency problem and little emphasis is placed to the optimal level of monitoring (Fama & Jensen, 1983; Beatty & Zajac, 1994). The role of monitoring is to fulfill the incentive gap between principal and agent (Beatty & Zajac, 1994). It is the reason why I believe that strong monitoring is particularly important in the governmental setting. Since the elected city officer's financial incentives are only weakly (if at all) tied to city financial performance, the benefits of monitoring will outweigh the costs associated with monitoring.

In this study, I address the factors affecting city budgets, the roles of city budgets, and how city budgets interact with political arrangements such as local elections and monitoring mechanisms. In particular, this study examines how the association between the current period's budget variance and the subsequent period's budget is influenced by the three most commonly considered governmental monitoring mechanisms—city governance structure, rule-based monitoring, and political competition.

2.1. Budgets and Agency Problems

Budget serves two primary roles: planning and controlling (e.g., Leone & Rock, 2002; Hansen et al., 2003). In its planning role, budget helps collect knowledge and communicate it to the managers with decision rights within an organization. In its controlling role,

budget assigns specific decision rights to the managers, and it functions as a benchmark for performance evaluation. The dual role of budget in organizations may cause potential agency problems (Leone & Rock, 2002). For example, when too much emphasis is given to the budget as a performance benchmark, managers with specialized knowledge will stop disclosing unbiased forecasts of future events, and instead will report conservative budget figures that enhance their chances of achieving the next period's performance target (Kenno et al., 2018).

An agency problem exists in governments between elected officials and the voters (Zimmerman, 1977). Since elected officials are assumed to be rational and self-interested agents, they will maximize their welfare by increasing their likelihood of re-election and advancement in the political hierarchy. However, the interests of the voters (the principal) may differ. The voters' welfare is tied to the actions of their agents through levying taxes and providing civic services. As the principal, electoral voters can demand a legally adopted budget from their elected officers (Zimmerman, 1977). Once a budget is adopted by the city council, it serves as a benchmark to measure the performance of the elected officers. The rational and self-interested agents prepare and supply the periodic budget upon the demand from the principal. How to set up an organizational budget and its consequences for the subsequent periods have been studied in various academic fields (Weitzman, 1980; Chow et al., 1991; Jensen, 2003).

When rewards are based on budgeted output and the budgeted output is a function of the observed output in the previous period, agents will produce less than they would if future budgets were set independently of the current period's output (Weitzman, 1980; Holmstrom, 1982; Chow et al., 1991; Healy, 1985; Jensen, 2003). According to Weitzman (1980) the basic ratchet principle framework (p. 304, extended Equation (3)) is

$$Q_t = b_t\, y_{t-1} + (1 - b_t)Q_{t-1} + a_t \quad (1)$$

where Q_t is the current period's performance target, y_{t-1} is the previous period's actual performance output, and b_t is the weight on the previous period's performance-based adjustment coefficient. Equation (1) shows that the current period's target is simply the weighted average of the previous period's actual performance and performance target, plus an independent increment a_t in each period (Weitzman, 1980; Leone & Rock, 2002; Lee & Plummer, 2007). Weitzman claimed that the ratchet principle can cause an agency problem, and called it "the ratchet effect" (i.e., Holmstrom, 1982; Chow et al., 1991). This ratchet effect phenomenon is the basis of my analysis in the rest of this study.

Based on Weitzman (1980)'s analytical framework, previous studies have empirically documented the following three points: the budget itself can serve as a performance target, the budget can be used to motivate a high level of effort from agents, and the dynamic incentive of the budgeting framework may induce unintended opportunistic agent behaviors (i.e., Leone & Rock, 2002; Jensen, 2003; Lee & Plummer, 2007; Balakrishnan et al., 2007; Bouwens & Kross, 2011). I begin my analyses by investigating the relationship between the current period's budget variance and the subsequent period's budget from the top 50 US cities' data. To examine ratcheting in city budgets based on evidence from earlier works, I hypothesize the following in an alternative form:

H0: *A favorable budget variance in the current period will induce a budget increase in the subsequent period, while a similar magnitude but unfavorable budget variance in the current period will generate a lesser budget decrease in the subsequent period.*

2.2. Budgets and Political Arrangement in Local Governments

In the governmental setting, elected agents' incentives are tied to their re-electability in the political arena (Zimmerman, 1977). When an agent is expecting an upcoming election, the elected officer may modify their behavior opportunistically (e.g., Blais & Nadeau, 1992; DeAngelo, 1988; Alt & Lassen, 2006).

In this section, I investigate the political budget cycle theory and whether or not similar opportunistic behaviors are found in the budgeting process. Political budgetary cycle theory is defined as opportunistic fiscal spending patterns prior to elections. It has been well documented in the political science literature that prior to elections, local governments tend to expand their spending (Blais & Nadeau, 1992; Alt & Lassen, 2006; Syam & Afdal, 2025).[5] However, what is yet not clear is whether or not I should expect to observe fiscal expansion in large US cities during election periods. On the one hand, considering the rational and experienced voters in US cities, one may suggest that I cannot expect these opportunistic budgetary cycles from rational politicians (Blais & Nadeau, 1992; Drazen & Eslava, 2007). On the other hand, given the low level of participation in local-level political arenas, one may insist that I can still expect to observe opportunistic fiscal cycles at the local level even in the developed countries (Alt & Lassen, 2006). As a result, I only hypothesize the existence of political budgetary cycles without any directional prediction:

H1: *Cities in an election period will show different budget growth patterns than cities in non-election periods.*

2.3. Monitoring Mechanisms and the Ratcheting

After documenting the supporting evidence of budget ratcheting and agency problems within one corporation, prior studies in accounting literature do not discuss any corrective actions that the principal can take (i.e., Leone & Rock, 2002; Bouwens & Kross, 2011).[6] However, what the principal can do to overcome agency problems under the principal–agent framework has been studied in various academic areas (Murphy, 2001; Eisenhardt, 1989; Moe, 2006).[7] Most suggestions are governance structural solutions, including incentive-based control, legislative (rule-based) control, and monitoring mechanisms (i.e., Beatty & Zajac, 1994; Agrawal & Knoeber, 1996; Davis et al., 1997; Tosi et al., 1997).

As discussed in the previous section, in the case of elected city officers, financial incentives to align their interests with those of the voters are not common—at least in developed countries. The most feasible and widely adopted controlling devices in the public domain are rule-based control and monitoring mechanisms. The budgetary and monitoring mechanism data from the sampled cities allow me to compare how different levels and types of monitoring mechanisms are associated with the relationship between the current period's budget variance and the subsequent period's budget. Unlike prior studies, my work empirically examines the effectiveness of the three most common monitoring mechanisms in the ratcheting framework. In the following sections, I explain the role of the different types of monitoring mechanisms for the budget ratcheting pattern.

2.3.1. Monitoring from City Governance Structures—Separation of Power

Among many other governance mechanisms, the primary corporate governance design that firms may use to increase the level of monitoring on top management is the board (Fama & Jensen, 1983; Beatty & Zajac, 1994). According to prior studies, the presence of an outside independent board chairman who is not also chief executive officer of the organization can represent an additional monitoring of managerial behavior.

In a municipality setting, prior studies have documented that the city governance form plays an important role in monitoring (Giroux & McLelland, 2003). Zimmerman

(1977) documents that compared to the council-centered form of city governance, mayor-administered cities tend to have larger per capita revenues, expenditures, debt, and number of employees (Table 3, p. 130). Prior studies provide evidence that city governmental structure creates variation in a city's fiscal policies (i.e., Giroux & McLelland, 2003). Based on findings from prior literature, I expect to observe more severe agency problems in cities operated under strong-mayoral governance. I therefore formulate the following hypothesis (stated in an alternative form):

H2A: *A strong internal monitoring mechanism in governance will result in less severe ratcheting. That is, cities with a council–manager form of government will show less asymmetric responses in budget growth compared to other cities.*

2.3.2. Monitoring from Budget-Limiting Regulations

The second type of governmental monitoring mechanism I examine is the budget-limiting rule-based monitoring mechanism imposed by the city code, charter, or upper-level jurisdiction. In particular, this section investigates how city-level budgetary regulations, such as balanced budget requirements and tax- or expenditure-limiting rules, mediate the next period's budget reaction to the current period's budget variance.

State laws prevent the state and its municipal governments from running deficits in their general operating budgets, but the nature and scope of these limits vary widely across states (Poterba, 1994, 1995a, 1995b; Lewis, 1994; Mullins & Wallin, 2004). Poterba (1994) uses state-level regulation data to empirically test how various budgetary institutions such as tax and expenditure limits affect the dynamics of state revenue and expenditure adjustments. Based on the results, he suggests that tighter budgetary constitutions are associated with quicker adjustment to unfavorable fiscal shocks. Based on his findings, I hypothesize and test the following:

H2B: *Cities with more rigid budget-limiting legislative (rule-based) monitoring devices will have less severe ratcheting in the following year's budget.*[8]

2.3.3. Monitoring from Political Competition

Beyond organizations' governance structure and regulations, previous studies have also found that competition for a higher-level position can provide a self-monitoring function (i.e., DeAngelo, 1988; Baber, 1990; Mayper et al., 1991; Gibbons & Murphy, 1992). In corporate settings, DeAngelo (1988) shows that under the pressure of proxy contest, incumbent managers exercise their accounting discretion to paint a favorable image of their own performance to the voting stockholders in order to increase their likelihood of re-election.

Unlike their private sector counterparts, in a governmental setting, elected officers face competitive elections at regular intervals, rather than the pressure of proxy contests (Ingram & Copeland, 1981; Baber, 1990; Mayper et al., 1991). Baber (1990) tests incumbents' uses of accounting information to communicate their actions in anticipation of periodic elections. Baber (1990) implicitly claims that the well-documented significant relationship between the use of standard accounting practices and political competition is not due to the relationships between incumbents and their electoral voters, but instead due to the relationships between incumbents and their prospective competitors. Furthermore, Mayper et al. (1991) hypothesize and document that the competition and timing of an election influence budget variances and patterns of budget changes. This evidence from earlier studies of the self-monitoring hypothesis leads me to the following hypothesis:

H2C: *Cities with severe political competition, proxied by the winning margin in the mayoral election, will show less asymmetric responses in budget growth compared to less competitive cities.*

3. City Budgetary Process

In this section I describe city governance structures and budgetary processes in general.

3.1. City Governance Structure

I consider the two different types of city governance structure: the strong-mayoral (i.e., mayor–council) and council–manager/commission-manager forms of governance. The former treats a mayor as the chief operations officer and the latter defines the city managers as chief commanders (Zimmerman, 1977; Giroux & McLelland, 2003). All 50 cities considered in this study have one of these two governance structures. Both forms of government have an elected council as a legislative body whose primary functions are budget approval and rule-making, such as city zoning ordinances, criminal codes, building codes and permissions, etc. Under the council–manager form, city managers are hired and monitored by the council and are responsible for executing city policies. Under the strong-mayoral form, the elected mayor in most cases not only executes city policies but also holds veto power over the council's decisions. In the context of this study, essentially non-elected professional city managers are directly monitored by the council under the council–manager form, while elected mayors under the strong-mayor form of government are monitored by the council in only a limited manner. Under the council–manager form of government, an agency relationship is created between the hired city managers and the council; under the strong-mayoral form, both the council and a mayor are directly elected, and there is no direct agency relationship between them (i.e., Zimmerman, 1977).

3.2. Budget-Limiting Regulations and the Political Competition

Cities face various types of budget-limiting regulations imposed by either upper jurisdictions or the city's own charter/codes (Lewis, 1994; Mullins & Wallin, 2004). The first category of budget-limiting regulations is the balanced budget requirement (Lewis, 1994; Poterba, 1994). The second category of budget-limiting regulations is the revenue- and expenditure-related limitations adopted by cities' own charters/codes, state laws, or both (Mullins & Wallin, 2004). Both types of regulations essentially restrict city officers' ability to respond to a city's current financial status (Poterba, 1994; Poterba & Rueben, 2001). In particular, I consider the eleven different types of budget-limiting regulations imposed against city governments—four from the balanced budget requirements and seven from the revenue and expenditure limitations.

Most cities considered in this study are large and densely populated metropolitan areas. Politicians serving as mayors in these megacities are career politicians and face challenges from other professional politicians in periodic mayoral elections. Their political record as successful mayors may promote them to a higher political position (i.e., Zimmerman, 1977; Ingram & Copeland, 1981).

3.3. City Budget and Budgetary Process

As Mayper et al. (1991) point out, the budgetary processes of US cities are very diverse but many key features are fundamentally similar. I report a brief summary of these fundamental features in this section.

3.3.1. Budget in Different Organizations

Budgeting is an important part of a manager's planning and control responsibilities for an organization. In governments, legislators authorize officers to raise and expend resources in order to provide services to citizens by approving a periodic budget. In

general, local governments plan and allocate financial resources to improve the quality of the public services delivered to citizens. City budgets are estimated on the basis of cost information of governmental activities (i.e., Zimmerman, 1977). City governments set their own budget and assess their financial performance based on their budgets. A unique feature of governmental budgets, compared to any other not-for-profit organization's budget, is that once it is adopted, it becomes a *legal* document reflecting plans for spending appropriations from tax and other revenues, or other government sources. In particular, a city budget provides a specific vision of the city officers, playing a role as a communication and management tool within the city government (Mayper et al., 1991).

3.3.2. Role of Budget for City Government

City budget serves two objectives: a planning role and performance evaluation role. Bland (2007) describes the comprehensive set of budgeting objectives as "the budget document and its preparation and adoption express the basic political values of a government. Budgets reflect the compromises negotiated in the contentious process of budget adoption. They guide public administrations, defining the government's economic and political role in a community and sanctioning, as well as limiting, administrative action. Budgets not only represent plans for the future, they also mold that future by the policies they contain. . . The budget is a tool for holding administrators accountable for performance expectations" (Bland, 2007, p. 3).

In order to serve planning and performance-evaluating roles, a city budget must be enacted before its fiscal year begins and be integrated with the city's financial accounting system so that the actual performance results can be periodically compared to the budgeted targets. Integrating the city budget into the accounting system allows city officers to oversee individual departments' performance and react quickly to variances between actual results and budgeted targets in a timely manner. The legalistic perspective is that a city budget is the city's plan of financial operations embodying an estimate of proposed expenditures for a given period of time and the proposed means of financing them. In a more general sense, a city budget may be regarded as a device to assist management in operating a city more effectively. A city government builds a budget to demonstrate compliance with laws and periodically review city officers' performance.

First, from the law obedience perspective, the essential budgetary principle is published by the National Committee on Governmental Accounting (NCGA) in the 1968 Governmental Accounting, Auditing and Financial Reporting guide (GAAFR).[9] The Governmental Accounting Standard Board (GASB)'s budgeting, budgetary control, and budgetary reporting principles provide the following basic rules for cities: an annual budget should be adopted by the city government, the city's accounting system should provide the basis for appropriate budgetary control, and budgetary comparison schedules should be presented as required supplementary information for the general fund and for each major special revenue fund that has a legally adopted annual budget.[10] The budgetary comparison schedule present both the original and the final appropriated budgets for the reporting period as well as the actual inflows, outflows, and balances stated on the government's budgetary basis.

Second, from a more general perspective, city budgeting is an important tool for evaluating city officers' periodic performance—whether or not city officers manage financial resources efficiently and effectively. Due to public demand for improved government performance, innovative performance measurement systems are being developed even at the city government level.[11] Yet, unlike any other performance metric, the periodic budget provides ex ante performance target, and it is therefore still the most widely used performance benchmark in the government. Given its importance, the Government Finance

Officers Association (GFOA) annually reviews city budgets and presents distinguished awards to those governments that not only meet the goals described in the traditional government principles but go beyond these minimums in their presentation of the budget as a policy document, financial plan, operations guide, and communications device.

3.3.3. City Budgetary Approval Process

Under most city charters, an elected city mayor (or hired city managers under the council-centered form of city government) is required to submit a budget proposal to the city council two or three months before the forthcoming fiscal year begins. The proposed budget is based on the mayor's budget priorities, the responses of the city administrative officer and city departments to the mayor's budget policy letter distributed early in the fiscal year, and estimates of receipts from the city's various revenue sources.[12] The council's budget and finance committee reviews the mayor's proposed budget and reports its recommendations to the full council. The council must legally adopt the mayor's proposed budget as modified by the council before the fiscal year begins. However, under the strong-mayor form of government, the elected mayor does have a few working days after the budget's adoption to approve or veto any items modified by the council. The council then has a few more days to override this modified budget by a two-thirds vote.

3.3.4. City Budget Revenue Sources and General Funds

There are two primary revenue-generating channels for city governments: property taxes and sales or income taxes.[13] This classification is particularly useful if a study intends to focus on cities' revenue-generating capability. According to the survey by the National League of Cities in 2006 and 2008, sales or income taxes are considerably sensitive to current economic conditions and city governments have authority inherited from upper jurisdictions to levy and modify local sales and/or income taxes (refer to note 13). In contrast to common belief, city governments have the right to modify property taxes at the city level; in the case of budget shortfall, the city government may increase tax revenues by modifying assessment practices at the city level. I claim that these two primary revenue sources provide cities with enough flexibility and capability to react to the current period's budget variance between the targeted revenues and actual revenues.

The general fund is the principal operating fund for a city. It is used to account for all financial resources, except those required to be accounted for in another fund, including but not limited to special revenue funds, debt service funds, capital projects funds, and permanent funds.

General funds finance most departmental operating activities, such as police and fire departments, public parks and recreation, public works and services, and social services, as well as general government supporting services, including the city manager's office, city clerk's office, finance and business offices, and technical support offices. Following earlier works (i.e., Ingram & Copeland, 1981; Mayper et al., 1991), I limit my study only to the general fund budgets and their variances.

4. Sampled Cities and Descriptive Statistics

I first identify the top 50 most populous cities in the United States from the US Census Bureau's 2000 Census. From the list of the top 50 cities, I collect the comprehensive annual financial report (CAFR) for each city; this is a set of governmental financial statements from either the city's official website or the state's depository. A CAFR has three major sections: the introductory, financial, and statistical sections. The CAFRs for all 50 cities considered in this study provide much more information beyond the minimums established for Annual Financial Reports by the National Council on Governmental Accounting Concepts State-

ment 1. I hand-collect the budgetary, financial, and governmental data from the CAFRs; a few other variables and their sources are also identified in this section. In particular, all budget-related and financial data are collected from the financial section, and other governmental and economic variables are from the introduction and statistical sections of the CAFRs.[14]

Table 1 reports summary descriptive statistics of the original budget revenue, actual budget revenue, population, and gross metropolitan product (GMP). General fund budget-related information is hand-collected from the comprehensive annual financial reports. Population data is collected from the US Census Bureau, and GMP information is gathered from the Bureau of Economic Analysis (BEA) of the US Department of Commerce.[15]

Table 1. Descriptives of the Top 50 Populous Cities in the United States.

City	State	Number of Observations (N = 473)	Population (in Thousands) [1]	Gross Metropolitan Product (in Billion US$) [2]	Actual Revenues (in Millions US$) [3]	Original Budgeted Revenues (in Millions US$) [4]
Albuquerque	New Mexico	7	524	35	448	451
Anaheim	California	10	335	699	245	243
Arlington	Texas	9	366	338	188	186
Atlanta	Georgia	11	477	256	475	464
Austin	Texas	10	736	77	447	441
Baltimore	Maryland	10	636	133	1231	1202
Boston	Massachusetts	10	614	290	2258	2237
Charlotte	North Carolina	11	674	105	462	454
Chicago	Illinois	9	2814	513	3004	3044
Cincinnati	Ohio	10	325	95	339	336
Cleveland	Ohio	10	437	101	487	485
Colorado Springs	Colorado	10	386	24	192	191
Columbus	Ohio	10	753	88	616	600
Dallas	Texas	9	1246	355	955	947
Denver	Colorado	10	583	145	791	795
Detroit	Michigan	10	878	196	1308	1445
El Paso	Texas	10	607	25	291	270
Fort Worth	Texas	6	710	376	519	514
Fresno	California	10	469	28	305	319
Honolulu	Hawaii	11	365	46	946	939
Houston	Texas	10	2128	354	1657	1648
Indianapolis	Indiana	10	799	96	446	467
Las Vegas	Nevada	8	568	93	474	482
Long Beach	California	8	467	684	333	336
Los Angeles	California	8	3814	706	3956	3927
Louisville/Jefferson	Kentucky	9	567	53	546	607
Memphis	Tennessee	8	666	63	534	525
Mesa	Arizona	6	455	191	308	330
Miami	Florida	10	396	248	457	427
Milwaukee	Wisconsin	10	601	80	539	534
Minneapolis	Minnesota	9	381	192	326	323
New Orleans	Louisiana	9	362	71	424	414
New York	New York	11	8245	1146	58,204	54,798

Table 1. *Cont.*

City	State	Number of Observations (N = 473)	Population (in Thousands) [1]	Gross Metropolitan Product (in Billion US$) [2]	Actual Revenues (in Millions US$) [3]	Original Budgeted Revenues (in Millions US$) [4]
Oklahoma	Oklahoma	10	547	53	296	290
Omaha	Nebraska	7	429	47	279	278
Philadelphia	Pennsylvania	9	1484	315	3597	3602
Phoenix	Arizona	9	1499	185	279	283
Pittsburgh	Pennsylvania	10	315	107	429	429
Portland	Oregon	10	560	117	413	402
Sacramento	California	10	455	90	335	329
San Antonio	Texas	9	1304	76	791	752
San Diego	California	10	1285	160	950	947
San Francisco	California	11	796	304	2924	2670
San Jose	California	9	941	148	669	645
Seattle	Washington	9	592	218	932	971
St. Louis	Missouri	11	344	121	402	405
Tucson	Arizona	11	525	30	422	440
Tulsa	Oklahoma	10	387	42	236	232
Virginia Beach	Virginia	9	438	76	968	961
Wichita	Kansas	10	364	25	178	181

Variable Definitions: The sample period is from 2003 to 2013. The total number of observations is 473. Population [1] is the average of city population during the sampled period. Gross Metropolitan Product (GMP) [2] is the average gross domestic products of the metropolitan area during the sampled period. Actual Revenues [3] is the average of city revenues budget for general funds during the sampled period. Original Budgeted Revenues [4] is the average of original budgeted revenues for general funds during the sampled period.

However, to test each hypothesis, I use data from several sources. Hypothesis 2A considers the city governance structure. This information is obtained from either CAFRs or the city's charter (refer to Panel A of Table 2). Hypothesis 2B deals with budget-limiting regulations; this data is collected from Mullins and Wallin (2004), and Lewis (1994).[16] Testing Hypothesis 2C and Hypothesis 1 utilizes city mayoral election data; this data is primarily obtained from each city's electoral board website and backed by the state's electoral board documents, local media, and the Factiva database (refer to Panel A of Table 2). Panel A of Table 3 provides descriptive summary statistics for the primary variables, and Panel B shows the correlation among variables in the analyses. In addition, Table 4 report the univariate comparisons between the two groups: one with Strong-Mayoral and the other with Council-Manager forms of city government (Panel A & B), one with a higher level and the other with a lower level of limitations (Panel C & D), and one with a higher level and the other with a lower level of winning margin in mayoral election (Panel E & F).

Table 2. Description of City Governance, Mayoral Election Results and Budget Limiting Regulations in the Top 50 US Cities.

Panel A. City Governance and Mayoral Election Results					
City	**State**	**City Governance [1]**	**City Governance Structure Index [2]**	**Winning Margin in Mayoral Elections (%) [3]**	**Winning Margin Index [4]**
Albuquerque	New Mexico	Mayor-Council	1	44	0
Anaheim	California	Council-Manager	0	57	0
Arlington	Texas	Council-Manager	0	62	1
Atlanta	Georgia	Mayor-Council	1	68	1
Austin	Texas	Council-Manager	0	61	1
Baltimore	Maryland	Mayor-Council	1	91	1
Boston	Massachusetts	Mayor-Council	1	65	1
Charlotte	North Carolina	Council-Manager	0	59	1
Chicago	Illinois	Mayor-Council	1	72	1
Cincinnati	Ohio	Strong-Mayor	1	54	0
Cleveland	Ohio	Mayor-Council	1	62	1
Colorado Springs	Colorado	*Council-Manager*	0	46	0
Columbus	Ohio	Mayor-Council	1	79	1
Dallas	Texas	Council-Manager	0	57	0
Denver	Colorado	Strong-Mayor	1	74	1
Detroit	Michigan	Mayor-Council	1	54	0
El Paso	Texas	Council-Manager	0	57	0
Fort Worth	Texas	Council-Manager	0	77	1
Fresno	California	Strong-Mayor	1	63	1
Honolulu	Hawaii	Mayor-Council	1	52	0
Houston	Texas	Mayor-Council	1	69	1
Indianapolis	Indiana	Mayor-Council	1	56	0
Las Vegas	Nevada	Council-Manager	0	79	1
Long Beach	California	Mayor-Council	1	60	1
Los Angeles	California	Mayor-Council	1	57	0
Louisville/Jefferson	Kentucky	Mayor-Council	1	68	1
Memphis	Tennessee	Mayor-Council	1	60	1
Mesa	Arizona	Mayor-Council	1	58	0
Miami	Florida	Commission-Manager	0	62	1
Milwaukee	Wisconsin	Mayor-Council	1	64	1
Minneapolis	Minnesota	Mayor-Council	1	52	0
New Orleans	Louisiana	Mayor-Council	1	57	0
New York	New York	Mayor-Council	1	53	0
Oklahoma	Oklahoma	Council-Manager	0	71	1

Table 2. *Cont.*

Panel A. City Governance and Mayoral Election Results

City	State	City Governance [1]	City Governance Structure Index [2]	Winning Margin in Mayoral Elections (%) [3]	Winning Margin Index [4]
Omaha	Nebraska	Mayor-Council	1	57	0
Philadelphia	Pennsylvania	Strong-Mayor	1	70	1
Phoenix	Arizona	Council-Manager	0	72	1
Pittsburgh	Pennsylvania	Strong-Mayor	1	65	1
Portland	Oregon	Commission-Manager	0	66	1
Sacramento	California	Council-Manager	0	56	0
San Antonio	Texas	Council-Manager	0	65	1
San Diego	California	*Strong-Mayor*	1	52	0
San Francisco	California	Mayor-Council	1	62	1
San Jose	California	Council-Manager	0	62	1
Seattle	Washington	Mayor-Council	1	57	0
St. Louis	Missouri	Mayor-Council	1	75	1
Tucson	Arizona	Council-Manager	0	59	1
Tulsa	Oklahoma	Mayor-Council	1	57	0
Virginia Beach	Virginia	Council-Manager	0	45	0
Wichita	Kansas	Mayor-Council	1	61	1

Variable Definitions: The sample period is from 2003 to 2013. City Governance [1] is identified by each city government on its comprehensive annual financial report. City Governance Structure Index [2] is an indicator variable that equals one if a city has either Mayor-Council or Strong-Mayor form of government, otherwise zero. Winning Margin in Mayoral Election [3] is the mayoral election results showing how much votes the winner had earned in elections. Winning Margin Index [4] is an indicator variable that equals one if the mayor was elected by less than 59% of election margin, otherwise zero.

Panel B. Budget Limiting Regulation and Full Disclosure Requirement in the Top 50 US Cities [1]

City	State	Balanced Budget Required by State Laws		Balanced Budget Required by City Laws		Overall Property Tax Rate Limit	Specific Property Tax Rate Limit	Property Tax Revenue Limit	Assessment Increase Limit	General Revenue Limit	General Expenditure Limit	Full Disclosure	Regulation Scores [2]	REG Index [3]
		State-Wide	City-Specific	Balanced Budget Required by City Charter/Code	Balanced Fiscal Year Required									
Albuquerque	New Mexico		yes		yes	yes	yes	yes	yes				6	1
Anaheim	California			yes		yes	yes		yes		yes		5	0
Arlington	Texas			yes			yes	yes				yes	4	0
Atlanta	Georgia	yes	yes									yes	3	0
Austin	Texas		yes				yes	yes				yes	4	0
Baltimore	Maryland			yes					yes			yes	2	0
Boston	Massachusetts	yes	yes				yes	yes					4	0
Charlotte	North Carolina		yes				yes						2	0
Chicago	Illinois		yes	yes	yes		yes	yes				yes	6	1

Table 2. *Cont.*

Panel B. Budget Limiting Regulation and Full Disclosure Requirement in the Top 50 US Cities [1]														
City	State	Balanced Budget Required by State Laws		Balanced Budget Required by City Laws		Overall Property Tax Rate Limit	Specific Property Tax Rate Limit	Property Tax Revenue Limit	Assessment Increase Limit	General Revenue Limit	General Expenditure Limit	Full Disclosure	Regulation Scores [2]	REG Index [3]
		State-Wide	City-Specific	Balanced Budget Required by City Charter/Code	Balanced Fiscal Year Required									
Cincinnati	Ohio	yes	yes		yes	yes		yes					5	0
Cleveland	Ohio	yes	yes			yes		yes					4	0
Colorado Springs	Colorado		yes	yes			yes	yes		yes	yes	yes	7	1
Columbus	Ohio	yes	yes [4]		yes	yes		yes					6	1
Dallas	Texas		yes [4]		yes		yes	yes				yes	6	1
Denver	Colorado			yes	yes		yes	yes		yes	yes	yes	7	1
Detroit	Michigan		yes	yes			yes	yes	yes			yes	6	1
El Paso	Texas		yes	yes			yes	yes				yes	5	0
Fort Worth	Texas			yes			yes	yes				yes	4	0
Fresno	California			yes		yes	yes		yes		yes		5	0
Honolulu	Hawaii			yes									1	0
Houston	Texas			yes			yes	yes				yes	4	0
Indianapolis	Indiana		yes		yes			yes					3	0
Las Vegas	Nevada		yes			yes	yes	yes		yes		yes	6	1
Long Beach	California			yes	yes	yes	yes		yes		yes		6	1
Los Angeles	California			yes	yes	yes	yes		yes		yes		6	1
Louisville/ Jefferson	Kentucky						yes	yes				yes	3	0
Memphis	Tennessee			yes								yes	2	0
Mesa	Arizona		yes			yes		yes	yes		yes		5	0
Miami	Florida		yes	yes			yes		yes			yes	5	0
Milwaukee	Wisconsin	yes		yes									2	0
Minneapolis	Minnesota		yes	yes			yes			yes		yes	5	0
New Orleans	Louisiana			yes			yes	yes					3	0
New York	New York		yes	yes	yes		yes		yes				5	0
Oklahoma	Oklahoma			yes	yes	yes			yes				4	0
Omaha	Nebraska			yes	yes		yes	yes			yes	yes	6	1
Philadelphia	Pennsylvania	yes		yes			yes						3	0
Phoenix	Arizona		yes		yes	yes		yes	yes		yes		6	1
Pittsburgh	Pennsylvania	yes		yes			yes						3	0
Portland	Oregon	yes	yes	yes	yes	yes	yes	yes	yes				8	1
Sacramento	California			yes		yes	yes		yes		yes		5	0

Table 2. *Cont.*

Panel B. Budget Limiting Regulation and Full Disclosure Requirement in the Top 50 US Cities [1]														
City	**State**	**Balanced Budget Required by State Laws**		**Balanced Budget Required by City Laws**		**Overall Property Tax Rate Limit**	**Specific Property Tax Rate Limit**	**Property Tax Revenue Limit**	**Assessment Increase Limit**	**General Revenue Limit**	**General Expenditure Limit**	**Full Disclosure**	**Regulation Scores [2]**	**REG Index [3]**
		State-Wide	**City-Specific**	**Balanced Budget Required by City Charter/Code**	**Balanced Fiscal Year Required**									
San Antonio	Texas		yes	yes	yes	yes	yes	yes				yes	7	1
San Diego	California			yes		yes	yes		yes		yes		5	0
San Francisco	California			yes	yes	yes	yes		yes		yes		6	1
San Jose	California			yes	yes	yes	yes		yes		yes		6	1
Seattle	Washington		yes		yes	yes	yes	yes	yes			yes	7	1
St. Louis	Missouri			yes			yes	yes					3	0
Tucson	Arizona		yes	yes	yes	yes		yes	yes		yes		7	1
Tulsa	Oklahoma	yes	yes		yes	yes			yes				5	0
Virginia Beach	Virginia	yes	yes [4]	yes								yes	5	0
Wichita	Kansas	yes					yes	yes					3	0

Note. Budget Limiting Regulations in the top 50 US cities [1] is from Lewis (1994) and Municode Library (www.municode.com).
Variable Definitions: Regulation Scores [2] is an indicator showing number of budget limiting regulations imposed in a city. REG Index [3] is an indictor variable that equals one if a city has Regulation Scores [4] greater than 5, and zero otherwise. There are three cities (Columbus, Dallas, and Virginia Beach) in which the state requires that specific city to have a balance budget by the state's constitution. Such constitutional requirement is harder to modify once it has stated. Therefore, we assign two points in those cases.

Table 3. Descriptive Summary of the Variables.

Panel A. Overall Sample (N = 473)							
Variable	**Mean**	**Std Dev**	**Minimum**	**Q1**	**Median**	**Q3**	**Maximum**
GROWTH_BUD_REV	0.035	0.126	−0.605	−0.002	0.033	0.064	2.127
BUD_VAR	0.007	0.063	−0.281	−0.023	0.009	0.033	0.429
WINNING MARGIN (%)	62	13	31	53	58	71	100
WIN	0.495	0.501	0	0	0	1	1
GOV	0.638	0.481	0	0	1	1	1
BUD_LIMIT_REG_INDEX	4.681	1.628	1	3	5	6	8
REG	0.347	0.476	0	0	0	1	1
D_NEG_BV	0.429	0.495	0	0	0	1	1

Table 3. *Cont.*

Panel A. Overall Sample (N = 473)

Variable	Mean	Std Dev	Minimum	Q1	Median	Q3	Maximum
GROWTH_POP	0.040	0.038	−0.115	0.025	0.042	0.063	0.172
GROWTH_GMP	0.005	0.040	−0.537	−0.001	0.007	0.015	0.367

Variable Definitions: The sample period is from 2003 to 2013. The total number of observations is 473. *GROWTH_BUD_REV* is the difference in original budgeted revenues between year t and year $t-1$ scaled by original budgeted revenues at year $t-1$. *BUD_VAR* is the difference between actual budget revenues and original budgeted revenues at year $t-1$ scaled by original budgeted revenues at year $t-1$. *GOV* is an indicator variable taking one if a city has either Mayor-Council or Strong-Mayor form of government, otherwise zero. *WIN* is an indicator variable taking one if the mayor was elected by less than 59% of election margin, otherwise zero. *BUD_LIMIT_REG* is number of budget limiting regulations imposed in a city. *REG* is an indicator variable taking one if city has *BUD_LIMIT_REG_INDEX* greater than 5, and zero otherwise. *D_NEG_BV* is an indicator variable taking one if a city has negative budget variance at year $t-1$. *GROWTH_POP* is city population growth rate between year t and $t-1$. *GROWTH_GMP* is a city's gross production growth rate between year t and $t-1$.

Panel B. Pearson (top) a Spearman (bottom) Correlations (N = 473)

Variable		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GROWTH_BUD_REV	(1)	1	**−0.212**	0.007	−0.034	0.035	**0.358**	**0.096**	**0.132**
			<0.0001	0.874	0.458	0.446	<0.0001	0.037	0.004
D_NEG_BV	(2)	**−0.432**	1	0.057	0.059	0.056	**−0.673**	−0.009	−0.060
		<0.0001		0.218	0.197	0.223	<0.0001	0.854	0.195
GOV	(3)	−0.051	0.057	1	**−0.136**	0.005	**−0.122**	**−0.179**	**−0.198**
		0.272	0.218		0.003	0.909	0.008	<0.0001	<0.0001
REG	(4)	−0.014	0.059	**−0.136**	1	**0.088**	−0.067	0.033	−0.043
		0.754	0.197	0.003		0.057	0.146	0.473	0.356
WIN	(5)	−0.005	0.056	0.005	**0.088**	1	−0.018	0.051	−0.025
		0.911	0.223	0.909	0.057		0.693	0.271	0.589
BUD_VAR	(6)	**0.528**	**−0.857**	**−0.086**	−0.066	−0.009	1	0.062	**0.147**
		<0.0001	<0.0001	0.061	0.154	0.849		0.176	0.001
GROWTH_POP	(7)	**0.108**	−0.059	**−0.449**	0.073	0.043	**0.087**	1	0.037
		0.019	0.204	<0.0001	0.111	0.355	0.059		0.417
GROWTH_GMP	(8)	**0.165**	**−0.142**	**−0.213**	−0.027	0.044	**0.199**	**0.104**	1
		0.000	0.002	<0.0001	0.560	0.344	<0.0001	0.024	

Note: Bold indicates significance levels of 0.10.
Variable Definitions: The sample period is from 2003 to 2013. The total number of observations is 473. *GROWTH_BUD_REV* is the difference in original budgeted revenues between year t and year $t-1$ scaled by original budgeted revenues at year $t-1$. *D_NEG_BV* is an indicator variable taking one if a city has negative budget variance in revenues at year $t-1$. *GOV* is an indicator variable taking one if a city has either Mayor-Council or Strong-Mayor form of government, otherwise zero. *REG* is an indicator variable taking one if a city has more than five budget limiting regulations, otherwise zero. *WIN* is an indicator variable taking one if the mayor was elected by less than 59% of election margin, otherwise zero. *BUD_VAR* is the difference between actual budget revenues and original budgeted revenues at year $t-1$ scaled by original budgeted revenues at year $t-1$. *GROWTH_POP* is city population growth rate between year t and $t-1$. *GROWTH_GMP* is a city's gross production growth rate between year t and $t-1$.

Panel C. Election Effect Sub-sample (N = 328)

Variable	N	Mean	Std Dev	Minimum	Q1	Q2	Q3	Maximum
$GROWTH_BUD_REV_{i,t}$	328	0.036	0.140	−0.605	−0.005	0.032	0.064	2.127
$BUD_VAR_{i,t}$	328	0.003	0.062	−0.281	−0.026	0.007	0.030	0.253
$Election_{i,t}$	328	0.25	0.434	0	0	0	0.5	1
$D_NEG_Bv_{i,t}$	328	0.450	0.498	0	0	0	1	1

Table 3. *Cont.*

Panel C. Election Effect Sub-sample (N = 328)								
Variable	**N**	**Mean**	**Std Dev**	**Minimum**	**Q1**	**Q2**	**Q3**	**Maximum**
$GOV_{i,t}$	328	0.692	0.462	0	0	1	1	1
$REG_{i,t}$	328	0.420	0.494	0	0	0	1	1
$WIN_{i,t}$	328	0.477	0.500	0	0	0	1	1
$GROWTH_POP_{i,t}$	328	0.004	0.044	−0.537	−0.001	0.006	0.014	0.367
$GROWTH_GMP_{i,t}$	328	0.038	0.037	−0.115	0.023	0.041	0.058	0.172

Variable Definitions: The sample period is from 2003 to 2013. The total number of observations is 328. Following cities are dropped due to their two-year mayoral election cycles and irregular elections: Arlington, TX, Charlotte, NC, El Paso, TX, Fort Worth, TX, Houston, TX, Memphis, TN, Oklahoma, OK, Pittsburgh, PA, San Diego, CA, and San Antonio, TX. *GROWTH_BUD_REV* is the difference in original budgeted revenues between year t and year $t-1$ scaled by original budgeted revenues at year $t-1$. Election is an indicator variable taking one if a city having a mayoral election within a fiscal year, otherwise zero. *D_NEG_BV* is an indicator variable taking one if a city has negative budget variance in revenues at year $t-1$. *GOV* is an indicator variable taking one if a city has either Mayor-Council or Strong-Mayor form of government, otherwise zero. *REG* is an indicator variable taking one if a city has more than five budget limiting regulations, otherwise zero. *WIN* is an indicator variable taking one if the mayor was elected by less than 59% of election margin, otherwise zero. *BUD_VAR* is the difference between actual budget revenues and original budgeted revenues at year $t-1$ scaled by original budgeted revenues at year $t-1$. *GROWTH_POP* is city population growth rate between year t and $t-1$. *GROWTH_GMP* is a city's gross production growth rate between year t and $t-1$.

Panel D. Pearson (top) and Spearman (bottom) Correlation (N = 328) for Election Effect Testing							
Variable		**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
GROWTH_BUD_REV	(1)	1	**−0.190**	**0.346**	**−0.028**	**0.096**	**0.143**
			0.000	<0.0001	0.005	0.058	0.005
$D_NEG_BV_{i,t}$	(2)	**−0.417**	1	**−0.676**	−0.052	0.007	**−0.095**
		<0.0001		<0.0001	0.305	0.887	0.059
$BUD_VAR_{i,t}$	(3)	**0.514**	**−0.858**	1	0.005	0.054	**0.166**
		<0.0001	<0.0001		0.916	0.289	0.001
$election_{i,t}$	(4)	**0.327**	−0.152	0.230	1	0.079	0.030
		0.002	0.010	0.015		0.119	0.547
GROWTH_POP	(5)	**0.087**	−0.037	0.064	**0.110**	1	0.033
		0.084	0.465	0.203	0.029		0.513
GROWTH_GMP	(6)	**0.204**	**−0.187**	**0.235**	0.019	0.071	1
		<0.0001	0.000	<0.0001	0.704	0.160	

Note. Bold indicates significance levels of 0.10.
Variable Definitions: The sample period is from 2003 to 2013. The total number of observations is 328. Following cities are dropped due to their two-year mayoral election cycles and irregular elections. *GROWTH_BUD_REV* is the difference in original budgeted revenues between year t and year $t-1$ scaled by original budgeted revenues at year $t-1$. *D_NEG_BV* is an indicator variable taking one if a city has negative budget variance in revenues at year $t-1$. *Election* is an indicator variable taking one if a city having a mayoral election within a fiscal year, otherwise zero. *REG* is an indicator variable taking one if a city has more than five budget limiting regulations, otherwise zero. *WIN* is an indicator variable taking one if the mayor was elected by less than 59% of election margin, otherwise zero. *BUD_VAR* is the difference between actual budget revenues and original budgeted revenues at year $t-1$ scaled by original budgeted revenues at year $t-1$. *GROWTH_POP* is city population growth rate between year t and $t-1$. *GROWTH_GMP* is a city's gross production growth rate between year t and $t-1$.

Table 4. Univariate Analysis.

Panel A. Mean comparison between Strong-Mayoral and Council-Manager form cities						
	***NEG* = 0, when (*ABR* − *OBR*) > = 0**			***NEG* = 1, when (*ABR* − *OBR*) < 0**		
	Council-manager form (1)	**Strong-mayoral form (2)**	**t-statistics of difference = (1) − (2)**	**Council-manager form (3)**	**Strong-mayoral form (4)**	**t-statistics of difference = (3) − (4)**
$(OBR_{i,t+1} - OBR_{i,t})/OBR_{i,t}$	0.0582	0.0579	0.02	−0.0044	0.0084	−0.94
$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	0.0499	0.0404	1.54	−0.0325	−0.0457	**2.10**
$(POP_{i,t} - POP_{i,t-1})/POP_{i,t-1}$	0.0137	0.0001	**1.77**	0.0096	0.0010	**1.93**
$(GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t-1}$	0.0548	0.0411	**3.03**	0.0342	0.0316	**0.46**
No. of observations	104	166		67	136	
Note: Bold shows significance levels of 0.10.						
Panel B. Median comparison between strong-mayoral and council-manager form cities						
	***NEG* = 0, when (*ABR* − *OBR*) > = 0**			***NEG* = 1, when (*ABR* − *OBR*) < 0**		
	Council-manager form (1)	**Strong-mayoral form (2)**	**z-statistics of difference = (1) − (2)**	**Council-manager form (3)**	**Strong-mayoral form (4)**	**z-statistics of difference = (3) − (4)**
$(OBR_{i,t+1} - OBR_{i,t})/OBR_{i,t}$	0.0557	0.0444	**1.90**	0.0035	0.0026	−0.83
$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	0.0298	0.0269	0.78	−0.0255	−0.0337	**1.07**
$(POP_{i,t} - POP_{i,t-1})/POP_{i,t-1}$	0.0138	0.0026	**6.77**	0.0122	0.0035	**4.35**
$(GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t-1}$	0.0583	0.0426	**3.80**	0.0371	0.0352	**0.85**
No. of observations	104	166		67	136	
Note: Bold shows significance levels of 0.10.						
Panel C. Mean comparison between cities with less number of budget limiting regulations and greater number of budget limiting regulations						
	***NEG* = 0, when (*ABR* − *OBR*) > = 0**			***NEG* = 1, when (*ABR* − *OBR*) < 0**		
	Less number of regulations (1)	**Greater number of regulations (2)**	**t-statistics of difference = (1) − (2)**	**Less number of regulations (3)**	**Greater number of regulations (4)**	**t-statistics of difference = (3) − (4)**
$(OBR_{i,t+1} - OBR_{i,t})/OBR_{i,t}$	0.0608	0.0522	0.64	0.0050	0.0028	0.18
$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	0.0447	0.0427	0.34	−0.0392	−0.0448	0.89
$(POP_{i,t} - POP_{i,t-1})/POP_{i,t-1}$	0.0045	0.0087	−0.96	0.0051	0.0017	0.74
$(GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t-1}$	0.0457	0.0479	−0.49	0.0335	0.0307	0.48
No. of observations	183	87		126	77	
Note: Bold shows significance levels of 0.10.						
Panel D. Median comparison between cities with less number of budget limiting regulations and greater number of budget limiting regulations						
	***NEG* = 0, when (*ABR* − *OBR*) > = 0**			***NEG* = 1, when (*ABR* − *OBR*) < 0**		
	Less number of regulations (1)	**Greater number of regulations (2)**	**z-statistics of difference = (1) − (2)**	**Less number of regulations (3)**	**Greater number of regulations (4)**	**z-statistics of difference = (3) − (4)**
$(OBR_{i,t+1} - OBR_{i,t})/OBR_{i,t}$	0.0478	0.0457	−0.14	0.0021	0.0083	0.18
$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	0.0281	0.0291	0.21	−0.0256	−0.0347	−1.41
$(POP_{i,t} - POP_{i,t-1})/POP_{i,t-1}$	0.0051	0.0112	**2.37**	0.0062	0.0079	0.38
$(GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t-1}$	0.0480	0.0494	0.52	0.0356	0.0356	−0.13
No. of observations	183	87		126	77	
Note: Bold shows significance levels of 0.10.						
Panel E. Mean comparison between cities with higher winning margin and lower winning margin in mayoral election						
	***NEG* = 0, when (*ABR* − *OBR*) > = 0**			***NEG* = 1, when (*ABR* − *OBR*) < 0**		
	High winning margin (1)	**Low winning margin (2)**	**t-statistics of difference = (1) − (2)**	**High winning margin (3)**	**Low winning margin (4)**	**t-statistics of difference = (3) − (4)**
$(OBR_{i,t+1} - OBR_{i,t})/OBR_{i,t}$	0.0603	0.0561	0.23	0.0146	−0.0074	**1.75**
$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	0.0439	0.0442	−0.06	−0.0384	−0.0446	1.04
$(POP_{i,t} - POP_{i,t-1})/POP_{i,t-1}$	0.0085	0.0035	0.09	0.0047	0.0028	0.44
$(GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t-1}$	0.0471	0.0457	0.32	0.0287	0.0366	−1.44
No. of observations	127	143		107	96	
Note: Bold shows significance levels of 0.10.						

Table 4. *Cont.*

Panel F. Median comparison between cities with higher winning margin and lower winning margin in mayoral election						
	***NEG* = 0, when (*ABR* − *OBR*) > = 0**			***NEG* = 1, when (*ABR* − *OBR*) < 0**		
	High winning margin (1)	**Low winning margin (2)**	**z-statistics of difference = (1) − (2)**	**High winning margin (3)**	**Low winning margin (4)**	**z-statistics of difference = (3) − (4)**
$(OBR_{i,t+1} - OBR_{i,t})/OBR_{i,t}$	0.0457	0.0476	0.66	0.0104	−0.0017	**−1.74**
$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	0.0315	0.0257	1.32	−0.0243	−0.0339	−1.26
$(POP_{i,t} - POP_{i,t-1})/POP_{i,t-1}$	0.0082	0.0055	**3.37**	0.0063	0.0080	−0.12
$(GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t-1}$	0.0470	0.0486	0.45	0.0357	0.0349	0.84
No. of observations	127	143		107	96	

Note: Bold shows significance levels of 0.10.

5. Research Design and Analysis

I begin by examining the subsequent period's budget response to the current period's budget variance. I follow Leone and Rock's (2002) model of budget responses in order to test the association between the current period's performance and the subsequent period's performance target:

$$(OBR_{i,t+1} - OBR_{i,t}) = a_0 + b_1(ABR_{i,t} - OBR_{i,t}) + b_2\, NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t}) + b_3 NEG_{i,t} + error_{i,t} \quad (2)$$

where $(OBR_{t+1} - OBR_t)$ is the difference between t and $t + 1$ in terms of the original budgeted revenues (OBR), $(ABR_t - OBR_t)$ is the difference between the actual budget revenue (ABR) and original budgeted revenue (OBR) in time t, $NEG = 1$ if $(ABR_t - OBR_t) < 0$, and 0 otherwise.[17]

In Equation (2), the intercept a represents how much the budget increases or decreases independently of previous performance relative to the budget. b_1 is the budget response coefficient for a favorable budget variance, and b_2 is the incremental coefficient if the budget variance is unfavorable. Based on Weitzman's (1980) prediction and the asymmetric budget ratcheting evidence documented in Leone and Rock (2002), I expect both the intercept a and the first coefficient b_1 to be positive and the interaction term b_2 to be negative.

In order to address potential heteroskedasticity concerns from using the unscaled model, I re-estimate Equation (2) using the following:

$$(OBR_{i,t+1} - OBR_{i,t})/OBR_{i,t} = a_0 + b_1(ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_2\, NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_3 NEG_{i,t} + error_{i,t} \quad (3)$$

One noticeable advantage of this scaled model is that Equation (3) provides easier economic interpretations. That is, from Equation (3), the coefficient b_1 represents how a 1% favorable budget variance in the current year is reflected in the next year's budget growth. The interactive slope coefficient, b_2, which measures the difference in the sensitivity of the subsequent period's budget to the current period's negative and positive budget variance, is expected to be significant. And the next period's budget is expected to be less sensitive to unfavorable budget variances than it is to favorable budget variances.

Leone and Rock (2002) had concerns that their model may suffer from correlated but omitted variable bias due to unanticipated economic growth affecting both the dependent and independent variables. In my model, Equation (3) may be affected by a similar argument, and I address this omitted variable concern by controlling for city-specific growth using population growth and actual gross domestic production growth as proxies for unanticipated growth. This should eliminate the potential alternative explanation for my first results on the association between budget variance and budget growth. I then rerun Equation (3) with these additional variables:

$$(OBR_{i,t+1} - OBR_{i,t})/OBR_{i,t} = a_0 + b_1 NEG_{i,t} + b_2 (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_3\ NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_4 (POP_{i,t} - POP_{i,t-1})/POP_{i,t-1} + b_5 (GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t} + error_{i,t} \quad (4)$$

where $(POP_{i,t} - POP_{i,t-1})/POP_{i,t-1}$ is the annual population growth, and $(GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t}$ is the annual gross metropolitan production growth at the city level. I expect b_4 and b_5 to be positive.

5.1. Tests of Hypothesis 1: "Political Budget Cycle"

In order to test the political budget cycle hypothesis on the association between the current period's budget variance and the subsequent period's budget, I estimate Equation (5) by controlling for election period effects:

$$(OBR_{i,t+1} - OBR_{i,t})/OBR_{i,t} = a_0 + b_1 NEG_{i,t} + b_2 Election_{i,t} + b_3 NEG_{i,t} \times Election_{i,t} + b_4 (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_5 (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} \times Election_{i,t} + b_6 NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_7 NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} \times Election_{i,t} + b_8 (POP_{i,t} - POP_{i,t-1})/POP_{i,t-1} + b_9 (GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t} + error_{i,t} \quad (5)$$

where *Election* takes a value of 1 if a city is preparing for an upcoming mayoral election in the current fiscal year, and 0 otherwise.[18] I expect b_2, b_3, and b_7 to be positive and significant (e.g., Blais & Nadeau, 1992; Alt & Lassen, 2006; Veiga & Veiga, 2007).

5.2. Tests of Hypothesis 2: Monitoring Mechanisms

In order to examine the relationship between different types of monitoring mechanisms and budgetary patterns, I extend Equation (4) into the following model:

$$(OBR_{i,t+1} - OBR_{i,t})/OBR_{i,t} = a_0 + b_1 NEG_{i,t} + b_2 GOV_{i,t} + b_3 REG_{i,t} + b_4\ WIN_{i,t} + b_5 GOV_{i,t} \times NEG_{i,t} + b_6\ REG_{i,t} \times NEG_{i,t} + b_7 WIN_{i,t} \times NEG_{i,t} + b_8 (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_9 NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{10} GOV_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{11} REG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{12} WIN_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{13} GOV_{i,t} \times NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{14} REG_{i,t} \times NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{15} WIN_{i,t} \times NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{16} (POP_{i,t} - POP_{i,t-1})/POP_{i,t-1} + b_{17} (GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t} + error_{i,t} \quad (6)$$

where *GOV* takes a value of 1 if the strong-mayoral form of city governance is used and 0 otherwise (Hypothesis 2A testing); *REG* takes 1 if a higher level of budget-limiting regulations is adopted in the city and 0 otherwise (Hypothesis 2B testing); *WIN* takes 1 if the winning margin in the mayoral election is lower than median and 0 otherwise (Hypothesis 2C testing). Consistent with these hypotheses, in years when cities have favorable budget variance, I expect b_{10} to be negative, b_{11} to be positive, and b_{12} to be positive; in periods when cities experience unfavorable budget variance, I expect both b_{13} and b_{14} to be negative, but b_{15} to be positive.

6. Empirical Findings

6.1. The Budget Ratcheting

I begin by investigating the association between the current period's budget variance and the subsequent period's budget. Panel A of Table 5 documents the results of estimating Equation (4) using an ordinary least squares regression. As Leone and Rock (2002) document, the results for both the unscaled and scaled models are consistent with an *asymmetric response* of the subsequent year's budget on the current period's budget variance.[19]

Table 5. A Regression Analysis: Dependent Variable = $(OBR_{i,t+1} - OBR_{i,t})/OBR_{i,t}$.

Panel A. Main Results						
		Predicted	**Parameter**		**Parameter**	
		Sign	**Estimate**	**t-stat.**	**Estimate**	**t-stat.**
Intercept	(a_0)	(+)	0.0311	1.04	0.0423	1.48
$NEG_{i,t}$	(b_1)	(+)	0.0206	0.82	0.0002	0.22
$GOV_{i,t}$	(b_2)	(−)			−0.0012	−0.20
$REG_{i,t}$	(b_3)	(−)			−0.0221	−1.01
$WIN_{i,t}$	(b_4)	(+)			0.0410	1.22
$GOV_{i,t}$*$NEG_{i,t}$	(b_5)	(−)			0.0012	0.35
$REG_{i,t}$*$NEG_{i,t}$	(b_6)	(−)			0.0412	0.91
$WIN_{i,t}$*$NEG_{i,t}$	(b_7)	(−)			−0.0014	−0.10
$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_8)	(+)	**0.5940**	4.89	**0.3214**	1.98
$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_9)	(−)	−0.3888	−1.52	**1.4251**	4.01
$GOV_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{10})	(−)			**−0.3124**	−1.79
$REG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{11})	(−)			**0.2143**	1.82
$WIN_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{12})	(−)			0.3242	1.49
$GOV_{i,t}$*$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{13})	(−)			**−1.0214**	−1.84
$REG_{i,t}$*$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{14})	(−)			**−1.6789**	−3.24
$WIN_{i,t}$*$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{15})	(−)			1.2435	1.59
$(POP_{i,t} - POP_{i,t-1})/POP_{i,t-1}$	(b_{16})	(+)	0.1552	1.08	0.4123	1.23
$(GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t-1}$	(b_{17})	(+)	0.0624	0.36	0.0684	0.67
					F-value	*Pr* > *F*
H_{null}: $b_9 + b_{13} = 0$					0.0245	0.34
H_{null}: $b_9 + b_{14} = 0$					0.3984	0.26
H_{null}: $b_9 + b_{15} = 0$					7.5135	0.00
Fixed Year Effects			*Yes*		*Yes*	
Outliers			*Yes* [1]		*Yes* [1]	
Clustered by Cities and Years			*Yes*		*Yes*	
Adj. R^2			0.2451		0.3821	
N			462		462	

Note. The expected signs of the coefficients on my main variables are based on Hypothesis 0, and on the other control variables are based on the findings of prior studies. The models are estimated by using the pooled regression clustered by years and cities. [1] For this regression I use one for the Cook's D test or 2.5 for the studentized-residual test as the included cutoff (refer Walther, 1997). 11 observations are identified as outliers. Therefore, 462 out of 473 observations are used in analyses. Bold indicate significance levels of 0.10. Robust t-statistics are reported in parentheses. The sample period is from 2003 to 2013.

Regression Model: Equation (6)

Definition of Variables:

OBR is the original budgeted revenue, *ABR* is the actual budget revenue, *GOV* is an indicator taking 1, if a city has the strong-mayoral form of government, 0 otherwise, *REG* is an indicator taking 1, if a city has more than median number of total budget limiting regulations, 0 otherwise, *WIN* is an indicator taking 1, if a city's mayor was elected higher than 59% (median from the sample) of margin in the previous election, 0 otherwise, *NEG* is an indicator taking 1, if $(ABR - OBR) < 0$, 0 otherwise, *POP* is population of a city, and *GMP* is gross metropolitan production level of a city.

Panel B. Election Effects						
Variable		**Predicted**	**Parameter**	**t-stat.**	**Parameter**	**t-stat.**
		Sign	**Estimate**		**Estimate**	
Intercept	(a_0)	(+)	−0.0245	−0.76	**0.0423**	3.22
$NEG_{i,t}$	(b_1)	(−)	**0.0502**	2.35	−0.0002	−0.38
$Election_{i,t}$	(b_2)	(+)	0.0358	1.02	0.0063	0.91
$Election_{i,t}$*$NEG_{i,t}$	(b_3)	(+)	−0.0163	−0.30	−0.0112	−0.10
$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_4)	(+)	**1.6221**	6.67	**0.8244**	3.88
$Election_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_5)	(−)	**−1.4585**	−2.36	**−0.6544**	−1.87
$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_6)	(−)	**−0.8898**	−2.29	−0.5122	−0.98
$Election_{i,t}$*$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_7)	(+)	**1.5191**	1.95	**0.9929**	2.24
$(POP_{i,t} - POP_{i,t-1})/POP_{i,t-1}$	(b_8)	(−)	0.0756	0.46	0.1024	1.44
$(GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t-1}$	(b_9)	(+)	0.1274	0.57	−0.0002	−0.42
			F-value	*Pr* > *F*	F-value	*Pr* > *F*
H_{null}: $b_4 + b_5 = 0$			0.62	0.44	1.99	0.13
H_{null}: $b_6 + b_7 = 0$			1.00	0.34	1.68	0.16
FY Effects			*Yes*		*Yes*	

Table 5. *Cont.*

Panel B. Election Effects					
Variable	**Predicted Sign**	**Parameter Estimate**	**t-stat.**	**Parameter Estimate**	**t-stat.**
Outlier				*Yes* [3]	
Clustering		*Yes*		*Yes*	
Adj. R^2		0.2249		0.4124	
N		328		311	

Note. The expected signs of the coefficients on my main variables are based on Hypothesis 1, and on the other control variables are based on the findings of prior studies. The models are estimated by using the pooled regression clustered by years and cities. [3] For this regression I use one for the Cook's D test or two for the studentized-residual test as the included cutoff. 17 observations are identified as outliers. Therefore, 311 out of 328 observations are used in analyses (the Column 2). Bold indicate significance levels of 0.10. Robust t-statistics are reported in parentheses. The sample period is from 2003 to 2013. Following cities are dropped due to their two-year mayoral election cycles and irregular elections: Arlington, TX, Charlotte, NC, El Paso, TX, Fort Worth, TX, Houston, TX, Memphis, TN, Oklahoma, OK, Pittsburgh, PA, San Diego, CA, and San Antonio, TX.

Regression Model: Equation (5)

The results of estimating Equations (4) and (6) on Panel A of Table 5 show a reliably positive subsequent period budget response to the current period's favorable budget variance. That is, the scaled model of Equation (4) reveals that a 1% favorable budget variance in the current period results in a 0.59% increase in the next period's budget; meanwhile, a 1% unfavorable budget variance in the current period incurs a 0.21% decrease in the subsequent period's budget. This 0.59% budget growth following a 1% favorable budget variance is statistically significant, while the 0.21% drop in the subsequent period's budget is not.[20] The coefficient on the budget variance in the current period b_2 is significantly positive at the $p < 0.01$ level. However, the incremental slope coefficient b_3 for observations where the current period's actual spending fell short of its budget is significantly negative in the scaled regression. This result suggests that, at least for these 50 largest US cities considered in this study, when budget variance is positive, the subsequent period's budget is raised accordingly. However, when budget variance is unfavorable (actual performance is less than the budgeted target), then the subsequent budget remains essentially unchanged. Overall, the tests provide evidence consistent with the popular notion that budgets ratchet (Leone & Rock, 2002; Bouwens & Kross, 2011).

The results in Panel A of Table 5 also indicate that there is a certain increase in budgets independent of budget variance in the preceding period. In the scaled model (Equation (4)), budgets increase on average by approximately 3.11% of the previous year's budget independent of budget variance. This constant increase is not statistically significant. The adjusted R^2 from each regression also indicates that the variables of interest explain a significant proportion of the variation in the subsequent year's budget—25% for Equation (4), and 38% for Equation (6).

In terms of control variables, Leone and Rock (2002) consider unanticipated growth across business units as a potential alternative explanation for their asymmetric ratcheting results. Their point is that if a top manager fails to foresee strong economic growth during the time period, then both the realized earnings and the subsequent period's target would be affected upward in a similar manner. Given a top manager's tendency to believe that any negative variance is temporary, a negative variance would be ignored and the subsequent period's target would therefore move upward (or remain unchanged). This argument can be applied to my findings, as particularly for the earlier time period considered in my study, the overall US economy was performing well and the optimistic city officers' expectations may have shaped the asymmetric budget ratcheting reported in Table 5 of my study. I therefore consider two alternative explanations—unexpected population growth and unexpected economic growth across cities—for the results reported in Table 5. The results

show no significant impact of these two additional control variables on the coefficients, and the implications remain unchanged.

6.2. Test Results of Hypothesis 1: Political Budget Cycle and Budget Ratcheting

The aim of this section is to investigate to what extent the association between the current period's budget variance and the subsequent period's budget is influenced by the political budget cycle. In order to contrast the patterns of budget ratcheting in the pre- and post-election periods, I mechanically separate the time periods into two parts for each city. I define the pre-election period as either the actual election year or the preceding election year, and drop cities either with two-year mayoral election cycles *or* if the incumbent does not run for re-election in order to make the contrast clearer.[21]

Panel C of Table 3 shows a descriptive summary of this subsample of 328 observations. These observations are grouped into the two periods, with 246 observations of non-election periods and 82 observations of pre-election periods. The results show that cities expecting mayoral elections in the current fiscal year have a lower frequency of unfavorable budget variance compared to cities not preparing for upcoming mayoral elections (39% versus 48% with z-stat = 0.57). Panel B of Table 5 shows how much impact the mayoral election cycle has on the association between the current year's budget variance and the subsequent year's budget. Specifically, during a pre-election period, the current year's favorable budget variance does not imply an increase in the subsequent period's budget ($0.1636 = 1.6221 - 1.4585$; F-value = 0.62); however, during a pre-election period, the current year's unfavorable budget variance does generate a significant boost in the subsequent year's budget. Interestingly, this pattern of change becomes more obvious when I consider the observations when incumbents run for re-election. From these findings, it appears that when incumbents face re-election, they do not increase city revenues in case the city has a favorable budget variance, yet incumbents do increase city budgets significantly if the city currently has an unfavorable budget variance. Untabulated results show that there is no statistically significant difference in terms of the pattern of budget ratcheting between the post-election year and other years.

6.3. Test Results of Hypothesis 2: Monitoring Mechanisms and Budget Ratcheting

In order to investigate how monitoring mechanisms affect the relationship between the current period's budget variance and the subsequent period's budget, I consider three different types of monitoring mechanisms. These three mechanisms are city governance structure-based monitoring, regulatory-based monitoring, and competition-based monitoring (Zimmerman, 1977; Baber, 1990; Mayper et al., 1991; Poterba, 1994).

First, in terms of monitoring mechanisms embedded within the governance structure, my interest is in testing whether or not the separation of power—either the council–manager or strong-mayoral form—can affect the ratcheting pattern between the current year's budget variance and the subsequent year's budget. Panel A of Table 2 and Panel A of Table 3 provide descriptive and univariate analyses of governance structure types. Of the 50 cities under analysis, 18 (36%) have the council–manager (or commission-manager) form of governance, while 32 (64%) have the strong-mayoral (or mayor–council) form of governance. A closer examination reveals that the top five largest cities (New York City, Los Angeles, Chicago, Houston, and Philadelphia) in terms of population as well as total governmental debt have the strong-mayoral form of governance. All financial variables are, therefore, considered to have larger standard deviations within this group. However, as reported on Panel A of Table 4, in terms of budget variance in revenues when a city experiences favorable budget variance, there is no meaningful difference between the two groups (t-stat. = 1.54; z-stat. = 0.78). Yet, when a city faces unfavorable budget

variance, there are statistically significant differences between the two groups (t-stat. = 2.10; z-stat. = 1.07).

Panel A of Table 5 reports the results of estimating Equation (6). The dependent variable is the subsequent period's budget growth. The reported result considers growth in population and gross metropolitan production as control variables, and includes fixed-year dummies in order to control for economy-wide year effects across cities (Poterba, 1994; Leone & Rock, 2002; Lee & Plummer, 2007). Furthermore, Cook's D test and the studentized-residual test are employed in order to detect outliers from the regression analyses. I follow Walther (1997)'s outlier detection process, using one for Cook's D test or two (or 2.5) for the studentized-residual test as the included cutoff. The reported results are estimated by a pooled time series and cross-sectional data using the ordinary least squares (OLS) method with clustering by both cities and years in order to correct the standard errors for serial/cross-correlations in the sample (Petersen, 2009; Gow et al., 2010).

In terms of testing Hypothesis 2A, the results indicate that there is a statistically significant difference between the two groups; that is, cities with the strong-mayoral form of governance do respond differently in terms of setting their subsequent period's budget compared to cities with the council–manager form of governance.

Second, I consider regulatory-based monitoring mechanisms. Specifically, I test whether or not regulations limiting the city's revenue-generating and spending abilities affect the association between the current period's budget variance and the subsequent period's budget. In this study, I consider eleven different types of budget-limiting regulations: state-wide and city-specific state-level balanced budget regulations, two city-level balanced budget requirements, overall property tax rate limits, specific property tax rate limits, property tax revenue limits, assessment increase limits, general revenue limits, general expenditure limits, and full disclosure requirements (Lewis, 1994; Mullins & Wallin, 2004). Using these different types of regulations for limiting cities' budgets, I thereby create a regulatory-based index—the total number of limitations—in order to measure the severity of each city's limitations. In order to operationalize this concept of rule-based monitoring, in the regression analysis, I create the dummy variable *REG*. *REG* takes 1 if a city has higher than the median level (five) of regulations and 0 otherwise.

Panel B of Table 2 and Panel C and D of Table 4 report the descriptives and univariate comparisons between the two groups, one with a higher level and the other with a lower level of limitations. In multivariate testing, the result in Panel A of Table 5 implies that under severe budget regulations in years when cities have better-than-expected revenues, this additional revenue is more fully reflected in the subsequent period's budget (0.5357 = 0.3214 + 0.2143). On the other hand, under severe budget regulations in periods when cities have unfavorable budget variance in the current period, the next period's budget is set back to the previous level. Overall, this evidence clearly indicates that cities with a high level of regulations respond differently in terms of setting their next period's budget compared to cities with a relatively lower level of regulations, particularly during a period of unfavorable budget variance.

Third, I examine the external source of monitoring directly performed by shareholders, in this case political competition. I specifically test how and to what extent voters' participation can affect the association between the current period's budget variance and the subsequent period's budget. Panel A of Table 2 shows the mayoral election (average) results for each city during the sampled period. Panels E and F of Table 4 report the univariate comparisons between the two groups separated by the winning margin in the mayoral election; a high level of monitoring is assigned if the winner in the mayoral election earned less than 59% of the vote (the median of the winning margin across all mayoral elections held in the top 50 US cities during the period from 2001 to 2013).[22] The results in Panels

E and F of Table 4 show a statistically significant difference in terms of their subsequent period's budget in periods when cities have unfavorable budget variances (t = 1.75 and z = −1.74).

Panel A of Table 5 reports the multivariate regression results using *WIN*; this takes a value of 1 if the winning candidate receives lower-than-average support (less than 59% of the vote) in the mayoral election, and 0 otherwise. The incremental slope coefficient b_{12} for observations where cities have a higher level of political competition becomes strongly positive; when a mayor is elected by a narrow margin under severe political competition, then the elected officer tends to more fully reflect the current period's favorable variance in the next period's budget. One interesting finding is that when cities with a higher level of political competition are not able to meet their expected budget during the current period, the subsequent period's budget is raised even higher. One possible explanation for this finding is that when cities are in political turmoil, the budget may react in a financially irresponsible manner. The results show that when mayors are elected by a narrow margin, they tend to set the subsequent year's budget target as unchanged from the current year in case of a favorable budget variance, yet when they face an unfavorable budget variance in the current year, they increase the subsequent year's target to a significantly higher level.[23]

6.4. Alternative Explanation of Budget Ratcheting

Permanent and Transitory Budget Growth

Leone and Rock (2002) argue that the ratcheting pattern is observed in budgets since senior managers tend to believe that positive budget growth during the current period is more permanent than negative budget growth (refer to pg. 48 of Leone & Rock, 2002). This implies that the current period's positive budget growth should be more persistent than the current period's negative budget growth. Given this alternative explanation, I investigate whether or not the subsequent period's actual budget growth (between year t and $t + 1$) is a simple reflection of the current period's actual budget growth, particularly when the current period experiences positive budget growth.

I first measure the current period's budget growth, i.e., the actual budget revenue in year t minus the actual budget revenue in year $t - 1$ scaled by the actual budget revenue at year $t - 1$. I then create a dummy variable $D_WEAK_{i,t-1,t}$ in order to separate weak budget growth from ordinary budget growth. Leone and Rock (2002) predict that only positive budget growth during the current period will be reflected in the subsequent period's budget growth.

In order to estimate the relationship between the current period's revenue budget growth and the subsequent period's revenue budget growth, I modify Equation (3) into the following model:

$$\begin{aligned} GROWTH_ACT_BUD_REV_{i,t,t+1} = {} & a_0 + b_1\, D_WEAK_{i,t-1,t} + b_2 GOV_{i,t} + b_3 REG_{i,t} + b_4 WIN_{i,t} + b_5 GOV_{i,t} \times \\ & D_WEAK_{i,t-1,t} + b_6 REG_{i,t} \times D_WEAK_{i,t-1,t} + b_7 WIN_{i,t} \times D_WEAK_{i,t-1,t} + b_8 (ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1} + b_9 \\ & D_WEAK_{i,t-1,t} \times (ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1} + b_{10} GOV_{i,t} \times (ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1} + b_{11} REG_{i,t} \times (ABR_{i,t} - \\ & ABR_{i,t-1})/ABR_{i,t-1} + b_{12} WIN_{i,t} \times (ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1} + b_{13} GOV_{i,t} \times D_WEAK_{i,t-1,t} \times (ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1} \\ & + b_{14} REG_{i,t} \times D_WEAK_{i,t-1,t} \times (ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1} + b_{15} WIN_{i,t} \times D_WEAK_{i,t-1,t} \times (ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1} \\ & + b_{16} (POP_{i,t} - POP_{i,t-1})/POP_{i,t-1} + b_{17} (GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t} + error_{i,t} \end{aligned} \tag{7}$$

where $GROWTH_ACT_BUD_REV_{i,t,t+1}$ is the difference in the actual budget revenue between year t and year $t + 1$ scaled by the actual budget revenue in year t. $D_WEAK_{i,t-1,t}$ is an indicator variable taking one if a city has less than 4.2% actual budget revenue growth from year $t - 1$ to year t, and zero otherwise. The 4.2% cutoff is the median of the actual budget revenue growth during the sampled period from 2003 to 2013.

$GROWTH_ACT_BUD_REV_{i,t-1,t}$ is the difference in the actual budget revenue between year $t-1$ and year t.

In Equation (7), b_8 captures the subsequent period's actual revenue growth with respect to "strong" revenue growth in the current period and b_9 captures the incremental subsequent period's actual revenue growth with respect to "weak" revenue growth during the current period. b_2, b_3, b_4, b_{10}, b_{12}, and b_{13} capture the subsequent period's actual revenue growth with respect to "strong" actual revenue during the current period with $GOV_{i,t}$, $REG_{i,t}$, $WIN_{i,t}$, and its interaction terms. b_5, b_6, b_7, b_{13}, b_{14}, and b_{15} capture the subsequent period's incremental revenue growth with respect to "weak" actual revenue growth during the current period for its corresponding variables.

The results in Table 6 show that the current period's actual budget growth does not adequately explain the subsequent period's actual budget growth because it implies that the subsequent period's actual budget growth is not a mirror image of the current period's actual revenue growth. Leone and Rock's (2002) explanation for budget ratcheting should therefore not be applied in this case of city government budgets. Instead, it should be used as the reason that resource-maximizing elected officers simply ignore the previous budget growth information and continue increasing the city budget.

Table 6. A Regression Analysis: Dependent Variable = $(ABR_{i,t+1} - ABR_{i,t})/ABR_{i,t}$ (Next period's actual revenue growth with respect to current period's actual revenue growth).

Variable		Predicted	Parameter		Parameter	
		Sign	Estimate	t-stat.	Estimate	t-stat.
Intercept	(a_0)	(+)	**0.1862**	2.12	0.0215	1.11
$D_WEAK_{i,t,t-1}$	(b_1)	(+)	0.1422	1.11	−0.0622	−1.01
$GOV_{i,t}$	(b_2)	(−)			−0.0002	−0.15
$REG_{i,t}$	(b_3)	(−)			**−0.0522**	−3.44
$WIN_{i,t}$	(b_4)	(+)			0.0041	0.52
$GOV_{i,t}$*$D_WEAK_{i,t,t-1}$	(b_5)	(−)			−0.0089	−1.2
$REG_{i,t}$*$D_WEAK_{i,t,t-1}$	(b_6)	(−)			0.0142	0.88
$WIN_{i,t}$*$D_WEAK_{i,t,t-1}$	(b_7)	(+)			0.0024	0.14
$(ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1}$	(b_8)	(+)	0.1124	0.58	−0.2116	−1.39
$D_WEAK_{i,t,t-1}$*$(ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1}$	(b_9)	(+)	0.3245	1.02	0.1114	0.04
$GOV_{i,t}$*$(ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1}$	(b_{10})	(−)			0.0422	0.29
$REG_{i,t}$*$(ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1}$	(b_{11})	(−)			**0.5287**	2.16
$WIN_{i,t}$*$(ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1}$	(b_{12})	(+)			0.1283	0.24
$GOV_{i,t}$*$D_WEAK_{i,t,t-1}$*$(ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1}$	(b_{13})	(−)			−0.2169	−0.17
$REG_{i,t}$*$D_WEAK_{i,t,t-1}$*$(ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1}$	(b_{14})	(−)			0.5639	0.89
$WIN_{i,t}$*$D_WEAK_{i,t,t-1}$*$(ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1}$	(b_{15})	(−)			0.9246	0.84
$(POP_{i,t} - POP_{i,t-1})/POP_{i,t-1}$	(b_{16})	(+)	**0.3324**	4.29	**0.1895**	3.23
$(GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t-1}$	(b_{17})	(+)	**0.2424**	1.88	0.1723	1.42
Fixed Year Effects			*Yes*		*Yes*	
Outliers			*Yes* [1]		*Yes* [1]	
Clustered by Cities and Years			*Yes*		*Yes*	
Adj. R^2			0.1941		0.2244	
N			454		454	

Note. The expected signs of the coefficients on main variables are based on Leone and Rock (2002), and on the other control variables are based on the findings of prior studies. The models are estimated by using the pooled regression clustered by years and cities. [1] For this regression I use one for the Cook's D test or two for the studentized-residual test as the included cutoff. 19 observations are identified as outliers. Therefore, 454 out of 473 observations are used in analyses. Bold indicate significance levels of 0.10. Robust t-statistics are reported in parentheses. The sample period is from 2003 to 2013. $D_WEAK_{i,t,t-1}$ takes one if $(ABR_{i,t} - ABR_{i,t-1})/ABR_{i,t-1}$ is less than 4.2%, 0 otherwise.

Regression Model: Equation (7)

6.5. Additional Analyses on City Budgets

6.5.1. The Relationship Between the Current and Subsequent Period's Budget Variance

Budget variance can be considered time-invariant where the current period's budget variance is continued in subsequent periods. This implies that revenue budget ratcheting is the result of the persistence of revenue budget variance, rather than revenue budget-maximizing bureaucrats.

In order to investigate whether or not the current period's budget variance is persistent, I modify Equation (4) into the following model:

$$\begin{aligned}(ABR_{i,t+1} - OBR_{i,t+1})/OBR_{i,t+1} = a_0 + b_1 NEG_{i,t} + b_2 GOV_{i,t} + b_3 REG_{i,t} + b_4 WIN_{i,t} + b_5 GOV_{i,t} \times NEG_{i,t} + b_6 REG_{i,t} \times NEG_{i,t} + \\ b_7 WIN_{i,t} \times NEG_{i,t} + b_8 (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_9 NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{10} GOV_{i,t} \times (ABR_{i,t} - \\ OBR_{i,t})/OBR_{i,t} + b_{11} REG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{12} WIN_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{13} GOV_{i,t} \times \\ NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{14} REG_{i,t} \times NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{15} WIN_{i,t} \times NEG_{i,t} \times (ABR_{i,t} - \\ OBR_{i,t})/OBR_{i,t} + b_{16} (POP_{i,t} - POP_{i,t-1})/POP_{i,t-1} + b_{17} (GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t} + error_{i,t}\end{aligned} \quad (8)$$

where *GOV* takes 1 if the strong-mayoral form of city governance is used and 0 otherwise; *REG* takes 1 if a higher level of budget-limiting regulations is adopted in the city and 0 otherwise; *WIN* takes 1 if the winning margin in the mayoral election is lower than median and 0 otherwise.

The results in Table 7 show that the current period's revenue budget variance is statistically correlated with the subsequent period's revenue budget variance only when the current period's revenue budget variance is favorable. This implies that budget variance is not a simple characteristic of city government.

Table 7. A Regression Analysis: Dependent Variable = $(ABR_{i,t+1} - OBR_{i,t+1})/OBR_{i,t+1}$ (Next period's budget variance with respect to current year's budget variance).

Variable		Predicted	Parameter		Parameter	
		Sign	Estimate	t-stat.	Estimate	t-stat.
Intercept	(a_0)	(−)	−0.0198	−1.18	**−0.0531**	−3.17
$NEG_{i,t}$	(b_1)	(+)	0.0235	1.59	0.0394	1.47
$GOV_{i,t}$	(b_2)	(−)			0.0032	0.57
$REG_{i,t}$	(b_3)	(−)			−0.0028	−1.33
$WIN_{i,t}$	(b_4)	(−)			−0.0051	−0.62
$GOV_{i,t}$*$NEG_{i,t}$	(b_5)	(−)			−0.0366	−1.45
$REG_{i,t}$*$NEG_{i,t}$	(b_6)	(−)			−0.0156	−0.54
$WIN_{i,t}$*$NEG_{i,t}$	(b_7)	(−)			**−0.0472**	−1.76
$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_8)	(−)	**0.4042**	2.94	**0.2954**	1.94
$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_9)	(+)	0.2896	1.27	1.9477	1.52
$GOV_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{10})	(−)			0.6438	0.59
$REG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{11})	(−)			**0.7348**	3.21
$WIN_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{12})	(−)			**0.4386**	1.92
$GOV_{i,t}$*$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{13})	(−)			−0.9954	−1.42
$REG_{i,t}$*$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{14})	(−)			−2.3992	−1.16
$WIN_{i,t}$*$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{15})	(−)			−3.0415	−0.95
$(POP_{i,t} - POP_{i,t-1})/POP_{i,t-1}$	(b_{16})	(+)	**0.1537**	2.16	**0.3239**	2.22
$(GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t-1}$	(b_{17})	(+)	0.0040	0.11	−0.0134	−0.63
Fixed Year Effects			*Yes*		*Yes*	
Outliers			*Yes* [1]		*Yes* [1]	
Clustered by Cities and Years			*Yes*		*Yes*	

Table 7. *Cont.*

Variable	Predicted	Parameter		Parameter	
	Sign	Estimate	t-stat.	Estimate	t-stat.
Adj. R^2		0.2926		0.2905	
N		467		463	

Note. The expected signs of the coefficients on main variables are based on the discussion on the Additional Analyses Section, and on the other control variables are based on the findings of prior studies. The models are estimated by using the pooled regression clustered by years and cities. [1] For this regression I use one for the Cook's D test or two for the studentized-residual test as the included cutoff. Six (ten) observations are identified as outliers for the first (second) column analysis. Therefore, 463 out of 473 observations are used in analyses (the Column 2). Bold indicate significance levels of 0.10. Robust t-statistics are reported in parentheses. The sample period is from 2003 to 2013.

Regression Model: Equation (8)

6.5.2. The Relationship Between the Current Period's Budget Ratcheting in Revenue and the Current Period's Budget Ratcheting in Expenditures

Although metropolitan cities are required to have a balanced budget at the city level, it is still not clear whether or not the current period's revenue budget variance is related to the current period's expenditure budget variance. In particular, it is important for city government policymakers to understand the contemporary relationship between revenue budget variance and expenditure budget variance under the influence of different levels of mayor power at the city level.

In order to investigate the relationship between revenue budget variance and expenditure budget variance in the concurrent period, I modify Equation (3) into the following model:

$$\begin{aligned}(OBE_{i,t} - ABE_{i,t})/OBE_{i,t} = {} & a_0 + b_1 NEG_{i,t} + b_2 GOV_{i,t} + b_3 REG_{i,t} + b_4 WIN_{i,t} + b_5 GOV_{i,t} \times NEG_{i,t} + b_6 REG_{i,t} \times NEG_{i,t} \\ & + b_7 WIN_{i,t} \times NEG_{i,t} + b_8 (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_9 NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{10} GOV_{i,t} \times (ABR_{i,t} - \\ & OBR_{i,t})/OBR_{i,t} + b_{11} REG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{12} WIN_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{13} GOV_{i,t} \times NEG_{i,t} \times \\ & (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{14} REG_{i,t} \times NEG_{i,t} \times (ABR_{i,t} - OBR_{i,t})/OBR_{i,t} + b_{15} WIN_{i,t} \times NEG_{i,t} \times (ABR_{i,t} - \\ & OBR_{i,t})/OBR_{i,t} + b_{16} (POP_{i,t} - POP_{i,t-1})/POP_{i,t-1} + b_{17} (GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t} + error_{i,t}\end{aligned} \quad (9)$$

where *GOV* takes 1 if the strong-mayoral form of city governance is used and 0 otherwise; *REG* takes 1 if a higher level of budget-limiting regulations is adopted in the city and 0 otherwise; *WIN* takes 1 if the winning margin in the mayoral election is lower than median and 0 otherwise.

The results in Table 8 show that the current period's expenditure budget variance is negatively correlated with the concurrent period's revenue budget variance.

Table 8. A Regression Analysis: Dependent Variable = $(OBE_{i,t} - ABE_{i,t})/OBE_{i,t}$ (Concurrent period's budget variance in terms of expenditures w.r.t current period's budget variance in revenues.).

Variable		Predicted	Parameter	t-stat.	Parameter	t-stat.
		Sign	Estimate		Estimate	
Intercept	(a_0)	(+)	**−0.0232**	−1.87	0.0004	0.33
$NEG_{i,t}$	(b_1)	(+)	0.0327	1.49	0.0407	0.94
$GOV_{i,t}$	(b_2)	(−)			0.0030	−0.84
$REG_{i,t}$	(b_3)	(−)			−0.0002	−0.05
$WIN_{i,t}$	(b_4)	(−)			**−0.0636**	−1.86
$GOV_{i,t}$*$NEG_{i,t}$	(b_5)	(+)			0.0164	1.02
$REG_{i,t}$*$NEG_{i,t}$	(b_6)	(−)			−0.0362	−0.71
$WIN_{i,t}$*$NEG_{i,t}$	(b_7)	(+)			**0.0711**	1.91
$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_8)	(−)	−0.2091	−1.47	**−0.2562**	−2.05
$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_9)	(+)	**−1.6632**	−4.49	0.3210	0.22
$GOV_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{10})	(+)			0.0965	0.67

Table 8. *Cont.*

Variable		Predicted Sign	Parameter Estimate	t-stat.	Parameter Estimate	t-stat.
$REG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{11})	(+)			**0.6521**	2.12
$WIN_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{12})	(+)			**−0.5142**	−2.46
$GOV_{i,t}$*$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{13})	(−)			**−1.0645**	−1.88
$REG_{i,t}$*$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{14})	(−)			**−2.5412**	−2.65
$WIN_{i,t}$*$NEG_{i,t}$*$(ABR_{i,t} - OBR_{i,t})/OBR_{i,t}$	(b_{15})	(−)			**1.6775**	3.45
$(POP_{i,t} - POP_{i,t-1})/POP_{i,t-1}$	(b_{16})	(+)	**0.1528**	2.97	**0.2462**	2.12
$(GMP_{i,t} - GMP_{i,t-1})/GMP_{i,t-1}$	(b_{17})	(+)	0.2097	1.02	0.4012	1.46
Fixed Year Effects			*Yes*		*Yes*	
Outliers			*Yes* [1]		*Yes* [1]	
Clustered by Cities and Years			*Yes*		*Yes*	
Adj. R^2			0.2895		0.4168	
N			468		468	

Note. The expected signs of the coefficients on main variables are based on the discussion on the Additional Analyses Section, and on the other control variables are based on the findings of prior studies. The models are estimated by using the pooled regression clustered by years and cities. [1] For this regression I use one for the Cook's D test or two for the studentized-residual test as the included cutoff. Five observations are identified as outliers. Therefore, 468 out of 473 observations are used in analyses. Bold indicate significance levels of 0.10. Robust t-statistics are reported in parentheses. The sample period is from 2003 to 2013.

Regression Model: Equation (9)

7. Summary and Conclusions

I analyze the impact of three different monitoring mechanisms—internal governance structure-based monitoring, regulation-based monitoring, and competition-based monitoring—on the association between the current period's budget variance and the subsequent period's budget. My goal is to shed light on whether, and to what extent, these monitoring mechanisms alter the pattern of the relationship between the current period's performance and the next period's performance target.

My primary analysis regarding monitoring mechanisms and their association with the budgetary pattern finds following: (1) when cities have the council–manager form of governance, the current period's favorable as well as unfavorable budget variance is more fully reflected onto the subsequent period's budget; (2) when cities have stricter budget-limiting regulations, the favorable budget variance is fully reflected onto the following period's budget, yet unfavorable budget variance is less fully reflected onto the following period's budget; (3) when cities have more aggressive competition in mayoral election, the favorable budget variance is more fully reflected onto the following period's budget, yet the unfavorable budget variance is not reflected onto the subsequent period's budget. Based on empirical evidence of budget ratcheting and cyclic budgetary patterns in these large US cities, I provide an explanation of to what extent the monitoring mechanisms play a role in forming the next period's budget beyond the current period's budget variance.

These asymmetric patterns are consistent with agency theory and the ratchet effect. City officials are incentivized to capitalize on favorable budget outcomes because positive performance can be framed as evidence of competent management, justifying larger future budgets and expanding their political discretion. By contrast, unfavorable budget outcomes are less fully reflected because officials are reluctant to reduce budgets in ways that might constrain future financial flexibility or signal managerial failure. This asymmetry reflects an opportunistic tendency to treat favorable results as permanent but unfavorable results as temporary. The role of monitoring mechanisms reinforces this explanation: council–manager forms of government provide closer oversight of administrations, stricter budget-limiting regulations reduce the ability to obscure unfavorable results, and competitive elections heighten accountability pressures. Collectively, these mechanisms mitigate opportunistic ratcheting and help align budget adjustments more closely with

underlying fiscal realities. A more detailed discussion of how these findings compare with prior literature and highlight the incremental contributions of the study can be found in Section 8.

8. Contributions and Shortcomings

One additional potential source of monitoring mechanism that I do not address in this study is external debt market monitoring. Cities carry a large amount of debt (USD 4.8 billion on average among the top 50 US cities), and cities' budgetary and financial performances are closely monitored by the market. In order to address this concern, I require debt market data at the city level.

My results do not speak to whether or not any of the monitoring mechanisms I consider are associated with the economically or socially optimal budget; setting these targets involves public policy and social welfare considerations that lie outside the scope of my analysis. This study leaves those unanswered questions as suggestions for future research.

Similar to other empirical studies, this study conducts joint hypothesis tests. To be precise, my Hypothesis 2B testing is also a test of the assumption that my proxy for the severity of budget-limiting regulation imposed on a city correctly measures the underlying true characteristic of regulation-based monitoring of that city; the Hypothesis 2C testing is a joint hypothesis of my Hypothesis 2C as well as the assumption that the winning margin correctly captures the true underlying competition in that city. In order to address these concerns, I need to re-estimate the main multivariate regression, Equation (6), with different proxies for the testing of each hypothesis, as addressed in note 20.

This study contributes to the extant literature on both budget ratcheting and agency theory. First, this study provides the first empirical evidence of the association between the current period's budget variance and the subsequent period's budget in the public sector revenues using US city data. Second, and more importantly, it is important to notice that given the single-company setting, prior studies have ignored the implications of monitoring mechanisms imposed in the organizations (Bouwens & Kross, 2011; Leone & Rock, 2002). It is probably fair to assume insufficient variation in terms of monitoring mechanisms. I believe that relying on one corporation's data is the strength of the above studies, since a single-firm setting provides the researcher with a natural setting for holding incentives level and monitoring mechanisms constant across all subdivisions. However, in this study my question concerns how the relation between budget variance and the subsequent budget will react under different types of governmental monitoring mechanisms. I believe that my study sheds light on the role of monitoring in the budget ratcheting literature.

I believe that this study provides future research opportunities by shedding new light on the effectiveness of different monitoring mechanisms. For example, Butler et al.'s (2009) work can be interpreted differently based on my findings. That is, corruption does not cause the higher cost of debt for these relatively highly corrupted states, but their fiscal institutional structure causes these differential reactions in the financial market. Baber and Gore (2008) fail to consider the different types of monitoring mechanisms employed by each state. Their findings on the significance of the US GAAP adaptation on the cost of debt financing for states may suffer from correlated but omitted variable bias due to the lack of monitoring mechanisms imposed by each state. Another example is Gore (2009). In the study, the author implicitly claims that municipal managers opportunistically manage cash levels in order to compensate themselves. However, it is not clear whether or not the reported results will hold if one controls for various types of governance factors, such as tax revenue limits, budget limitations, and shareholders' direct monitoring discussed in this study. Beyond the US context, my findings carry broader implications for municipal finance and governance worldwide. Many countries employ local government structures

that resemble either strong-mayor or council–manager systems, and they too impose fiscal rules and experience varying levels of electoral competition. The evidence presented here suggests that the ratchet effect in budgeting is not solely a US phenomenon, but one that may arise wherever budget allocations are tied to prior outcomes and political incentives are present. At the same time, the moderating role of monitoring mechanisms highlights the importance of institutional design in constraining opportunistic fiscal behavior. For policymakers, this underscores that adopting clear fiscal rules, strengthening council oversight, and fostering electoral accountability can mitigate budgetary distortions. For international scholars, the study's results invite comparative research across countries and institutional settings, thereby enhancing our understanding of how local political and governance arrangements influence fiscal discipline.

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Notes

1 Ingram and Copeland (1981) document that there is supporting evidence that local electoral voters utilize accounting and budgetary data in evaluating elected officials' performance. Throughout this study, I maintain the assumption that career politicians are politically motivated and focus on their re-electivity.

2 Drazen and Eslava (2007) and Veiga and Veiga (2007), using local municipality-level data from Colombia and Portugal, document contradictory evidence. Using Colombia's data, Drazen et al. show evidence of strategic changes in the composition of expenditures, but no election year expansion in deficits and total expenditures. Yet using Portugal's data, Veiga et al. demonstrate opposing results in terms of deficits and expenditures.

3 Some may insist that agency costs will vary inversely with expected competition; the more intense the competition, the more extensive the monitoring will be, such as voluntary audits. Nonetheless, I do not consider audit differences across cities for the following two reasons: (1) during the sampled period, all the top 50 cities earned unqualified audit opinions from their external auditors, and (2) all cities received more than USD 500,000 federal assistance in the form of federal grants, federal funds, or federal awards during the periods considered. Accordingly, all the sampled cities have been required to follow the Single Audit Act of 1984, and none of the sampled city governments failed to meet the audit requirements during the period from 2003 to 2013.

4 One paper by Marlowe (2009) tests the ratcheting explanation using data from several hundred cities in Minnesota from 1994 to 2007. However, his study is more similar to Lee and Plummer's (2007) research; since it utilizes all city-level data from that state, it inevitably includes small cities without sufficient revenue-raising authorities. In these cities, city government administrators function financially more like agents in the independent school districts. As a result, their findings should not be generalized to large cities with revenue-generating authority.

5 However, these studies primarily focus on the expenditures of public entities and largely ignore revenues. The only exception I know of is Poterba (1995b), who considers tax revenues as one of the dependent variables (Table 3, p. 810). The general notion in this line of the literature is that earnings (revenues) have no meaning in a governmental setting (Barton, 2005; Lee & Plummer, 2007). Even though this may be the case for small public domain entities such as independent school districts without tax authority (Lee & Plummer, 2007), the top 50 US cities considered in this study should not be included in this line of argument. In fact, large municipalities in the US are given significant discretionary authority to levy local taxes, as well as modify tax rates, service charges, and size of the debt within a certain range (see Carroll, 2009). Each municipality is also strictly circumscribed to maintain a balanced budget by the city's own charter and codes, as well as the upper-level government—in this case by the state and federal government (Lewis, 1994; Mullins & Wallin, 2004, Tables 1 and 2). This information is verified and updated using either the city's CAFR, charter/codes, or a Factiva search.

6 I do not claim that their models are incorrect; instead, I observe that they do not address the role of monitoring mechanisms in their setting. Given the single-company setting, it is probably fair to assume insufficient variation in terms of monitoring mechanisms. I believe that relying on one corporation's data is the strength of the above studies, since a single-firm setting provides the researcher with a natural setting for holding incentives level and monitoring mechanisms constant across all

subdivisions. Relying on one firm's data is not uncommon in other managerial accounting studies, such as Lee and Plummer's (2007) focus on ratcheting of budget expenditures and Balakrishnan et al.'s (2007) focus on lapsing budgets in the US Army hospital subdivisions. My question concerns how the relation between budget variance and the subsequent budget will react under different types of governmental monitoring mechanisms. I believe that my study sheds light on the role of monitoring in the budget ratcheting literature.

7 Refer to Murphy (2001) for a survey on incentive contracts in accounting research, Eisenhardt (1989) for a survey on the principal–agent theory in organization theory, and Moe (2006) for an overview of the principal–agent theory in the political science literature. Prior studies find that given the potential conflict of interest between the principal and the agent, the monitoring mechanism can play a significant role in reducing agency costs.

8 The considered legislative monitoring devices will be discussed in detail in the sample and data description section. I collect the following rule-based devices imposed at the city level: tax limitation, revenue caps, expenditure limitation, and balanced budget requirements from the upper jurisdiction. I refer to the following prior studies: Lewis (1994), Mullins and Wallin (2004), Benson and Marks (2010), and annual surveys conducted by the National League of Cities for the sampled periods.

9 Governmental Accounting Standards Board, Codification of Governmental Accounting and Financial Reporting Standards, as of 30 June 2008 (Norwalk, CT: GASB, 2008), Sec. 1100.111, 2400.

10 All of this information is collectively reported in the city's comprehensive annual financial report (CAFR), which is the main source of my study.

11 For instance, the city of New York has the following performance measurement systems publicly available: the Citywide Performance Reporting System (CPR), the Mayor's Management Report, My Neighborhood Statistics (MNS), Scorecard Cleanliness Ratings, Citywide Customer Survey Results, etc. In sum, these measurement systems provide both financial and non-financial evaluations of city performance.

12 Most cities utilize multiple sources in collecting revenues, including but not limited to adjusting property taxes, income taxes, sales taxes, other tax rates, and fees and charges for services. According to the National League of Cities 2006 survey of 365 US cities, the most common action taken to boost city revenues is to increase fees and charges for services. Half of all responding city finance officers report that their city did increase service fees and charges in order to keep the budget balanced.

13 It is a survey research conducted by the National League of Cities in 2006 and 2008, and is accessible at www.NLC.org.

14 The other sources of budgetary information are the city's budget reports. I randomly select and cross-check the quality of the budgetary data reported in the CAFRs with the same year's budget reports. The budgetary information is identical.

15 I take advantage of readily available GMP data, which is the US metropolitan gross production from the BEA website (www.bea.gov). The alternative method would be manual collection directly from the CAFRs or budgetary reports; however, according to my manual reading, the reported GMP on a city's CAFR is the same as that reported in Table 1.

16 However, the data on city-level budget-limiting regulations in Lewis (1994)'s study is somewhat old and likely outdated. I update this data using LexisNexis and Municode Library (www.municode.com). In cases where I could not find the relevant information, I address them before explaining the empirical findings.

17 $(ABR_t - OBR_t)$ is the budget variance. If $(ABR_t - OBR_t) < 0$, then it is an unfavorable budget variance.

18 It is important to note that municipal election cycles and budget cycles are not perfectly aligned. Fiscal years, budget preparation schedules, and election dates vary across cities, creating some ambiguity in defining the exact exposure period for political incentives. Following prior political budget cycle research (e.g., Blais & Nadeau, 1992; Alt & Lassen, 2006; Brender & Drazen, 2008), I define the pre-election period as either the election year or the year immediately preceding it. This definition provides a consistent and tractable proxy for a large sample of cities, even if it does not fully capture the precise timing of budget formulation, approval, and implementation. Importantly, the results remain robust under alternative specifications—for example, when restricting the pre-election period to the election year only, the main conclusions are unchanged. I therefore acknowledge the limitation but view this definition as a reasonable approximation of when electoral incentives are most likely to affect fiscal behavior.

19 The unscaled result is not tabulated.

20 The 0.21 drop is based on this calculation, i.e., 0.5940 + (−0.3888) = 0.2052, which is a positive number; yet, it should be interpreted as a future budget decrease since $ABR_{i,t} < OBR_{i,t}$.

21 The following cities are dropped from the sample due to their two-year mayoral election cycles and irregular elections: Arlington, TX; Charlotte, NC; El Paso, TX; Fort Worth, TX; Houston, TX; Memphis, TN; Oklahoma, OK; Pittsburgh, PA; San Diego, CA; and San Antonio, TX. However, when I redefine the pre-election period as either the election year itself or one year ahead of the election in order to preserve the observations, the primary coefficients become much weaker but remain unchanged in terms of their signs.

22 I also consider the average number of candidates in mayoral elections in order to measure political competition at the city level.

23 In line with prior literature, I operationalize *REG* (regulatory intensity) as the number of budget-limiting rules imposed on a city, following the approach of Mullins and Wallin (2004) and Lewis (1994). To distinguish high- versus low-regulation environments,

I use a median split of the total number of restrictions. Although this cutoff is necessarily coarse, it avoids researcher discretion and reflects standard practice in municipal finance research. Similarly, *WIN* (political competition) is proxied by the winning margin in mayoral elections, with the median margin across the sample serving as the threshold for high versus low competition, consistent with Baber (1990) and Mayper et al. (1991). While alternative thresholds could be constructed, the median split ensures comparability across cities and years. Governance structure is captured with a binary indicator *GOV* distinguishing strong-mayor systems from council–manager systems (Giroux & McLelland, 2003; Zimmerman, 1977). This classification captures the most salient institutional difference—whether the executive is elected with independent authority or appointed by the council—while allowing consistent coding across a large sample of cities and years. I acknowledge that this binary measure does not fully capture nuances such as veto authority, appointment powers, committee structures, or party dynamics. However, such features vary considerably across municipalities and are difficult to code consistently at scale. For this reason, I adopt the simplified but widely used binary framework, while noting that future research could incorporate richer institutional details where data availability permits.

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