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THREE ESSAYS ON MUNICIPAL STRUCTURE AND GOVERNMENT FISCAL MANAGEMENT OUTCOMES

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THREE ESSAYS ON MUNICIPAL STRUCTURE AND GOVERNMENT FISCAL MANAGEMENT OUTCOMES

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
Graduate School at the University of Kentucky

By

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ABSTRACT OF DISSERTATION

THREE ESSAYS ON MUNICIPAL STRUCTURE AND GOVERNMENT FISCAL MANAGEMENT OUTCOMES

This dissertation aims to reclassify municipal structures of the U.S. municipalities and investigates the effect of municipal structures on government fiscal management outcomes, including fiscal conditions and fiscal slack balances. This dissertation is comprised of four chapters. The first chapter briefly introduces, and each of the remaining three is an independent research article. The second chapter investigates seven essential structural characteristics of the U.S. municipalities and constructs a municipal structure political-administrative index. It then examines the determinants of municipal structures on a political-administrative dimension. The empirical results show that municipal structure choices are statistically significantly associated with citizens' socioeconomic and demographic characteristics. Citizens' income levels play a crucial role in determining municipal structure changes during the sample period.

The third chapter examines the effect of municipal structures on government fiscal conditions. Municipal structure is operationalized by the municipal structure political-administrative index, which is the focus of the second chapter. There are a variety of mechanisms through which municipal structures can influence government fiscal conditions, among which managerial professionalism, strategy stance, and managerial accountability versus efficiency are theoretically addressed. Empirical evidence shows that a municipal structure that is more administrative is associated with healthier fiscal conditions in cash solvency, dependence on intergovernmental transfers, and debt level. Particularly, there is an inverted U-shaped relationship between the municipal structure index and governments' fiscal conditions. Moreover, municipal structures moderate the influence of external environmental factors.

The fourth chapter investigates the determinants of local government's fiscal slack in a political-budgetary-managerial framework. The research argues that voters' preferences, government's budgetary performance, and government internal management work interactively to influence government fiscal slack, and it proposes appropriate indicators for the three explanatory dimensions. Particularly, government internal management is operationalized by the municipal structure political-administrative index. Empirical results show that voters' anti-tax and pro-spending sentiment have a negative effect on the size of government fiscal slack, and government's budgetary performance exerts a positive impact. Moreover, government internal management modifies the effects of voters' preferences and government' budgetary performance on government fiscal slack.

KEYWORDS: Municipal Structures, Political-Administrative Index, Government Fiscal Management, Fiscal Conditions, Fiscal Slack

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05/02/2019

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DEDICATION

To my great mother Dexian Zhu.

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CHAPTER 1. INTRODUCTION

Municipal structures as one of the fundamental institutional settings in the U.S. municipalities play an important role in organizing city politics and influencing policy formulation and implementation (Frederickson, Johnson, and Wood 2004b; Svara and Watson 2010). There are five statutory forms of municipal structures in the U.S. municipalities: mayor-council, council-manager, commission, town meeting, and representative town meeting. Mayor-council and council-manager are the most widely adopted statutory municipal structures, and the other three are adopted by a minority group of municipalities, mainly in the New England states. Most previous studies, and also this dissertation, primarily focuses on the mayor-council and council-manager municipal structures.

Based on the traditional wisdom, the main characteristics of the mayor-council structure include: The mayor is elected separately from the council and elected directly by the voters, the mayor is responsible for administrative affairs, and the council is responsible for legislation (Frederickson and Johnson 2001). The main characteristics of the council-manager structure include: The council is responsible for both administrative affairs and legislation, the council usually appoints a professional manager as the chief administrative officer to manage administrative affairs, and the mayor is a ceremonial position and is usually selected by council members on a rotating basis (Frederickson and Johnson 2001).

Municipalities' structures are dynamic and adapt over time (Svara and Watson 2010). Before the early twentieth century, the strong mayor or classic mayor-council was the dominant municipal structure, which was suited to machine politics and resulted in widespread corruption of governments (Judd and Swanstrom 2015). The reformed

manager or classic council-manager structure was invented in the Progressive Era. Its proponents aimed to reduce corruption, withstand machine politics, and provide public services efficiently (Judd and Swanstrom 2015; Wheeland, Palus, and Wood 2014). Since the 1950s, cross-adoption of structural characteristics between the mayor-council and council-manager structures is so common that the boundary between them has become ambiguous. The dichotomous separation of the primary municipal structures into the mayor-council or council-manager has limitations because it ignores important subsidiary features.

Previous studies have used various methods to reclassify municipal structures, among which the "Type III City" framework (the political, the administrative, and the adapted) of Frederickson, Johnson, and Wood (2004a, 2004b) is the most influential. The second chapter of this dissertation creates an innovative municipal structure political-administrative index to reclassify municipal structures by examining seven essential structural characteristics that can distinguish municipal structures. Compared to the previous efforts, the index has the merit of comprehensively evaluating the political or administrative nature of municipal structures by investigating more structural characteristics. After introducing the index and discussing its validity and reliability, the second chapter investigates the determinants of municipal structures on the political-administrative dimension. It summarizes the political conflict theory and class cleavage theory from the related literature and incorporates these theories into the theoretical model of cost analysis. Empirical results demonstrate that the municipal structure political-administrative index is tightly associated with citizens' socioeconomic and demographic characteristics, most of which are consistent with the theoretical predictions and previous

studies. Regarding the changes in municipal structures during the sample period, the research finds that municipalities that have higher per capita incomes are more likely to adapt toward the administrative structure.

The third chapter aims to relate municipal structures, which is operationalized by the municipal structure political-administrative index, to government fiscal conditions. Municipal structures are correlated with government internal management through a variety of mechanisms. The administrative municipal structure promotes managerial professionalism and efficiency and stimulates officials to act as prospectors in the choice of managerial strategy stance. These effects lead to a positive correlation between the municipal structure political-administrative index and government fiscal performance. On the other hand, considering the public nature of governments, officials' accountability to the public and prompt reacting to the dynamic demands of voters are also important for improving government performance. This study accordingly hypothesizes that the municipal structure that mixes the political and administrative characteristics may result in better fiscal conditions, which implies an inverted U-shaped relationship between the municipal structure index and indicators of government fiscal conditions. In addition, municipal structure can moderate effects of the factors of external environment on government fiscal performance. The empirical evidence supports the proposed hypotheses for the fiscal conditions of governments in cash solvency, dependence on intergovernmental transfers, and debt level. The evidence becomes stronger when using instrumental variables to solve the endogeneity problem of municipal structures.

The last chapter examines the effect of municipal structures on government fiscal slack in a three-dimensional framework composed of voters' preferences, government's

budgetary performance, and government internal management. Particularly, government internal management is operationalized by the municipal structure political-administrative index. Saving fiscal slack in economic booms to prepare for fiscal crises in the future is a prevailing strategy adopted by the U.S. state and local governments. Fiscal slack of local government is a more salient issue compared to the state due to the large size and informal forms. The study uses Massachusetts municipalities as a research sample. The empirical findings show that the defined budgetary gap is positively and statistically significantly related to government's fiscal slack balances, which is measured by either the level of stabilization funds or the sum of stabilization funds and other informal forms of fiscal slack resources. However, the municipal structure political-administrative index weakens the positive effect of the budgetary gap. The pro-spending sentiment of voters has a negative effect on government fiscal slack, and the municipal structure index weakens the negative effect.

CHAPTER 2. THE DETERMINANTS OF MUNICIPAL STRUCTURES ON A POLITICAL-ADMINISTRATIVE DIMENSION

2.1 Introduction

Municipal structures play an important role in organizing city politics and influencing policy formulation and implementation (Frederickson, Johnson, & Wood, 2004b; Svara & Watson, 2010). Formal municipal structures provide the framework within which the policy maker "sets the rules of participation, exercises authority by making and carrying out the law (statutes, ordinances, or regulations), selects persons to politically represent all residents or some subset of residents, operates a permanent bureaucracy, provides services, and determines who will pay what in taxes." (Frederickson, Johnson, & Wood, 2004b). Also, municipal structures can "supply particular channels for information to travel through and among organizations." (Clingermayer & Feiock, 2001).

Like most scholars in this field, in this study, we focus on U.S. municipalities with the statutory form of mayor-council or council-manager.[1] Municipalities' structures are dynamic and adapt over time (Svara & Watson, 2010). Before the early twentieth century, the strong mayor or classic mayor-council was the dominant municipal structure, which was suited to machine politics and resulted in widespread corruption of governments (Judd & Swanstrom, 2015). The reformed manager or classic council-manager structure was invented in the Progressive Era. Its proponents aimed to reduce corruption, withstand machine politics, and provide public services efficiently (Judd & Swanstrom, 2015;

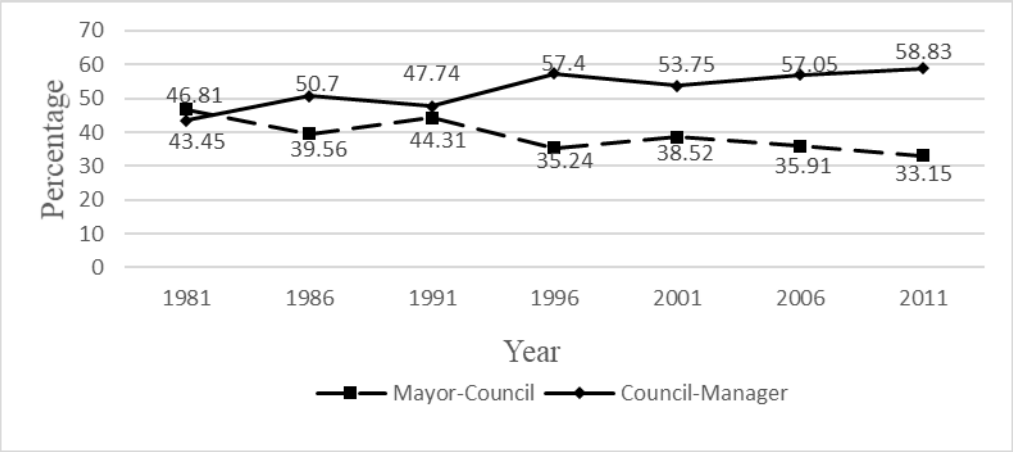
[1] The other three statutory municipal forms include the commission, the town meeting, and the representative town meeting. These forms are adopted by a minority group of municipalities, mainly in the New England states. According to the data from the Municipal Form of Government surveys by the International City/County Management Association, 9.7%, 9.7%, 8.0%, 6.7%, 7.6%, 6.7%, and 8.0% of the responding municipalities adopt these three forms in 1981, 1986, 1991, 1996, 2001, 2006, and 2011.

Wheeland, Palus, & Wood, 2014). The classic council-manager structure, first adopted in 1908 in Staunton, Virginia, was the most influential reformed municipal structure in the first half of the twentieth century (Choi, Feiock, & Bae, 2013; Svara & Watson, 2010; Wheeland, Palus, & Wood, 2014).

Conventional wisdom holds that, since the 1950s, the balance between various types of municipal structures has been stabilized (Choi, Feiock, & Bae, 2013). There have been, however, two emerging trends in municipal structure changes in recent decades. First, cross-adoption of structural characteristics between the mayor-council and council-manager structures is so common that the boundary between them has become ambiguous. The dichotomous separation of municipal structures into the mayor-council or council-manager has limitations because it ignores important subsidiary features. Scholars have proposed the so-called "Type III City" framework to reclassify municipal structures (Frederickson, Johnson, & Wood, 2004a, 2004b; Frederickson & Johnson, 2001; Frederickson, Wood, & Logan, 2001). Second, based on data from the Municipal Form of Government surveys by the International City/County Management Association (ICMA), between 1981 and 2011, the proportion of mayor-council municipalities was still declining and the proportion of council-manager municipalities was increasing. Figure 1.1 displays the trends.[2]

[2] Figure 1.1 displays the percentages of only the mayor-council and council-manager municipalities, ignoring municipalities with the other three statutory forms. Therefore, the sum of percentages in each year is less than 100%.

Figure 1.1 Percentages of Mayor-Council and Council-Manager Municipalities by Year



We aim to examine what factors determine municipal structure choices in this study. Some previous studies have involved this topic, but most previous studies use cross-sectional data and a small sample of municipalities, usually the municipalities that have a large population size (Choi, Feiock, & Bae, 2013; Gordon, 1968; Kessel, 1962; Knoke, 1982; Lineberry & Fowler, 1967). We continue this thread of research and aim to contribute to the scholarship both theoretically and empirically with panel data for a large number of municipalities.

This research is organized as follows: Section two briefly introduces the related literature; section three measures municipal structures on a political-administrative dimension and discusses the reliability and validity of the municipal structure index; section four builds a theoretical model to explain municipal structure choices; section five proposes some hypotheses; section six introduces the methodology, and section seven presents the empirical findings. This research ends with brief conclusions in the last section.

2.2 Related Literature

This section examines both the theoretical argument and empirical evidence on municipal structures. Scholars have developed theories from political and social science to explain municipal structure adoptions and changes. Political conflict theory and class cleavage theory dominate these theories. The research considered here is based on the idea that citizens can form and express preferences about municipal structure choices and that municipal structure reflects those preferences.

Kessel (1962) develops the political conflict theory and discusses municipal government structure choices from the perspective of a conflicting political environment. Kessel (1962) holds that the political mayor-council structure is adopted in municipalities where defined social norms and benefits must be adhered to, where conflicting benefits exist and have to be arbitrated, and where disadvantaged groups need political channels for expression.

The social cleavage theory, which is utilized by many scholars in this field, holds that groups from various backgrounds in terms of religion, wealth, profession, race, ethnicity, and educational attainment, have different preferences in methods of political participation and in pursuit of interests. Hirschman (1982) argues that municipal structures are highly dynamic and change based on the shifting values between pursuits of the private interests of individuals and the public interests of the society as an entity. Such scholars as Banfield and Wilson (1963), Lineberry and Fowler (1967), Hays (1974), Knoke (1982), Simmons and Simmons (2004), and Choi, Feiock, and Bae (2013) believe that the shift of municipal structures from the unreformed strong mayor to the reformed council-manager is the result of contests between two groups: (1) the moralistic middle- and upper-class

predominantly white native Protestants and business and professional elite, who have higher educational degrees, hold "public regarding ethos," and seek a structure responsive to their interests and (2) the working class, minorities, the poor, and immigrants, who want a government responsive to their needs.

Different from the political conflict theory and class cleavage theory, Knoke (1982) describes the adoption of the reformed council-manager municipal structure as an innovation diffusion process. Simmons and Simmons (2004) explain municipal structure choices from five perspectives, including government design flaws, political conflicts, sociodemographic cleavage, government legitimacy problems, and leadership deficits.[3]

The evidence from empirical exploration is mixed. Kessel (1962) finds that the reformed council-manager structure is associated with a medium-size population, a high growth rate, a small percentage of foreign-born population, and an economic base with a large fraction in professional service and a small fraction in manufacturing. Wolfinger and Field (1966) and Farnham and Bryant (1985) discover that the region and age of cities are essential in determining governmental structures. Findings of Lineberry and Fowler (1967) demonstrate that reformed cities are more homogenous in terms of race, ethnicity, and religion, which is consistent with the social cleavage theory. Gordon (1968) demonstrates that the fraction of immigrants is associated with a higher probability of adopting unreformed political municipal structures. Dye and MacManus (1976) use discriminant function analysis to explore the determinants of municipal government structures, and they find that the ethnicity composition predicts the type of constituency (ward or at-large) well,

[3] Many of their perspectives are close to the political conflict theory and class cleavage theory. Refer to Simmons and Simmons (2004) for details.

but the region of municipalities is a better predictor of election method (partisan or nonpartisan).

Some recent studies also provide evidence. Simmons and Simmons (2004) use ordinal values to measure municipal structure changes on a political-administrative dimension. Utilizing the ordered logit model, they find that municipal structures are affected by the race, ethnicity, and educational attainment of citizens. Choi, Feiock, and Bae (2013) employ a historical dataset that spans 75 years and contains the 191 largest cities in 1930 to explore the determinants of adoption and abandonment of the council-manager structure. Their results show that the economic conditions of municipalities are the most essential determinants.

Previous studies of municipal structure adoption have several limitations. In considering the structural choices, almost all previous studies focus on the shift between the mayor-council and council-manager structures. However, in recent decades, municipalities on each of these statutory platforms are absorbing characteristics of the other. A pure city structure, either mayor-council or council-manager, is inadequate to reflect the complex features of municipal structures in reality. So far, there is a lack of evidence on determinants of municipal structures among multiple possible choices. Second, most previous studies focus on a limited number of municipalities, usually the ones with a large population. Therefore, lessons have limited external generalizability. Last, much prior research uses the method of comparison of sample means of municipalities' characteristics in different structures, and most previous studies use one-year cross-sectional data. Although some recent studies utilize a panel dataset that spans a

longer time period and adopt more advanced econometric models (Choi, Feiock, & Bae, 2013; Simmons & Simmons, 2004), evidence is insufficient.

2.3 Measuring Municipal Structures on a Political-Administrative Dimension

2.3.1 Merits of the Municipal Structure Political-Administrative Index

The motivation of reclassifying and measuring municipal structures on a political-administrative dimension is rooted in the limitation of the binary separation of the main municipal structures into the mayor-council and council-manager forms. As argued in many previous studies, the prevalent cross-adoption of characteristics between these two structures makes a dichotomous classification problematic (Carr & Karuppusamy, 2008, 2009, 2010; Frederickson, Johnson, & Wood, 2004a, 2004b; Nelson & Svara, 2010). We provide statistical evidence to support this argument, using the data from the Municipal Form of Government survey in 2011 by the ICMA.

Based on the traditional wisdom, the main characteristics of the mayor-council structure include: The mayor is elected separately from the council and elected directly by the voters, the mayor is responsible for administrative affairs, and the council is responsible for legislation (Frederickson & Johnson, 2001). The main characteristics of the council-manager structure include: The council is responsible for both administrative affairs and legislation, the council usually appoints a professional manager as the chief administrative officer to manage administrative affairs, and the mayor is a ceremonial position and is usually selected by council members on a rotating basis (Frederickson & Johnson, 2001).

Among the 3,566 municipalities responding to ICMA's survey in 2011, 1,182 (33%) used the mayor-council structure, and 2,098 (59%) used the council-manager structure. Other structures account for 8%. Among the mayor-council municipalities, 1,093 had a mayor elected directly by voters, but 50 had a mayor that was selected by council members from themselves or council members rotated into the position. In 620 of the 1,182 mayor-council municipalities, the mayor was independent from the council; however, the mayor served in the council in 514 municipalities. Moreover, in 717 of the 1,182 mayor-council municipalities, there was a chief administrative officer who was responsible for or helped the mayor manage administrative affairs. The statistical analysis shows that the mayor-council municipalities used many of the structural characteristics of the council-manager structure. Similar cross-adoption of structural characteristics existed in the council-manager municipalities. For instance, among the 2,098 municipalities that reported a council-manager structure, 1,039 had a mayor who was directly elected by voters. This is a sharp contrast to the traditional wisdom. Data from ICMA's surveys for other years (2001, 2006) show similar findings.

Both existing evidence from previous studies and our statistical analysis of survey data reveal that separating the main municipal structures into the mayor-council and council-manager forms is problematic. In this study, we investigate seven essential structural characteristics (presented in table 1.1) of municipalities. These structural characteristics are well discussed by Carr and Karuppusamy (2008, 2009), Frederickson, Johnson, & Wood (2004a, 2004b), and Frederickson and Johnson (2001), who attempt to use the characteristics to reclassify municipal structures. We assign each characteristic a numerical value of 0, 0.5, or 1 based on its political or administrative nature. We conduct

factor analysis of the seven values of structural characteristics to construct a municipal structure political-administrative index. A lower index indicates a more political municipal structure, underscoring checks and balances between the mayor and council members, representation of interests of particular groups and specific districts, direct responsiveness and accountability of the mayor to voters, and influence of parties in local politics. On the contrary, the more administrative municipal structure, indicated by a higher index, stresses professional management of municipality affairs, membership of the mayor in the council, concentration of authority in council, and elimination of partisan influence on elections.

Table 1.1 Standards of Constructing Municipal Structure Political-Administrative Index

Standards\Coded values	0	0.5	1
Statutory form	Mayor-council		Council-manager
Existence of Chief Administrative Officer	No		Yes
Mayor election method	Direct election		Non-direct election
Mayor is independent of council	Yes		No
Authority of mayor to veto council	Yes		No
Partisan or nonpartisan election of council members	Partisan		Nonpartisan
At-large or by-district election of council members	By-district	Combination	At-large

Previous studies have proposed various approaches to reclassify municipal structures, most of which attempt to reclassify municipal structures into several types. Among them, the approach of Carr and Karuppusamy (2008, 2009, 2010) is closest to ours in this study. Modifying the "Type III City" framework (the political, the administrative, and the adapted) of Frederickson, Johnson, and Wood (2004a, 2004b), Carr and Karuppusamy (2008, 2009, 2010) classify the mayor-council and council-manager structures into six subtypes, including the political, adapted political, conciliated political, conciliated administrative, adapted administrative, and administrative. Carr and

Karuppusamy (2008, 2009) argue that these subtypes of municipal structures range from the most political to the most administrative.

A limitation in the approach of Carr and Karuppusamy is that they investigate many more structural characteristics than that they use to make reclassification, and the boundaries between their subtypes of municipal structures are sometimes ambiguous. This limitation is somewhat expected because as more structural characteristics are involved to reclassify in practice, more subtypes must be defined. Otherwise, many municipalities cannot be categorized into any specific type. Therefore, our approach of constructing an index to reclassify municipal structures on a political-administrative dimension has the merit of comprehensively evaluating the political or administrative nature of municipal structures by investigating more structural characteristics. We discuss the reliability and validity of the index below.

2.3.2 Index Reliability

The common method to assess reliability of an index is to evaluate its "dependability, stability, consistency, reproducibility and lack of distortion." (Kerlinger & Lee, 2000). The seven components of our index are objective features for assessing the political or administrative nature of municipal structures. Municipality samples in ICMA's surveys are selected based on their population size. In each survey year, ICMA mails survey questions to all municipalities with population size above 2,500 and to selected ones among the small-sized municipalities. To mitigate selection bias, our study includes only the municipalities with population size above 2,500. The response rates of ICMA's surveys in 2001, 2006, and 2011 are all around 50%, which is fairly high for a national survey of local governments. Our data to construct the index are accessible from ICMA, although

they are not free. Therefore, the results are reproducible. The form of ICMA's survey questions are uniform across time, with few changes. This improves the uniformity and consistency of the data sources. Moreover, ICMA's surveys have been conducted every five years since 1981. Across-time data makes the index more dependable (Clark, 2015).

A useful technique to assess reliability of an index is to evaluate the correlation of the index components. Table 1.2 reports the Pearson correlation coefficients for each pair of the index components in our samples and the statistical significance level. The components are positively correlated with each other at the 0.01 level, providing evidence of reliability.

Table 1.2 Correlation Matrix of Index Components

	a	b	c	d	e	f	g
a	1						
b	0.5382***	1					
c	0.3211***	0.1871***	1				
d	0.4685***	0.3272***	0.3159***	1			
e	0.4781***	0.3312***	0.2901***	0.5935***	1		
f	0.2654***	0.2212***	0.0738***	0.2069***	0.1950***	1	
g	0.2338***	0.1697***	0.1706***	0.2843***	0.3228***	0.0988***	1

Another technique to evaluate reliability of an index is to calculate the value of Cronbach's alpha. Values of Cronbach's alpha range between 0 and 1, with a higher value indicating closer correlation between components of the index (Clark, 2015). The value of Cronbach's alpha is 0.75 in our case, indicating that reliability of our index is acceptable (Berman & Wang, 2017).

2.3.3 Index Validity

"With validity, the goal is to figure out if we are measuring the concept that we intended to measure." (Clark, 2015). Adopting the method of Clark (2015), we assess

validity of our index in three aspects: Content validity, criterion-related validity, and construct validity, using theoretical arguments, existing evidence, and statistical techniques.

Content validity requires that components of the index should include all possible items that can measure the core concept (Kerlinger & Lee, 2000), and there should be evidence from the literature demonstrating the validity of these items in measuring the concept. The requirement of "all possible items" is extremely strict and can be satisfied only theoretically. In practice, there may be dozens of potential components (structural characteristics of municipalities). However, we need to balance thoroughness with parsimony and to consider data availability. The seven components we include in our standards in classifying municipal structures are well discussed in the literature by studies such as Carr and Karuppusamy (2008, 2009), Frederickson, Johnson, & Wood (2004a, 2004b), and Frederickson and Johnson (2001). Therefore, it is safe to use them to construct our municipal structure index. Particularly, we use more structural characteristics relating to institutional settings than to management practice.

Criterion-related validity requires the constructed index to be correlated with other potential measures of the same concept. In our case, the statutory municipal forms, mayor-council or council-manager, are traditionally used as a binary measurement of municipal structures. The former is the political structure and the latter is the administrative structure. The positive correlations between the statutory municipal form with other six components, which are presented in the first column in table 1.2, demonstrates that the components of our index are valid.

Construct validity is the most important and complex form of measurement validity (Clark, 2015; Kerlinger & Lee, 2000; Morgan et al., 2001). Assessment of construct validity is usually conducted by theoretically connecting the components of the index to the concept that we intend to measure. Also, construct validity asks "which factors account for the variance in performance of the thing we are trying to measure?" (Clark, 2015). We first provide a theoretical analysis and then use factor analysis to assess the construct validity of our index.

As noted previously, the statutory municipal form, mayor-council or council-manager, is the traditional separation of municipal structures into the political or administrative ones. Although this separation is problematic because of the cross-adoption of structural characteristics between themselves, it has intuitive validity to be used as one component of our municipal structure political-administrative index.

The existence of a chief administrative officer (CAO) is an administrative municipal structure characteristic. CAOs are usually trained experts who hold professional degrees and have extensive experience in public management and administration (Demir & Reddick, 2012; Zhang & Feiock, 2009; Nalbandian, 1999). They usually have considerable discretion in municipal governments' policy formulation and implementation (Zhang, 2014; Zhang & Feiock, 2009; Demir & Reddick, 2012; Selden, Brewer, & Brudney, 1999). Placing local government management under a CAO has the potential to increase government management efficiency (Deno & Mehay, 1987; Stumm & Corrigan, 1998).

Political municipal structures are characterized by a mayor who is directly elected by voters and works independently of the council (Frederickson, Logan, & Wood, 2003;

Frederickson, Johnson, & Wood, 2004a, 2004b; Carr & Karuppusamy, 2008, 2009). Checks and balances between the mayor and council members constrain their discretion and mitigate deviations in their behavior from citizens' preferences (Persson, Roland, & Tabellini, 1997; Persson & Tabellini, 1999), and citizens will have alternative channels to express their preferences. Besides, as argued by Persson, Roland, and Tabellini (1997), "under appropriate checks and balances, separation of power also helps the voters elicit information."[4]

Political municipal structures are also characterized by the authority of the mayor to veto council-passed decisions. Public policies can be approved only when both of the players agree to them (Coate & Knight, 2011). The mayor's power of vetoing increases the potential of checks and balances between the mayor and council and provides citizens more channels to defend their benefits. This characteristic reduces the cost of citizens for monitoring elected public officials but may increase the political struggles in localities and lead to inefficient government policy making or implementation (Judd & Swanstrom, 2015; Mossberger, Clarke, & John, 2015).

Partisan and district elections of council members are political municipal structure characteristics. Partisan elections and council members who are elected by district usually focus more on the benefits of particular groups or precincts. The political motivation of catering to a specific group or constituency that can contribute more political support encourages elected officials to invest a substantial amount of resources in public programs

[4] Although the argument of Persson and Tabellini (1997) is implied in the context of comparison between the presidential or parliamentary systems, it is reasonable to apply the argument in the comparison between diverse structures in municipalities.

that might not produce the maximum level of marginal benefits and, hence, creates government inefficiencies.

We finally use factor analysis to assess whether the seven components of our municipal structure index are appropriately loaded. The factor analysis reports only one factor with an eigenvalue greater than one, demonstrating that the components of our index measure a core concept, which we interpret as the political or administrative nature of municipal structures. Factor loadings of the principal factor are presented in table 1.3. The principal factor has positive loadings for all the seven components, among which the statutory form, existence of CAO, whether mayor is independent of council, and authority of mayor to veto council, are more highly loaded.

Table 1.3 Factor Analysis of Seven Components of the Index

Index Components	Factor 1	Uniqueness
Statutory form	0.7173	0.4483
Existence of Chief Administrative Officer	0.5560	0.6146
Mayor selection method	0.4107	0.8140
Mayor is independent of council	0.6923	0.4918
Authority of mayor to veto council	0.6991	0.4785
Partisan or nonpartisan election of council members	0.3127	0.8742
At-large or by-district election of council members	0.3783	0.8337

2.4 A Theoretical Model to Explain Municipal Structure Choices

This section incorporates arguments of political conflict theory and class cleavage theory into our theoretical model of the cost analysis of citizens. The fundamental idea of political conflict theory and class cleavage theory is that the municipal structure choices are results of contests between groups with different socioeconomic and demographic characteristics, who have various interest pursuits and preferences for public policies. We further argue that the socioeconomic and demographic characteristics of citizens in

municipalities can influence the costs of monitoring government officials and the inefficiency costs of policy making or implementation. The aim of minimizing the total costs determines citizens' municipal structure choices. The main purpose of this section is to provide an alternative explanation of municipal structure choices.

The theoretical model is based on the fundamental assumption that citizens in local communities in a representative democracy tend to choose the government structure that can best delegate governmental management to professionally trained experts for efficiency gains, while holding public officials accountable.[5] [6] [7] In this present study, we define accountability as the extent to which citizens in municipalities can make public officials, both elected politicians and appointed bureaucrats, be representative of their particular interests and can have channels to express their preferences in public policy

[5] This assumption is based on the premise that local citizens have the autonomy to customize their government structures in accordance with local characteristics. This is consistent with the argument of Frederickson at al. (2004a, 2004b) but is criticized by Nelson (2011). The latter argues and empirically finds that constraints on local government structural choices by states restrict municipalities' autonomy in determining their own governmental structures. After an extensive examination of state statutory and constitutional provisions on structures of local governments with population more than 10,000, Nelson (2011) finds that 28 states grant the majority of their municipal governments the autonomy to choose their form at will whereas other states do not. The constraints on municipal structures and modifications are usually tied to the population size, based on which home rule is designated. To make the argument of this present research more reliable, the scope of municipalities may be limited to the ones that obtain home rule, or at least to the ones above a certain population size threshold.

[6] "Accountability is an important yet elusive concept whose meaning and characteristics differ depending upon the context" (Posner, 1995). In political science, accountability usually means the agent must be answerable to the higher authority who delegates authority to act (Behn, 2001; Romzek & Dubnick, 1987). Political accountability concerns the degree to which the electorate can control politicians (Lassen, 2000), usually through regular elections and institutional designs such as initiative and petition.

[7] Two components in terms of efficiency exist when this concept is utilized in public management and economics research: technical efficiency and distributive efficiency. Technical efficiency focuses on the relationship between inputs and outputs (Mossberger, Clarke, & John, 2015). "The higher the output of some productive process relative to the input the more technically efficient that process is." (Mossberger, Clarke, & John, 2015). Distributive efficiency concerns the relationship between demand and supply and it is considered to be more distributive efficient when "more people receive the type and level of service they want." (Mossberger, Clarke, & John, 2015).

making. Like many scholars, we define efficiency as the capacity of governments to enhance public resource utilization.

The proposed assumption is reflected in a wide array of prior studies in political science. Shepsle (1988) argues that when evaluating a representative government, it is necessary to consider not only its responsiveness to the constituents but also its efficiency in dealing with public business. Adsera, Boix, and Payne's (2003) standards of a well-functioning government include efficiency and incorruptness (accountability). Putnam et al. (1994) point out that a good democratic government is the one that can provide citizens "the right to petition their government in the hope of achieving some individual or social goal" (accountability) and actually "gets things done" (efficiency).

The second important assumption is that the elected officials place high priority on meeting the demands of their constituency; however, professional managers focus on management efficiency and effectiveness. The main goal of elected public officials is to get reelected through satisfying demands of voters, and they seek to use political power to pursue public policy and personal goals (Persson, Roland, & Tabellini, 1997). The expert managers, who are appointed by elected officials, have to consider not only the demands of voters that are channeled through orders of the elected officials but also the pressure of building an outstanding reputation among peers in such professional organizations as ICMA and the Government Finance Officers Association (GFOA) (Dunn & Legge, 2001). The reputation incentive of managers may compel them to deviate from mandates of elected officials when their professional judgement is at odds with orders from the latter.

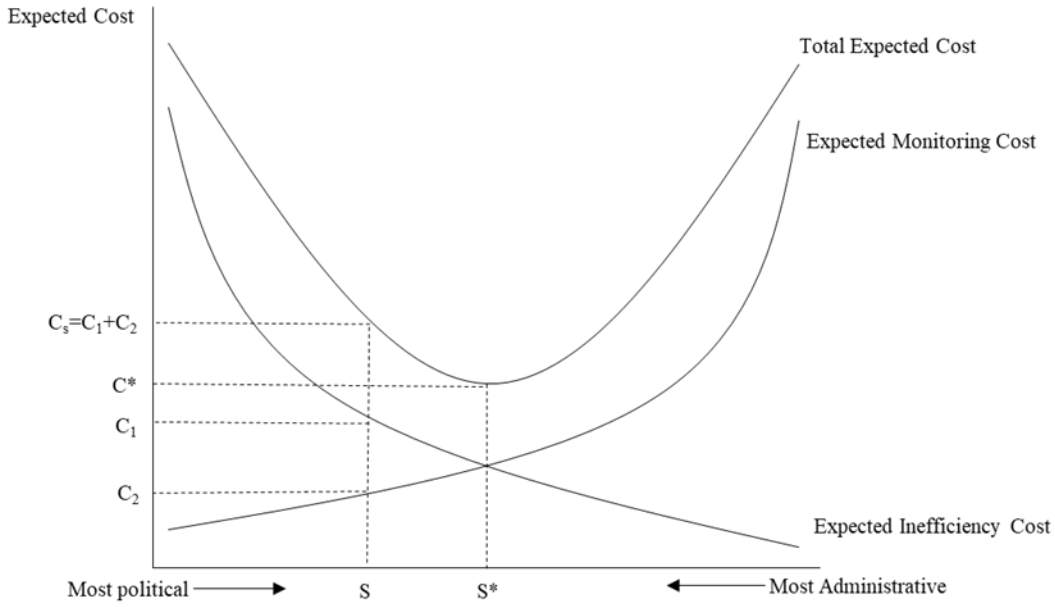
Delegating government management to professionally trained managers has the potential to improve management efficiency but enhances the difficulty of holding the

managers accountable (Carr, 2015; Deno & Mehay, 1987; Stumm & Corrigan, 1998). Therefore, the monitoring cost of citizens increases. On the other hand, government management under directly elected politicians, who focus more on political responsiveness and gaining reelection, can assure accountability but raise inefficiency cost due to the lack of managerial expertise. The two simultaneous goals of citizens create a dilemma: They have to make a trade-off between the interdependent monitoring cost and inefficiency cost.

We construct an index to indicate the political or administrative nature of municipal structure and array municipal structures on the political-administrative dimension (refer to discussions in section three). Figure 1.2 illustrates our fundamental theoretical arguments. The abscissa indicates the political-administrative dimension of municipal structures. The most political structure is placed at the left end, and the most administrative structure is placed at the right end. Citizens' expected monitoring cost increases when municipal structures move from the political to the administrative; meanwhile, their expected inefficiency cost declines.

The core of our theoretical model is the trade-off between the expected inefficiency cost and monitoring cost with movement along the political-administrative dimension. The optimal structure should be the one that minimizes the total expected costs of inefficiency and monitoring. As exhibited in figure 1.2, the total expected cost (C_s) is calculated by vertically summing the corresponding expected inefficiency cost (C_1) and expected monitoring cost (C_2) at a certain structure S. The optimal structure is denoted as S^*, with corresponding total cost at the minimum level C^*.

Figure 1.2 Theoretical Model of Optimal Municipal Structure



Notes: The cost curves assume positive first derivative (marginal cost) and second derivative (increasing cost) in the appropriate direction. The optimal point is found where the absolute values of the first derivatives (marginal costs) are equal. That does not imply the levels of the costs are equal, but that is a possibility that is graphed. The optimal point could be on either side.

The exact place of S^* depends on the shapes of the two cost curves. We assume a concave curve (positive second derivative) for both types of cost, meaning each cost increases at an increasing rate in the appropriate direction. The sum must have a positive second derivative, also being concave. As long as costs are low on one end for each, the optimal structure is a point between the left and right ends. We place the optimal structure S^* at the point where the corresponding expected monitoring and inefficiency cost curves intersect for simplification. In general, the optimum is at the point where both curves have the same absolute value of the first derivative.

The optimal structure S^* changes over time and varies across municipalities. The actual place of S^* is presumably determined by citizens' socioeconomic and demographic characteristics, which can influence the monitoring and inefficiency cost curves and derivatives. If either cost exhibits very slow marginal change, then controlling the other cost dominates the decision. If monitoring is easy, reducing inefficiency with an administrative structure is an optimal choice. If the opposite, reducing monitoring cost through increasing the political nature of municipal structures is preferred.

2.5 Hypotheses

Based on previous studies and the theoretical model, we discuss and propose hypotheses with regard to the effects of some socioeconomic and demographic characteristics of citizens or municipalities on municipal structure choices in this section. Those characteristics include income level and inequality, educational attainment, race composition, economic conditions, and industry structures. Political conflict and class cleavage theory imply that these characteristics are associated with preferences over municipal structure choices. In addition, municipality size and the existence of citizens' initiative are in the model. Municipality size relates to efficiency of government management and cost of monitoring officials, and initiative allows preferences however formed to be expressed.

High income groups have advantages in accessing necessary information on public policy making and government operation because information collection is costly (Downs, 1957). Therefore, monitoring the elected public officials is presumably easier for citizens with higher income. From another perspective, economic performance and wealth of the community contribute to accumulation of social capital (Knack & Keefer, 1997; Putnam

et al., 1994); meanwhile, social capital usually leads to "low social polarization, and formal institutional rules that constrain the government from acting arbitrarily." (Knack & Keefer, 1997). Therefore, wealthy municipalities are usually imbedded with formal institutions that can effectively constrain public officials' rent seeking behavior. In municipalities with higher per capita income, citizens may feel it is easier to make public officials accountable and more necessary to realize government efficiency. Hence, reducing inefficiency with a more administrative municipal structure is an optimal choice.

***Hypothesis 1*:** The per capita income is positively correlated with the municipal structure political-administrative index.

Educational attainment contributes to citizens' active political participation and increases their exposure to cosmopolitan culture. It helps build civic engagement and interpersonal trust, which are crucial components of social capital (Brehm & Rahn, 1997; Leighley & Vedlitz, 1999). "Greater levels of civic engagement and interpersonal cooperation should lead to closer monitoring and to more abundant information about the public arena." (Adsera, Boix, & Payne, 2003). Therefore, gathering information on government operation and monitoring public officials are relatively easier for groups with higher educational attainment. In addition, higher educational attainment is generally correlated with professional and managerial occupations. The fraction of citizens with educational attainment at high school or above among the citizens who are 25 years old and over is an indicator of the overall educational attainment of municipalities. In municipalities with higher educational attainment, citizens may feel it is easier to make public officials accountable and more important to realize government efficiency. Thus, reducing inefficiency with a more administrative municipal structure is an optimal choice.

Hypothesis 2: The educational attainment of citizens is positively correlated with the municipal structure political-administrative index.

The effect of income inequality can be examined through its relationship with political engagement in municipalities (Goodin & Dryzek, 1980; Solt, 2004, 2008). Solt (2008) argues that income inequality may increase citizens' political engagement because "higher levels of inequality cause divergences in political preferences that fuel debates about the appropriate course of policy; these debates then cause higher rates of political mobilization." Therefore, in municipalities with a higher level of income inequality, citizens will more actively participate in political activities and require channels to express their demands. Hence, the political municipal structures can satisfy the preferences of citizens. In municipalities with higher levels of income inequality, citizens may feel it is more important and difficult to make public officials accountable to defend their own benefits. Also, elected officials are in a better position to mediate interest conflicts in the community. This research uses the ratio of mean income to median income of citizens as measurement of the income inequality.

Hypothesis 3: The income inequality is negatively correlated with the municipal structure political-administrative index.

Previous studies have demonstrated the important role of racial and ethnic fractionalization in local politics. Alesina, Baqir, and Easterly (1999) find that racial fractionalization is associated with patronage spending. "The more fractionalized a society is, the more difficult it is to govern." (Keefer, 2007). Besides, racial and ethnic fractionalization may engender political instability (Horowitz, 1985). Racial and ethnic fractionalization can provoke fierce conflicts between diverse groups when each group

actively participates in local politics to advocate its own benefits. All the characteristics described can sufficiently increase the tendency of citizens in municipalities to choose a government structure that prompts political accountability for protecting their benefits. We utilize the proportion of blacks and the proportion of foreign-born citizens among the whole population as indicators of racial and ethnic fractionalization in municipalities. In ethnically and racially fractionalized municipalities, citizens may feel it is more important to make public officials accountable and to have more channels to protect their own benefits. Therefore, reducing monitoring cost with a more political municipal structure is an optimal choice.

> ***Hypothesis 4***: The proportions of blacks and foreign-born citizens among the whole population are negatively correlated with the municipal structure political-administrative index.

The small- and medium-sized communities presumably have lower levels of social cleavages (Choi, Feiock, & Bae, 2013; Lineberry & Fowler, 1967). To the contrary, a larger population size has more potential to result in higher levels of diversity and social cleavages, as well as active political mobilization and engagement. Citizens will have more incentives to make public officials adhere to their particular benefits.

From another perspective, a large population is generally associated with a larger bureaucratic system, increasing the cost for citizens to monitor government officials efficiently. Citizens in municipalities with a large population may feel it is more important to constrain the behavior of officials because government has charge of more public resources. In municipalities with a larger population, citizens may feel it is more important

and difficult to make public officials accountable. Thus, reducing monitoring cost with a more political municipal structure is an optimal choice.

Hypothesis 5: The population size of municipalities is negatively correlated with the municipal structure political-administrative index.

Local economic conditions and industry structures can also affect citizens' municipal structure choices. Choi, Feiock, and Bae (2013) argue that "demand for changes in forms of local government may occur in response to economic or environmental concerns of crises that compel local politicians and citizens to question the legitimacy of existing institutional arrangements." In municipalities that are mired in economic hardships, citizens' passion for governmental structure reform may be provoked. Citizens in municipalities that face severe economic conditions may feel it is important to have professional management to improve governmental efficiency. We use the unemployment rate as an indicator of economic conditions. In municipalities with a higher unemployment rate, citizens may feel it is more important to improve economic efficiency and performance. Therefore, reducing inefficiency cost with a more administrative municipal structure is an optimal choice.

In municipalities that are more dependent on manufacturing industry, the labor force is comprised of a larger fraction of lower-income and blue-collar groups. In contrast, in municipalities that rely more on the professional, managerial, scientific, and administrative industries (PMSA), the labor force is constituted more by the middle- and upper-class groups. We use the fraction of labor force in the two categories of industries as indicators of local economic structures.

Hypothesis 6a: The unemployment rate is positively correlated with the municipal structure political-administrative index.

Hypothesis 6b: The fraction of the labor force in manufacturing is negatively correlated with the municipal structure political-administrative index.

Hypothesis 6c: The fraction of labor force in the professional, managerial, scientific, and administrative industries is positively correlated with the political-administrative index.

Considering the autonomy of local citizens in choosing their municipal government structures, we look into the effect of citizens' authority of initiative, which allows citizens to place charter, ordinance, or home rule changes on the ballot by collecting a required number of signatures on petitions. Initiatives can work toward either end of the scale depending on the local socioeconomic and demographic situations.

Hypotheses 7: The authority of citizens to introduce initiatives is correlated either positively or negatively with the municipal structure political-administrative index.

2.6 Methodology

2.6.1 Model Specification

Municipal structure is measured up to three times for each municipality. The estimation includes pooled ordinary least squares (OLS) regression, random effects, and fixed effects. Explanatory variables implied by the theory to relate to municipal structure should also be related through the changes of explanatory variables and municipal structure,

which are the focus of the random effects and fixed effects models. Both levels and changes of municipal structure are relevant measures to test the theory.

The municipal structure political-administrative index is modeled as a function of a series of socioeconomic and demographic factors and one institutional factor that are discussed in the hypotheses section. The relationship can be specified as follows:

$$Structure\ Index_{(i,t)} = \beta_0 + \beta_1 \ln[X_{(i,t-1)}] + \beta_2 Initiative_{(i,t)} + \theta_t + \varepsilon_{(i,t)} \quad (1).$$

The dependent variable is the municipal structure political-administrative index. X indicates a vector of socioeconomic and demographic characteristics of citizens or municipalities. We take the natural log of the values of these factors. $Initiative$ is a binary variable that indicates the existence of the initiative. The estimated effects and the intercept are β. The year fixed effects θ_t control for national level forces that are constant for all states in the year, and ε denotes the error term.

2.6.2 Data

We use data from three sources. The data on municipal structure characteristics are derived from the national surveys of *Municipal Form of Government* conducted by ICMA in 2001, 2006, and 2011. These surveys are by far the most comprehensive resources about municipal structure characteristics and political institutions (Coate & Knight, 2011). In each survey year, ICMA mails survey questions to all municipalities with population above 2,500 and to selected ones among the small-sized municipalities. The number of samples in the three surveys are 7,867, 8,278, and 8,813. The respective number of responding municipalities are 4,244, 3,864, and 3,566 in the three surveys, representing 53.9%, 46.7%, and 40.5% of the survey samples.

Data on socioeconomic and demographic characteristics of municipalities in 2000 are collected from the Decennial Census 2000; the corresponding data in 2010 are derived from the Decennial Census 2010 and the American Community Survey 5-year estimates in 2010. The Census Bureau provides instructions to make data from the Decennial Census and American Community Survey multiple-year estimates comparable. We apply the approach of Coate and Knight (2011) to interpolate the corresponding data in 2005 by using the data points in 2000 and 2010. We match the socioeconomic and demographic data in 2000, 2005, and 2010 with municipal structure data in 2001, 2006, and 2011.

We only focus on the mayor-council and council-manager municipalities in this research. To mitigate selection bias among the small-sized municipalities, we delete the samples with population size below 2,500. After dropping observations with missing values in the explanatory variables, we obtain a total of 6,777 municipality-year observations during the sample period. The final dataset is an unbalanced panel because not every municipality replies to all three surveys. Table 1.4 displays the descriptive statistics of all explanatory variables.

Table 1.4 Descriptive Statistics of Explanatory Variables

Variables	N	Mean	S.D.	Min	Max
Population size	6,777	28884	80968.65	2501	3694820
Income inequality	6,777	1.28	0.15	0.99	2.53
Proportion of blacks (%)	6,777	8.76	14.47	0.01	95.96
Per capita income (real 2010 dollars)	6,777	27303.07	13054.75	6696.00	142341.70
Unemployment rate (%)	6,777	6.67	3.44	0.30	41.70
Labor force in industry of manufacturing (%)	6,777	13.82	7.83	0.25	82.60
Labor force in industry of PMSA (%)	6,777	8.62	4.25	0.40	29.80
Educational attainment (high school and above) (%)	6,777	83.53	9.96	22.40	100
Proportion of foreign-born citizens (%)	6,777	8.40	9.21	0.05	74.70
Existence of initiative (dummy)	6,777	0.58	0.49	0	1
Year (2001, 2006, 2011)	6,777	2005.63	4.10	2001	2011
Region (Northeast, North Central, South, West)	6,777	2.66	0.94	1	4

2.7 Empirical Findings

We first use cross-sectional ordinary least squares to estimate the model in equation (1). The results are displayed in column (1) in table 1.5. Over 17% of the variation of the municipal structure political-administrative index is captured by the explanatory variables, and many estimated effects are statistically significant at conventional levels. The more administrative municipal structure is correlated with smaller population size, smaller fraction of blacks, higher per capita income, higher unemployment rate, higher level of educational attainment, larger fraction of foreign-born citizens, and citizens' authority of initiative. Signs of coefficients of all factors that exert statistically significant effects are consistent with hypotheses, except the fraction of foreign-born citizens. Results in table 1.5 also show that regions of municipalities are correlated with their municipal structures. Compared to municipalities in the Northeastern U.S., municipalities in the North Central, South, and West are more likely to use a more administrative structure, which is consistent with previous findings.[8]

[8] We also tried to use state dummies, instead of region dummies, in the OLS regression because municipalities may have same in-state variations but different cross-state variations. Effects of the explanatory variables are similar to that presented in column (1) in table 1.5.

Table 1.5 Estimation Results

VARIABLES	(1) OLS	(2) Random Effects	(3) Fixed Effects
Log_Population size	-0.0717***	-0.0438***	0.0737
	(0.0116)	(0.0140)	(0.0614)
Log_Income inequality	-0.0377	-0.0104	0.208
	(0.105)	(0.103)	(0.155)
Log_Proportion of blacks (%)	-0.0140*	-0.00529	0.0317
	(0.00828)	(0.00904)	(0.0202)
Log_Per capita income	0.190***	0.237***	0.199*
	(0.0540)	(0.0497)	(0.101)
Log_Unemployment rate (%)	0.0928***	0.0258	1.31e-05
	(0.0269)	(0.0202)	(0.0242)
Log_Labor force in manufacturing (%)	-0.0228	-0.0138	0.0479
	(0.0172)	(0.0193)	(0.0378)
Log_Labor force in PMSA (%)	0.00541	-0.0241	-0.0390
	(0.0294)	(0.0261)	(0.0356)
Log_Educational attainment (%)	0.530***	0.382***	0.230
	(0.125)	(0.123)	(0.237)
Log_Proportion of foreign-born citizens (%)	0.141***	0.106***	0.0147
	(0.0132)	(0.0131)	(0.0229)
Initiative	0.232***	0.0572***	-0.0148
	(0.0217)	(0.0169)	(0.0202)
Year_2006 (2001 as reference group)	-0.0228	-0.0328***	-0.0237
	(0.0249)	(0.0119)	(0.0146)
Year_2011 (2001 as reference group)	-0.0236	-0.00576	0.0142
	(0.0275)	(0.0158)	(0.0213)
North Central (Northeast as reference group)	0.300***	0.245***	
	(0.0395)	(0.0470)	
South (Northeast as reference group)	0.737***	0.666***	
	(0.0375)	(0.0442)	
West (Northeast as reference group)	0.758***	0.805***	
	(0.0404)	(0.0484)	
Constant	-4.540***	-4.342***	-3.858**
	(0.510)	(0.541)	(1.555)
Observations	6,777	6,777	6,777
R-squared	0.173	-	0.014
Municipality fixed effects	No	No	Yes
Year dummies	Yes	Yes	Yes
Number of groups	-	4,135	4,135

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Even controlling for a group of explanatory variables in the model, some unobserved factors, such as local political ideology and cultural preference, may be omitted. We therefore add the unobserved and time-invariant factors of municipalities, indicated by α_i, into the specified model:

$$Structure\ Index_{(i,t)} = \beta_0 + \beta_1 \ln[X_{(i,t-1)}] + \beta_2 Initiative_{(i,t)} + \theta_t + \mu_{(i,t)} \quad (2),$$

where

$$\mu_{(i,t)} = \alpha_i + \varepsilon_{(i,t)} \quad (3).$$

Random effects estimation assumes the unobserved and time-invariant municipal characteristics α_t are uncorrelated with other explanatory factors. However, because the time-invariant term α_i exists in the composite error term, $\mu_{i,t}$ is serially correlated across time. The random effect method, which applies generalized least squares (GLS), can produce unbiased and consistent estimated effects (Wooldridge, 2015), which are displayed in column (2) in table 1.5. Signs of estimated effects remain unchanged (except the labor force in PMSA, whose effect is not statistically significant), but statistical significance of some variables disappears after controlling for observed and unobserved municipal characteristics. Compared to results in column (1), the proportion of blacks and unemployment rate produce no statistically significant effects now. The effects of population size, per capita income, educational attainment of citizens, proportion of citizens born in foreign nations, and citizens' initiative are statistically significant, and the sign of their effects are consistent with hypotheses (except the fraction of foreign-born citizens). As with the results in column (1), compared to municipalities in the Northeastern U.S., the ones in other three regions are more likely to use the administrative structure.

Last, under the strictest assumption, municipality fixed effects estimation allows the unobserved and time-invariant variable, α_i, to be correlated with other explanatory factors. The estimated effects using ordinary least squares and random effects are biased when there is a correlation between α_i and $X_{(i,t-1)}$ or $Initiative_{(i,t)}$. We use the municipality fixed effects to estimate the specified model, and only changes are used for estimation. The results displayed in column (3) in table 1.5 indicate the effects of changes of the explanatory factors on the change of the municipal structure political-administrative index.

Changes of structural characteristics of the samples are seldom and in small-scale during the research period (2001-2011), making the variation of the municipal structure political-administrative index small. The infrequency and small-scale of municipal structure index change partly explains the elimination of many statistically significant effects in the fixed effects estimation results. In column (3), only the effect of per capita income is still statistically significant. A higher per capita income leads to municipalities adopting structures that are more administrative, which is consistent with the hypothesis and prior studies. This finding demonstrates the important role citizens' income level plays in determining structural changes of municipalities. The findings mean that the model does a better job of accounting for variation in the cross section than it does accounting for longitudinal changes of municipal structures.

2.8 Conclusions

Conventional wisdom holds that the shift of municipal structures from the mayor-council to the council-manager form began in the early twentieth century and continued until the 1950s, after which the balance between these two forms remained stable (Choi,

Feiock, & Bae, 2013; Knoke, 1982). However, based on the *Municipal Form of Government* surveys conducted by ICMA every five years from 1981 to 2011, we find that the proportion of the mayor-council form was still declining, reaching the lowest point at 33% in 2011. In the same year, the fraction of council-manager municipalities increased to around 59%.

Another conspicuous trend in municipal structure adaptations is the development of the "Type III City" when municipalities on each of the two statutory platforms adopt characteristics of the other (Frederickson & Johnson, 2001; Frederickson, Johnson, & Wood, 2004a, 2004b; Frederickson, Wood, & Logan, 2001). The boundary between the statutory forms becomes ambiguous. Research can revisit municipal structures by observing details in composition of the structure and further explore their determinants because municipal structures still matter (Nelson & Svara, 2012).

We examine seven essential components that can distinguish municipal structures and construct a political-administrative index of municipal structures. Examining the determinants of municipal structures on the political-administrative dimension is the main purpose of this research.

We summarize the political conflict theory and class cleavage theory from the related literature and incorporate these theories into our theoretical model of cost analysis. Citizens presumably would like a local government that can be both accountable and efficient. However, pursuing one goal will give rise to increasing cost in the other. The political municipal structure provides the best approach for citizens to make public officials accountable and supplies multiple channels for citizens to express demands and safeguard their benefits, but community policy making or implementation interrupted by frequent

political conflicts may cause efficiency loss. Alternatively, an administrative structure has the potential to achieve efficiency due to professional management, but the concentration of authority in the council and the insulation of the appointed professional manager from ballot pressure may lead to insufficient ability of citizens to monitor public officials' behavior.

We argue that citizens with various socioeconomic and demographic backgrounds have different preferences towards accountability and efficiency and the corresponding monitoring and inefficiency costs. Citizens will tend to choose a municipal structure that minimizes the total of the two types of cost. We collect data and use multiple methods to test our hypotheses. Empirical results demonstrate that the municipal structure political-administrative index is tightly associated with citizens' socioeconomic and demographic characteristics, most of which are consistent with our predictions and previous studies. Regarding the changes in municipal structures during the sample period, we find from the model controlling for municipality fixed effects that municipalities that have higher per capita income are more likely to adapt toward the administrative structure.

CHAPTER 3. MUNICIPAL STRUCTURE MATTERS: EVIDENCE FROM GOVERNMENT FISCAL PERFORMANCE

3.1 Introduction

Municipal structure or form is a basic institutional setting that plays an essential role in organizing local politics and influencing public policy formulation and implementation (Judd and Swanstrom 2015; Wheeland, Palus, and Wood 2014; Zhang 2014; Zhang and Feiock 2009).[9] Most U.S. municipalities use either the mayor-council or council-manager municipal form.[10] Based on the traditional wisdom, in mayor-council municipalities, the mayor, as the chief executive officer, is separate from the council and is elected directly by voters; the mayor runs administrative affairs; and the council is responsible for legislation. In addition, council members are usually elected by district and on a partisan basis. In council-manager municipalities, the council runs both administration and legislation; the council usually appoints a professional manager as the chief administrative officer (CAO) to manage administrative affairs; and the mayor is a ceremonial position selected by council members on a rotating basis. The council-manager form is generally associated with the nonpartisan and at-large election of council members.

After the 1950s, cross-adoption of structural characteristics between mayor-council and council-manager municipalities was prevalent (Choi, Feiock, and Bae 2013), which

[9] Many studies use the concepts of municipal form and municipal structure interchangeably. This study refers to municipal form as the statutory nominal municipal form such as the mayor-council and council-manager. Municipal structure is a broader concept, which involves the elements of municipal form and other structural characteristics. Details on the differentiations between these two concepts are discussed later.

[10] There are three other statutory nominal municipal forms: commission, town meeting, and representative town meeting. These forms are adopted by a small group of municipalities mainly located in the New England states. According to the Municipal Form of Government surveys by ICMA, 9.7%, 9.7%, 8.0%, 6.7%, 7.6%, 6.7%, and 8.0% of the responding municipalities adopted these three forms in 1981, 1986, 1991, 1996, 2001, 2006, and 2011, respectively. Like previous studies, this research only involves municipalities with the mayor-council and council-manager forms in the analysis.

motivated scholars to reclassify municipal form. An important contribution of this research is the construction of a municipal structure political-administrative index based on several essential structural characteristics that determine governments' managerial professionalism, separation of powers, checks and balances between officials, and local electoral systems.

An on-going literature attempts to evaluate the consequences in government performance of variations in municipal form or structure. Carr (2015) systematically reviews the extant studies and summarizes ten propositions about the relationship between municipal form and government representation and functionality. He concludes that evidence on the fundamental assumption that municipal form makes a difference in government performance is still relatively small and weaker than many might expect. Carr (2015) encourages scholars to advance research in two approaches: developing a theory to explain how municipal form matters in government performance and producing empirical evidence to assess the theory. This article practices these approaches through (1) theoretically linking municipal structure to government performance based on the rich literature on government management and performance and (2) empirically investigating if variations in municipal structure matter in government fiscal performance.

The key research question in this article is whether and how municipal structure affects government fiscal conditions. The next section briefly introduces prior works on government fiscal conditions. Section two constructs a municipal structure political-administrative index. Section three proposes hypotheses based on theoretical analyses. Section four introduces the methodology. Section five discusses the empirical findings, and the last section concludes.

3.2 Related Literature on Government Fiscal Conditions

Most studies in the related literature focus on the measurement of government fiscal conditions, validity and reliability of fiscal condition indicators, determinants of government fiscal conditions, and consequences of and countermeasures to fiscal crises.

So far, there are no universally accepted reliable and valid indicators of government fiscal conditions. Among a variety of existing measurements, the most frequently cited include the Fiscal Trend Monitoring System (FTMS) by the International City/County Management Association (ICMA) (Groves, Godsey, and Shulman 1981; Nollenberger 2003), Brown's 10-point test and the revised edition (Brown 1993; Maher and Nollenberger 2009), the four-solvency approach by Wang, Dennis, and Tu (2007), and the 10-point scale approach by Kloha, Weissert, and Kleine (2005). These indicators capture a comprehensive picture of government fiscal conditions by examining the revenue, expenditure, budgetary balance, debt, long-term liability, and asset maintenance (Gorina, Maher, and Joffe 2018).

In-depth understanding of the determinants of government fiscal conditions assists officials in effectively resolving fiscal problems (Coe 2008; Maher and Deller 2007, 2013a). McDonald (2015) constructs a government fiscal condition determinants model in an open system framework that involves explanatory factors of politics, economics, demographics, and government characteristics. The empirical results show the partisan affiliation of registered voters, educational attainment and income level of local citizens, the unemployment rate, racial composition of citizens, government revenue sources, population size, and the charter form of county governments matter for Florida counties' fiscal conditions.

Gorina, Maher, and Joffe (2018) construct an action-based measure of local government fiscal distress. The authors operationalize fiscal distress as "actions, often disruptive and politically unpopular, that a government takes because it is unable to meet its fundamental operating needs and service requirements." (p. 81). The authors use a variety of indicators that are commonly employed by scholars as the direct measurements of government fiscal conditions, such as cash solvency, budgetary solvency, and long-term solvency, to predict governments' certain disruptive and politically unpopular actions.

Jimenez (2017) investigates the effect of managerial networking on the fiscal health of local governments from a perspective of the management-performance linkage. His results demonstrate a concave relationship between the managerial networking of city managers and government budgetary solvency. City managers' ties with external stakeholders do help improve governments' budgetary solvency at the beginning. But too frequent interactions with external stakeholders constrain managers' decisions in fiscal management and exacerbate government fiscal difficulties.

There are many limitations in the literature on the determinants of government fiscal conditions. Research samples in empirical studies are often derived from one single or a few states (Gorina, Maher, and Joffe 2018; McDonald 2015). Usage of one-year cross-sectional data is common (Maher and Deller 2013b). Moreover, few previous studies apply the rich literature on government management and performance to explain the effect of municipal structure on government fiscal conditions (Carr 2015; Ingraham, Joyce, and Donahue 2003). This research advances the related literature in these aspects.

3.3 Measuring Municipal Structure on a Political-Administrative Scale

Municipal structure is the explanatory variable of interest in the determinant model of government fiscal conditions in this research. Previous studies generally adopt a binary variable to indicate the primary municipal structure as the mayor-council or council-manager. However, prevalent cross-adoption of structural characteristics between municipalities makes a dichotomous classification problematic. Scholars have attempted to use different methods to reclassify municipal form into multiple categories based on a variety of structural characteristics (Carr and Karuppusamy 2008, 2009, 2010; DeSantis and Renner 2002; Frederickson, Johnson, and Wood 2004a, 2004b; Hansell 1999; Nelson and Svara 2010).

Nelson and Svara (2010) assert the importance of distinguishing adaptation of municipal models versus variation in municipal form at the conceptual level. In their viewpoint, the municipal model involves elements that not only characterize municipal form but differentiate local electoral systems and other structural characteristics. In this vein, municipal model is a broader concept than municipal form. The typology of Nelson and Svara (2010) starts from the stated nominal mayor-council or council-manager municipal form and examines three structural features: how the mayor is selected, whether a CAO exists, and who appoints the CAO. They classify the mayor-council form into four categories: mayor and council-administrator, mayor-council-administrator, mayor-administrator-council, and classic mayor-council. The council-manager form is classified into three categories: council (mayor)-manager, mayor-council-manager, and empowered mayor council-manager. The seven categories of municipal form "represent a progression

from low centralized political leadership and high professional autonomy to high political leadership and low professional autonomy." (Nelson and Svara 2010, p. 558).

Frederickson, Johnson, and Wood (2004a, 2004b) and Carr and Karuppusamy (2008, 2009, 2010) classify municipal structure by examining a broader range of structural characteristics, including all the elements examined by Nelson and Svara (2010), features of the electoral system, allocation of powers, among other characteristics. The "Type III City" framework of Frederickson, Johnson, and Wood (2004a, 2004b) classifies municipal structure into three groups: the political, the administrative, and the adapted structure. Carr and Karuppusamy (2008, 2009, 2010) modify the "Type III City" framework and classify the mayor-council form into the political, the adapted political, and the conciliated political, and classify the council-manager form into the conciliated administrative, the adapted administrative, and the administrative. The nature of these reclassified municipal forms ranges in an order from the most political to the most administrative.

3.3.1 Municipal Structure Political-Administrative Index

The approach to classify municipal structure in this article absorbs merits of the two previous typologies. Applying the terminology of Nelson and Svara (2010), the focus is more on the adaptation of municipal models than the variation of municipal form itself. Therefore, the theory here does not claim to classify the municipal form in the conventional sense. Instead, the typology aims to involve the most essential structural characteristics that determine the managerial professionalism, assignment of powers, and local electoral systems to measure the nature of municipal structure on a political-administration scale. Table 2.1 presents the seven structural characteristics that are examined. The number of

municipalities in the sample (N=6,786) with each structural characteristic is reported in parentheses.

Table 2.1 Standards of constructing the municipal structure political-administrative index

Structural characteristics\coded values	0	0.5	1
Stated nominal form	Mayor-council (N=2,544)		Council-manager (N=4,242)
Existence of Chief Administrative Officer	No (N=1,062)		Yes (N=5,724)
Mayor election method	Direct election (N= 5,539)		Non-direct election (N=1,247)
Mayor is independent of council	Yes (N=2,144)		No (N=4,642)
Authority of mayor to veto council decisions	Yes (N=2,058)		No (N=4,728)
Partisan or nonpartisan election of council members	Partisan (N=1,047)		Nonpartisan (N=5,739)
At-large or by-district election of council members	By-district (N=1,138)	Combination (N=1,453)	At-large (N=4,195)

The stated nominal form, mayor-council or council-manager, is the statutory structural setting. The other six structural characteristics measure three dimensions of the political or administrative nature of municipal structure. The election method of the mayor, independence of the mayor from the council, and the veto power of the mayor on council decisions determine the separation of powers and checks and balances between officials. The existence of a CAO characterizes the degree of managerial professionalism. The two features of the election of council members measure the influence of parties and special interests on local elections.

Each structural characteristic is assigned a numerical value (0, 0.5, or 1), with a lower value indicating the more political nature and a higher value indicating the more administrative nature. Factor analysis (refer to table 2.3) of the seven coded values produces a municipal structure political-administrative index. A lower index indicates a more political municipal structure and a higher index means a more administrative municipal structure. Data on municipalities' structural characteristics are collected from the *Municipal Form of Government* surveys by ICMA in 2001, 2006, and 2011. Among all municipality samples in the dataset, the municipal structure political-administrative index ranges from -1.92 to 1.72 with mean 0 and standard deviation 0.86.

3.3.2 Index Reliability

The common method to assess the reliability of an index is to evaluate its "dependability, stability, consistency, reproducibility and lack of distortion." (Kerlinger and Lee 2000). The seven components of municipal structure index are objective features for assessing the political or administrative nature of municipal structure. Municipality samples in ICMA's surveys are selected based on their population size. In each survey year, ICMA mails survey questions to all municipalities with population size above 2,500 and to selected small-sized municipalities. To mitigate selection bias, only the municipalities with population size above 2,500 are included in the analysis. The response rates of ICMA's surveys in 2001, 2006, and 2011 are around 50%. The data for constructing the index are accessible from ICMA. Therefore, the results are reproducible. The form of ICMA's survey questions is uniform across time. This improves the uniformity and consistency of the data sources. Moreover, ICMA's surveys have been conducted every five years. Time series data make the index more dependable (Clark 2015).

A useful technique to assess reliability of an index is to evaluate the correlation between index components. Table 2.2 reports the Pearson correlation coefficients for each pair of the index components in sample and the statistical significance level. The components are positively correlated with each other at the 0.01 level, providing strong evidence of reliability.

Table 2.2 Correlation matrix of index components

	a	b	c	d	e	f	g
a	1						
b	0.5445***	1					
c	0.3352***	0.1887***	1				
d	0.4834***	0.3311***	0.3118***	1			
e	0.4731***	0.3291***	0.2907***	0.5839***	1		
f	0.3164***	0.2663***	0.1258***	0.2055***	0.1992***	1	
g	0.2225***	0.1814***	0.1835***	0.2897***	0.3070***	0.1168***	1

Notes: Sample size is 6,786. ***p<0.01. a = stated nominal form; b = existence of Chief Administrative Officer; c = mayor election method; d = mayor is independent of council; e = authority of mayor to veto council decisions; f = partisan or nonpartisan election of council members; g = at-large or by-district election of council members.

Another technique to evaluate the reliability of an index is to calculate the value of Cronbach's alpha, which ranges between 0 and 1, with a higher value indicating a closer correlation between components of an index (Clark 2015). The value of Cronbach's alpha is 0.76, indicating an acceptable reliability of the municipal structure index (Berman and Wang 2017).

3.3.3 Index Validity

"With validity, the goal is to figure out if we are measuring the concept that we intended to measure." (Clark 2015, p. 72). Validity of the index is assessed in three aspects: content validity, criterion-related validity, and construct validity.

Content validity requires that components of the index should include all possible items that can measure the core concept (Kerlinger and Lee 2000), and there should be evidence from the literature demonstrating the efficacy of these items in measuring the concept. The requirement of "all possible items" is extremely strict that can be satisfied only theoretically. There may be dozens of potential index components (structural characteristics). However, it is necessary to balance thoroughness with parsimony and to consider data availability. The seven components involved in classifying municipal structure are well discussed in the literature. Therefore, it is safe to use them to construct the municipal structure index.

Criterion-related validity requires the constructed index to be correlated with other potential measures of the same concept. The stated nominal municipal form, mayor-council or council-manager, is traditionally used as a binary measurement of municipal structure. In the traditional wisdom, the former is a political structure and the latter is an administrative structure. The positive and statistically significant correlations between the stated nominal municipal form with the other index components, which are reported in the first column in table 2.2, support the criterion-related validity of the index.

Construct validity is usually assessed by theoretically relating components of the index to the concept to be measured. Also, construct validity asks "which factors account for the variance in performance of the thing we are trying to measure?" (Clark 2015, p. 73). The grounds on which the seven structural characteristics have political or administrative nature have been discussed thoroughly by previous studies. The more political municipal structure underscores separation of powers and checks and balances between the mayor and council members, direct responsiveness and accountability of the mayor to voters, and

influence of parties and special interests on local elections. To the contrary, the more administrative municipal structure highlights professional management of municipal affairs, concentration of powers in the council, and elimination of partisan and special interests' influence on elections.

Finally, factor analysis is used to assess whether the seven components of the municipal structure index are appropriately loaded. Factor analysis reports only one factor with an eigenvalue greater than one (2.24), demonstrating that the components of the index measure a single core concept. Factor loadings of the principal factor are presented in table 2.3. The principal factor has positive loadings for all the seven components, among which the stated nominal form, existence of a CAO, whether the mayor is independent of the council, and authority of the mayor to veto council decisions are highly loaded.

Table 2.3 Loadings of the principal factor after factor analysis

Index components	Principal Factor	Uniqueness
Stated nominal form	0.7319	0.4304
Existence of Chief Administrative Officer	0.5681	0.6062
Mayor selection method	0.4211	0.8159
Mayor is independent of council	0.6870	0.4928
Authority of mayor to veto council decisions	0.6798	0.4996
Partisan or nonpartisan election of council members	0.3566	0.8377
At-large or by-district election of council members	0.3747	0.8368

3.4 Theoretical Analyses and Hypotheses

We can propose at least three reasons that municipal structure might affect government performance. Municipal structure ought to affect the managerial professionalism of government. Professionalism and officials' behavior motivation in turn can affect governments' managerial strategy stance. Finally, municipal structure ought to affect the relative attention of officials to managerial efficiency versus accountability.

3.4.1 Managerial Professionalism and Government Performance

The administrative municipal structure is characterized by the existence of expert managers (CAOs) in the managerial system. Previous studies have found the important role of and the substantial degree of professional autonomy held by the CAO in policy making and implementation (Demir and Reddick 2012; Nalbandian 1999; Nelson and Svara 2015; Selden, Brewer, and Brudney 1999; Zhang 2014; Zhang and Feiock 2010).

Differentiations in the career path and primary behavior motivation of elected officials and appointed professional managers result in different degrees of managerial professionalism in dealing with government affairs. The primary motivation of elected officials, whose career is generally determined by vote results in elections, is to win popularity by catering to voters' demands. Thus, acting responding to the dynamic preferences of voters is presumably the most essential part of their works. The political motivation of catering to groups that can contribute more political support encourages elected officials to invest a substantial amount of resources in public programs that might not produce the maximum level of marginal benefits and, hence, creates government inefficiencies.

However, the appointed CAO must focus on not only voters' demands, which are expressed through mandates of elected officials, but also the pressure of building an outstanding reputation among peers in professional organizations, such as the International City/County Management Association and Government Finance Officers Association (Dunn and Legge 2001). Local governments usually select professional managers based on their managerial experiences and reputations. For the appointed professional managers, the presumably most important task is to search for innovations and improve managerial skills

to solve local problems. Moreover, appointed managers are usually trained experts who are equipped with managerial knowledge and information advantages, which facilitate government management in a more professional way.

Managerial professionalism promotes government fiscal performance via improving the quality of budget making, capital planning, investment of public funds, and usage of debt financing. Professional managers are presumably more capable of preparing government budgets based on the generally accepted accounting principles, forecasting revenues and expenditures accurately with advanced techniques, implementing multiple-year budgeting and capital plans, making using of capital markets more reasonably, and diversifying revenue sources strategically. These capacities have great potentials to improve government fiscal performance.

3.4.2 Managerial Strategy Stance and Government Performance

Organizational performance is the result of interaction between external environments and internal strategic management (Boyne and Walker 2010). Factors of the external environment, such as the population size, racial and ethnic characteristics of citizens, and local political ideology, are generally beyond the control of government officials. What officials are at discretion to a larger extent is the adjustment of strategic management in running the government. Boyne and Walker (2004) develop a strategy content matrix along two dimensions: strategy stances and strategy actions. The former refers to the generic approach that describes organizations' position and how they respond to environments to maintain or improve their performance, and the latter identifies the range of specific actions by organizations to operationalize the strategy stance (Andrews, Boyne, and Walker 2006; Boyne and Walker 2004).

Boyne and Walker (2004) classify the strategy stance of public organizations into *prospecting*, *defending*, and *reacting*. Prospectors are more likely to be pioneers and search for innovations and new approaches to deal with emerging environmental trends (Andrews, Boyne, and Walker 2006). Defenders usually take a conservative viewpoint toward innovations and "focus on a narrow range of services, their core activities, to retain their existing portfolio of activities and protect their share of the public budget from attacks by predatory organizations." (Andrews, Boyne, and Walker 2006, p. 53). Lastly, reactors generally do not maintain a consistent stance in organizational operation and tend to adjust strategies according to the dynamic environmental pressures (Boyne and Walker 2004). Previous studies have found a positive correlation between prospecting and public organizations' performance (Andrews et al. 2005; Andrews, Boyne, and Walker 2006) and a negative relationship between reacting and the performance of public organizations (Andrews et al. 2008; Andrews, Boyne, and Walker 2006).

Under the more political municipal structure, separation of powers forces the mayor and council members to negotiate and compromise with each other in order to achieve their desired policy goals. Council members selected on a partisan and district basis have a higher motivation to cater to special interest groups and political supporters in specific districts, and they are inclined to be more sensitive to external political pressures from parties and demands of voters. Officials under the more political municipal structure will be more likely to be reactors in strategy stance. In contrast, under the administrative municipal structure with unified powers concentrated in the council, collaboration inside the managerial system and assistance from professional managers in government operating facilitate adoption of innovations (Nelson and Svara 2012). In municipalities where at-

large elections are implemented and partisan influence is eliminated, professional autonomy is promoted. Therefore, officials are more likely to adopt innovative managerial practices and techniques, and they can be presumably described as prospectors in strategy stance. The theoretical linkage between municipal structure and strategy stance together with empirical evidence on the correlation between strategy stance and government performance imply that municipalities with a more administrative structure will have better fiscal performance.

Based on the two mechanisms described, there may be a linear relationship between the constructed municipal structure political-administrative index and indicators of government fiscal performance. Higher index values are correlated with a higher degree of managerial professionalism and a higher probability of adopting prospecting in managerial strategy stance and, thus, better government fiscal performance.

> ***Hypothesis 1****: There is a positive correlation between the municipal structure political-administrative index and government fiscal conditions, all else being equal.*

3.4.3 Managerial Accountability versus Efficiency

Accountability here is defined as the responsiveness and adherence of public officials to citizens' preferences for public policies and demands for public services (Dunn and Legge 2001). Like many previous studies, this article defines efficiency as the capacity of government officials in improving professional management to enhance public resource utilization (Hayes and Chang 1990). Managerial efficiency makes it feasible for governments to spend fewer resources to provide a certain amount of public services.

Accountability of public officials to citizens helps mitigate the agency problem and prevent government corruption.

Assume that an optimal municipal structure that is potentially correlated with best government performance can delegate government management to professional experts for efficiency gains while holding public officials accountable to citizens (Putnam, Leonardi, and Nanetti 1994; Shepsle 1988). Under a more administrative or professional municipal structure, delegating government management to expert managers can potentially improve managerial efficiency (Deno and Mehay 1987; Hayes and Chang 1990). However, it increases the difficulty of holding the managers accountable because they are not placed under the direct ballot pressure of voters and they hold information and skill advantages over voters and elected officials. Meanwhile, concentration of powers in the council weakens checks and balances between the mayor and council members. Therefore, voters' monitoring cost over officials increases. On the other hand, under a more political municipal structure, government management by the directly elected officials, who tend to put priority on political responsiveness and winning elections, helps assure accountability. However, managerial inefficiency may raise due to insufficient professional management and increasing political struggles. In this vein, an optimal municipal structure may be the one that mixes the political and administrative structural characteristics in combination.

Similar inference is obtained in the analysis of managerial strategy stance. Although there is evidence showing that reacting is detrimental to organizational performance, it may not be the worst strategy stance for governments because of their public nature. Actively adopting innovations by prospectors can potentially improve managerial practices, but failure to respond in a timely way to environmental dynamics

may result in accountability problem, loss of political support, and poor policy performance. In contrast, reactors may be hesitant to innovate, but their adherence to political principals and prompt adjustments of actions in accordance with external environments help them achieve more political support and prevent risks. Therefore, a strategy stance that mixes prospecting and reacting may combine advantages from both and lead to best government performance.

> ***Hypothesis 2****: There is a curvilinear relationship between the municipal structure political-administrative index and government fiscal conditions, presenting an inverted U-shaped relationship, all else being equal.*

Local governments' fiscal conditions are shaped by the external environment interacted with internal government management (Cabaleiro, Buch, and Vaamonde 2013; Hendrick 2004). In addition to the direct effect of municipal structure on governments' fiscal performance, municipal structure can interact with factors of external environments to exert indirect or moderating effect.

> ***Hypothesis 3****: The municipal structure political-administrative index moderates the effects of external environmental factors on government fiscal conditions, all else being equal.*

3.5 Methodology

3.5.1 Model Specification

Indicators of fiscal conditions are first modeled as a function of the direct effect of municipal structure and control variables to test Hypothesis 1.

$$FC_{i,t} = \alpha + \beta SE_{i,t-1} + \gamma F_{i,t-1} + \delta I_{i,t-1} + \lambda S_{i,t-1} + \varepsilon_{i,t} \qquad (1).$$

$FC_{i,t}$ refers to indicators of government fiscal conditions in municipality i and in year t. SE, F, I, and S indicate the factors of socioeconomic characteristics of municipalities or citizens, fiscal environments, institutional constraints, and the municipal structure political-administrative index, respectively. The intercept is α, the estimated parameters are β, γ, δ, λ, and the error term is ε. The explanatory variables take a one-year lag.[11]

Model (1) is expanded to include a square of the municipal structure index to test the inverted U-shaped relationship in Hypothesis 2.

$$FC_{i,t} = \alpha + \beta SE_{i,t-1} + \gamma F_{i,t-1} + \delta I_{i,t-1} + \lambda_1 S_{i,t-1} + \lambda_2 S_{i,t-1}^2 + \varepsilon_{i,t} \quad (2).$$

The multiplicative interaction regression model is used to test Hypothesis 3. All the factors of the external environment (socioeconomic, fiscal, and institutional) can interact with the municipal structure index. All constitutive terms of the interaction items should be included in the multiplicative interaction model (Brambor, Clark, and Golder 2005).

$$FC_{i,t} = \alpha + \beta SE_{i,t-1} + \beta_1 SE_{i,t-1} \times S_{i,t-1} + \gamma F_{i,t-1} + \gamma_1 F_{i,t-1} \times S_{i,t-1} +$$
$$\delta I_{i,t-1} + \delta_1 I_{i,t-1} \times S_{i,t-1} + \lambda S_{i,t-1} + \varepsilon_{i,t} \quad (3).$$

3.5.2 Data Collection

Data on municipal structural characteristics are derived from the *Municipal Form of Government* national surveys conducted by ICMA in 2001, 2006, and 2011. The survey samples in 2001, 2006, and 2011 are 7,867, 8,278, and 8,813, respectively, with response rates around 50%.

[11] Some of the socioeconomic and fiscal variables have a two-year lag instead of one (see the section on data collection).

Data on socioeconomic characteristics in 2000 are collected from the Decennial Census 2000. The corresponding data in 2010 are collected from the Decennial Census 2010 and supplemented by the American Community Survey 5-year estimates in 2010. The Census Bureau provides instructions for merging data accurately from these two sources. Data in 2005 are linearly interpolated using data points in 2000 and 2010, which is a commonly used data processing method (Coate and Knight 2011). Government finance data are collected from the U.S. Census Bureau government finance surveys in 2002, 2007, and 2012. In years ending with 2 and 7, the surveys cover almost all municipalities.

The government fiscal condition indicators are calculated based on the Census government finance data. The Census government finance data in 2002 are matched with municipal structure data in 2001 and Census socioeconomics data in 2000. The corresponding data in 2007, 2006, and 2005 are matched, as are the corresponding data in 2012, 2011, and 2010.

Part of the fiscal (governmental functions in public health, social service, and public school) and institutional (balanced budget requirement and debt limit) factors are coded according to Krane, Rigos, and Hill (2001). The data are coded based on state-imposed regulations on municipalities. In addition, data on the tax and expenditure limitations (TELs) stringency index are collected and updated based on Amiel, Deller, and Stallmann (2009).

Like most previous studies, only the mayor-council and council-manager municipalities with population size over 2,500 are involved in the analysis to mitigate selection bias in the municipal structure surveys. The final dataset is an unbalanced panel because the *Municipal Form of Government* survey respondents differ in each survey year.

3.5.3 Indicators of Government Fiscal Conditions

This article draws on measurements used by previous studies to operationalize government fiscal conditions. Considering data availability and practical feasibility, a constructive approach is to select a group of indicators that are commonly used and intuitively reasonable to capture a comprehensive picture of government fiscal conditions in several aspects. Government fiscal conditions are measured by four indicators: cash solvency, dependence on intergovernmental transfers, debt level, and balance of the operating budget.

Cash solvency manifests governments' ability to realize liquidity to provide public services in the short-term. Per capita total cash and securities at the end of a fiscal year is used as an indicator of municipal governments' cash solvency. A higher value of the indicator signals healthier fiscal conditions. The percentage of intergovernmental revenues to total revenues is an indicator of dependence on intergovernmental transfers. Undue reliance on revenues from other governments damages fiscal autonomy and presumably indicates a weaker ability of the government to provide public services and fulfil fiscal obligations using its own resources. Therefore, a lower value of the percentage reflects healthier fiscal conditions. Governments usually resort to the capital market to maintain normal operating of the government or to fund capital projects. The ratio of total debt outstanding at the end of a fiscal year to general revenues is an applicable indicator of debt level. A lower value of the ratio indicates healthier fiscal conditions. Balance of the operating budget reflects the ability of governments to collect sufficient revenues to provide mandatory general services in a fiscal year. The focus in this article is the operating budget, excluding the capital budget which generally involves a multiple-year capital plan

and is funded by the long-term debt. The operating budget balance is measured as the percentage of general budget surplus or deficit to general revenues. An operating budget surplus indicates healthier fiscal conditions.

3.5.4 Control Variables

Selection of control variables is based on evidence from previous studies and data availability. The factors of socioeconomics include the population size, mean household income, unemployment rate, fraction of residents above 65 years old, and local industrial structures. These factors affect government fiscal conditions by determining government revenue collections and spending needs (Hendrick 2004; Jacob and Hendrick 2012). Particularly, the industrial structure is measured by the Hirschman-Herfindahl Index (HHI) expressed as follows (Suyderhoud 1994):

$$HHI_{i,t} = \frac{1-\left(\sum_{j=1}^{n} X_{j,i,t}\right)^2}{1-\frac{1}{n}} \quad (3),$$

where i indicates municipality, t refers to time, and X_j specifies the fraction of labor force in industry j out of n industries.[12] HHI ranges between 0 and 1, with a higher value indicating a more diversified industry structure.

The fiscal factors include municipalities' fiscal functions and revenue structures. Dummy variables are used to indicate municipalities' functions in public health, social services, and public schools to account for variations in service responsibilities of

[12] Based on the classification by the Census Bureau, there are thirteen industries in local economies: agriculture, forestry, fishing and hunting, and mining; construction; manufacturing; wholesale trade; retail trade; transportation and warehousing, and utilities; information; finance, insurance, real estate, and rental and leasing; professional, scientific, management, administrative, and waste management services; educational, health and social services; arts, entertainment, recreation, accommodation and food services; other services (except public administration); and public administration.

municipal governments across states (Krane, Rigos, and Hill 2001).[13] The model includes the diversity index (HHI) of municipalities' general revenues and tax revenues to control for the effect of revenue diversification on governments' fiscal conditions.[14]

Local governments generally do not possess full fiscal autonomy over their fiscal behavior (McDonald 2015; Rose 2010). The factors of institutional constraints controlled for in the estimation model include the TELs stringency index and dummy variables for the balanced budget requirement (BBR) and debt limit. Descriptive statistics of fiscal condition indicators and control variables, their measurements, and the data sources are presented in table 2.4.

[13] Krane, Rigos, and Hill (2001) classify municipal government functions into nine categories, including general government, public safety, public health, public works, social services, economic development, physical environment, culture and recreation, and public schools. This study controls only three of them in the model because almost all municipalities across states have functions in the other six categories.

[14] Based on the classification by the Census Bureau, the categories of general revenues include intergovernmental revenues, total taxes, current charges, and miscellaneous general revenues. The categories of tax revenues include property tax revenues, sale tax revenues, license tax revenues, and others.

Table 2.4 Variable names, descriptive statistics, and data sources

Variable	N	Mean	S.D.	Min	Max	Data sources
Fiscal condition indicators						
Cash solvency (real 2013 dollars)	6,767	1454.23	3061.02	0	102628.50	CGFD
Dependence on intergovernmental transfers (%)	6,750	16.74	13.19	0	94.80	CGFD
Debt level (ratio)	6,579	1.24	1.52	0	66.16	CGFD
Operating budget balance (%)	6,785	1.15	21.76	-307.86	91.10	CGFD
Socioeconomic factors						
Population size	6,786	29104	80186	2501	3694820	DC and ACS
Average household income (real 2013 dollars)	6,786	71257.68	36857.98	26223.57	431349.70	DC and ACS
Unemployment rate (%)	6,786	6.72	3.47	0.30	41.70	DC and ACS
Fraction of residents over 65 years old (%)	6,786	14.46	5.93	1.44	68.70	DC and ACS
Structure of local industries	6,786	0.94	0.03	0.34	0.98	DC and ACS
Fiscal factors						
Function in public health (dummy)	6,786	0.45	0.50	0	1	KRH (2001)
Function in social service (dummy)	6,786	0.37	0.48	0	1	KRH (2001)
Function in public school (dummy)	6,786	0.23	0.42	0	1	KRH (2001)
Structure of general revenues	6,786	0.81	0.14	0	1	CGFD
Structure of tax revenues	6,786	0.51	0.26	0	1	CGFD
Institutional factors						
BBR (dummy)	6,786	0.62	0.49	0	1	KRH (2001)
Debt limit (dummy)	6,786	0.78	0.41	0	1	KRH (2001)
TELs stringency index	6,786	20.21	10.58	0	38	ADS (2009)

Notes: Cash solvency is measured by per capita total cash and securities at the end of a fiscal year. Dependence on intergovernmental transfers is measured as the percentage of intergovernmental revenues to total revenues. Debt level is measured as the ratio of total debt outstanding at the end of a fiscal year to general revenues. Operating budget balance is measured as the percentage of general budget surplus or deficit to general revenues. CGFD: Census government finance dataset; DC: Decennial Census; ACS: American Community Survey multiple-year estimates; KRH: Krane, Rigos, and Hill (2001); ADS: Amiel, Deller, and Stallmann (2009).

3.6 Empirical Results

3.6.1 Direct Effect of Municipal Structure

Results of regressing model (1) with year fixed effects and robust standard errors are presented in the first four columns in Panel A of table 2.5. The dependent variable in each of the four columns is the four indicators of fiscal conditions, respectively. Column (1) shows that the municipal structure political-administrative index has a positive and statistically significant correlation with per capita total cash and securities at the end of a fiscal year. The index ranges from -1.92 to 1.71. In column (1), the dependent variable takes a log form. Therefore, holding other explanatory variables constant, when municipal structure adjusts from the most political to the most administrative, per capita total cash and securities increased by around 22 percent. Column (2) shows that the municipal structure index is negatively correlated with governments' dependence on intergovernmental transfers and the effect is statistically significant at the 0.01 level. A smaller value of the dependent variable in column (2) means healthier fiscal conditions. Therefore, the results indicate that the administrative municipal structure is associated with better fiscal performance based on dependence on intergovernmental revenues. Holding other explanatory variables constant, when municipal structure adjusts from the most political to the most administrative, the percentage of intergovernmental transfers to total revenues decreases by about 5 percentage points. Results in columns (3) and (4) show that the correlations between the municipal structure index and governments' debt level and general budget balance are not statistically significant.

Table 2.5 Direct effect of municipal structure and the inverted U-shaped relationship

	Panel A *Direct effect of municipal structure (Model 1)*				***Panel B*** *Inverted U-shaped relationship test (Model 2)*			
VARIABLES	(1) Cash solvency	(2) Intergov. revenue dependence	(3) Debt level	(4) General budget Surplus/deficit	(5) Cash solvency	(6) Intergov. revenue dependence	(7) Debt level	(8) General budget Surplus/deficit
Municipal structure index	0.0602***	-1.275***	0.0312	0.304	0.0362*	-0.869***	-0.0844**	0.476
	(0.0137)	(0.210)	(0.0208)	(0.324)	(0.0197)	(0.292)	(0.0395)	(0.491)
Municipal structure index^2					-0.0322*	0.546*	-0.155***	0.232
					(0.0190)	(0.288)	(0.0357)	(0.474)
Socioeconomic factors								
Population size (log)	0.230***	-0.0813	0.0591***	-0.319	0.233***	-0.128	0.0725***	-0.340
	(0.0105)	(0.158)	(0.0197)	(0.247)	(0.0105)	(0.157)	(0.0188)	(0.249)
Mean household income (log)	0.285***	0.0850	-0.203***	1.981*	0.285***	0.0834	-0.205***	1.979*
	(0.0402)	(0.627)	(0.0622)	(1.073)	(0.0402)	(0.626)	(0.0621)	(1.073)
Unemployment rate	-0.126***	2.323***	-0.145***	0.738	-0.124***	2.297***	-0.138***	0.727
	(0.0287)	(0.403)	(0.0475)	(0.699)	(0.0287)	(0.403)	(0.0478)	(0.699)
Fraction of residents over 65	0.262***	0.192	-0.254***	-1.762**	0.267***	0.108	-0.231***	-1.797**
	(0.0287)	(0.373)	(0.0409)	(0.762)	(0.0289)	(0.376)	(0.0420)	(0.768)
Structure of local industries	-1.399***	-1.419	0.0879	-0.669	-1.417***	-1.097	0.00378	-0.534
	(0.400)	(5.275)	(0.505)	(8.064)	(0.400)	(5.273)	(0.509)	(8.085)
Fiscal factors								
Function in public health	0.0300	1.843***	-0.0268	3.387***	0.0329	1.795***	-0.0117	3.367***
	(0.0299)	(0.430)	(0.0402)	(0.816)	(0.0300)	(0.433)	(0.0398)	(0.821)
Function in social service	-0.185***	-5.496***	0.253***	-0.669	-0.188***	-5.455***	0.242***	-0.652
	(0.0290)	(0.418)	(0.0386)	(0.788)	(0.0291)	(0.420)	(0.0391)	(0.793)
Function in public school	0.0955***	2.037***	0.0147	-2.298***	0.0922***	2.091***	-0.000722	-2.274***
	(0.0276)	(0.453)	(0.0427)	(0.748)	(0.0276)	(0.455)	(0.0430)	(0.744)
Structure of general revenues	0.844***	13.52***	0.834***	-9.294***	0.841***	13.57***	0.820***	-9.277***

Table 2.5 (continued)

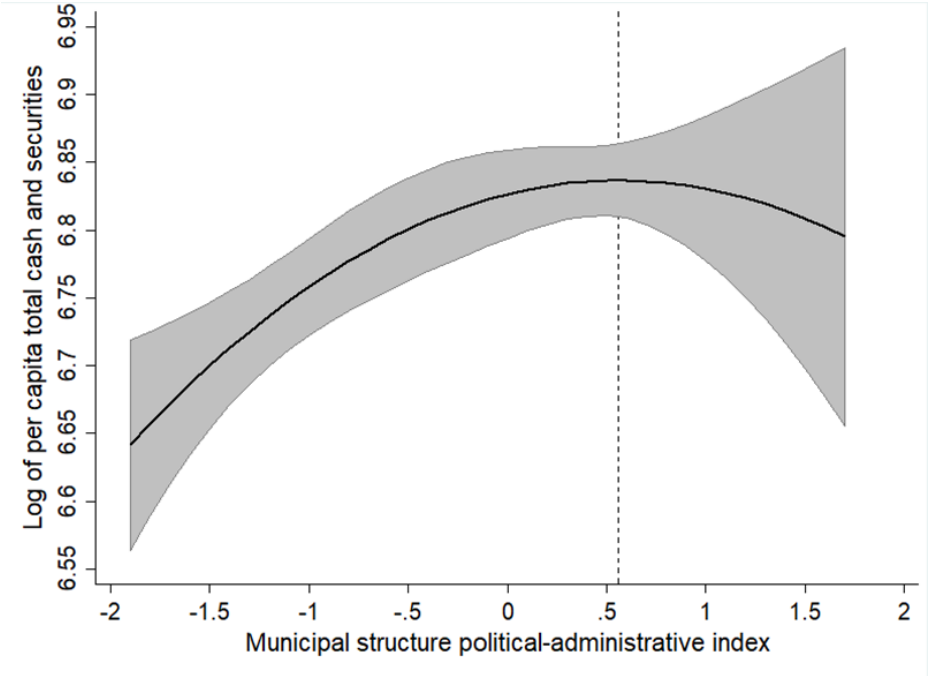
	(0.108)	(1.593)	(0.179)	(1.995)	(0.108)	(1.592)	(0.178)	(1.995)
Structure of tax revenues	-0.110**	-7.564***	0.0142	1.762	-0.113**	-7.510***	-0.00157	1.784*
	(0.0465)	(0.678)	(0.0790)	(1.076)	(0.0466)	(0.676)	(0.0778)	(1.074)
Institutional factors								
BBR	-0.118***	-4.106***	-0.121***	-1.934***	-0.122***	-4.040***	-0.139***	-1.906***
	(0.0256)	(0.357)	(0.0373)	(0.594)	(0.0257)	(0.360)	(0.0385)	(0.598)
Debt limit	-0.146***	-2.029***	-0.0913**	-0.226	-0.146***	-2.029***	-0.0917**	-0.226
	(0.0277)	(0.419)	(0.0417)	(0.700)	(0.0277)	(0.418)	(0.0415)	(0.700)
TELs stringency index	0.00516***	-0.134***	-0.00255	0.0388	0.00546***	-0.139***	-0.00115	0.0367
	(0.00111)	(0.0169)	(0.00172)	(0.0272)	(0.00113)	(0.0173)	(0.00181)	(0.0276)
2006 (2001 as reference)	0.446***	-2.374***	0.146***	1.140*	0.444***	-2.356***	0.141***	1.148*
	(0.0266)	(0.369)	(0.0471)	(0.670)	(0.0266)	(0.369)	(0.0476)	(0.669)
2011 (2001 as reference)	0.676***	-2.437***	0.302***	1.161*	0.673***	-2.393***	0.289***	1.181*
	(0.0280)	(0.413)	(0.0546)	(0.659)	(0.0280)	(0.414)	(0.0557)	(0.660)
Constant	1.469**	15.15*	3.066***	-8.180	1.465**	15.19*	3.077***	-8.143
	(0.634)	(9.078)	(0.924)	(14.85)	(0.633)	(9.079)	(0.924)	(14.85)
Observations	6,758	6,750	6,579	6,785	6,758	6,750	6,579	6,785
R-squared	0.205	0.120	0.026	0.015	0.205	0.121	0.029	0.015

Notes: Results in Panel A and B are obtained by estimating models (1) and (2), respectively. Refer to table 2.4 for the measurements and descriptive statistics of variables. Robust standard errors are reported in parentheses. ***p<0.01, **p<0.05, *p<0.1.

3.6.2 Inverted U-shaped Relationship

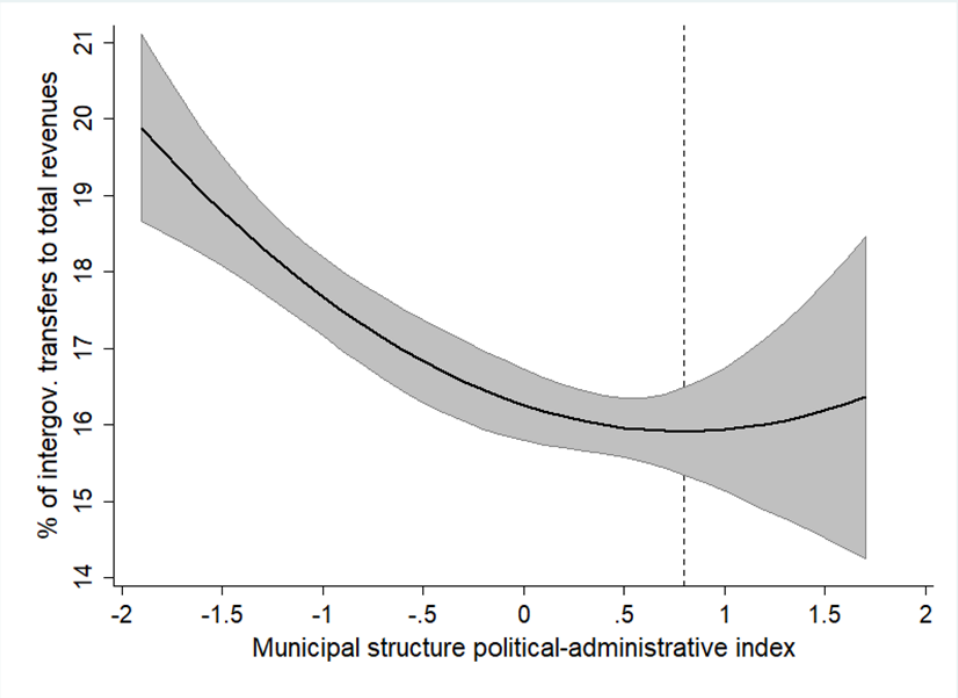
Model (2) is estimated to test Hypothesis 2, producing results reported in the last four columns in Panel B of table 2.5. Column (5) shows that the estimated effects of the municipal structure index and its square are positive and negative, respectively, and both are statistically significant. Taken together, there is an inverted U-shaped relationship between the municipal structure index and government fiscal conditions based on cash solvency. Figure 2.1 graphically illustrates the correlation to facilitate interpretation. Based on the coefficients, the curve reaches the peak at the index around 0.56. Figure 2.1 illustrates that as the municipal structure adjusts from the most political to the most administrative, governments' cash solvency improves and then declines, presenting an inverted U-shape. The results support Hypothesis 2.

Figure 2.1 Predicted log of per capita total cash and securities with 95% CI



Similarly, column (6) shows that the estimated effects of the municipal structure index and its square are negative and positive, respectively. Both are statistically significant at conventional levels. Governments' dependence on intergovernmental transfers declines until the municipal structure index reaches around 0.80 and then increases. A lower value of the dependent variable indicates better fiscal conditions. Therefore, the inverted U-shaped correlation between the municipal structure index and government fiscal performance based on dependence on intergovernmental revenues is supported. Figure 2.2 displays this correlation.

Figure 2.2 Predicted percentage of intergovernmental transfers to total revenues with 95% CI



Results in column (7) indicate that the effects on governments' debt level of both the municipal structure index and its square are negative and statistically significant. It implies that as the municipal structure becomes more administrative, governments' debt level declines at an increasing rate. Lastly, results in column (8) in table 2.5 indicate that

the correlation between the municipal structure index and its square and governments' general budget balance is not statistically significant.

3.6.3 Moderating Effect of Municipal Structure

The results of estimating model (3) are presented in table 2.6. In the multiplicative interaction model, effects of the factors of external environments on government fiscal conditions are contingent on the municipal structure. Similarly, interpreting the effect of municipal structure independently (for instance, the results reported in the first row in table 2.6) is misleading. Therefore, primary attention is paid to the parameters of the interaction items to examine the moderating effect of municipal structure. Most of the interaction items, especially for the first two indicators of fiscal conditions, show statistically significant estimates at conventional levels. To save space, only the unemployment rate and TELs are used as examples to discuss. The former is an important indicator of local economic conditions and the latter is an essential fiscal constraint that can regulate governments' fiscal behavior.

Table 2.6 Moderating effect of municipal structure (Model 3)

	(1) Cash solvency	(2) Intergov. revenue dependence	(3) Debt level	(4) General budget Surplus/deficit
Municipal structure index	-0.184	33.06***	-0.364	-10.60
	(0.720)	(10.99)	(0.912)	(16.79)
Socioeconomic factors				
Population size (log)	0.225***	-0.235	0.0738***	-0.358
	(0.0107)	(0.152)	(0.0188)	(0.254)
Population size × index	-0.0725***	-0.779***	0.0276	0.101
	(0.0123)	(0.199)	(0.0173)	(0.281)
Mean household income (log)	0.297***	0.336	-0.161***	2.078*
	(0.0408)	(0.628)	(0.0615)	(1.099)
Mean household income × index	0.00250	-1.647**	-0.0163	0.821
	(0.0488)	(0.816)	(0.0596)	(1.167)
Unemployment rate	-0.114***	2.068***	-0.109**	0.761
	(0.0291)	(0.408)	(0.0496)	(0.712)
Unemployment rate × index	0.0687**	-1.278***	0.0373	0.726
	(0.0320)	(0.476)	(0.0442)	(0.767)
Fraction of residents over 65	0.272***	0.381	-0.242***	-1.772**
	(0.0292)	(0.374)	(0.0428)	(0.798)
Fraction of residents over 65 × index	-0.148***	-0.443	-0.0430	0.166
	(0.0386)	(0.512)	(0.0598)	(1.085)
Structure of local industries	-1.373***	-3.531	0.0952	0.370
	(0.388)	(5.379)	(0.503)	(8.059)
Structure of local industries × index	1.216***	-12.09**	0.567	-3.191
	(0.401)	(5.685)	(0.553)	(9.527)
Fiscal factors				
Function in public health	0.0171	3.012***	-0.0270	3.267***
	(0.0313)	(0.456)	(0.0415)	(0.860)
Function in public health × index	0.0750**	2.070***	0.0216	-0.829
	(0.0333)	(0.473)	(0.0395)	(0.879)
Function in social service	-0.174***	-4.465***	0.249***	-0.716
	(0.0303)	(0.447)	(0.0412)	(0.830)
Function in social service × index	-0.142***	2.263***	0.0202	0.840
	(0.0338)	(0.486)	(0.0447)	(0.897)
Function in public school	0.0933***	-0.224	0.0210	-2.062**
	(0.0311)	(0.494)	(0.0485)	(0.823)
Function in public school × index	-0.0526	-5.465***	0.133***	0.509
	(0.0357)	(0.597)	(0.0507)	(0.877)
Structure of general revenues	0.873***	14.23***	0.824***	-8.931***
	(0.106)	(1.532)	(0.182)	(2.050)
Structure of general revenues × index	0.243*	3.836**	0.0320	0.784
	(0.131)	(1.920)	(0.171)	(2.192)

Table 2.6 (continued)

Structure of tax revenues	-0.0810	-7.143***	-0.0417	1.734
	(0.0494)	(0.733)	(0.0775)	(1.131)
Structure of tax revenues × index	0.0299	-0.218	-0.243***	0.430
	(0.0546)	(0.879)	(0.0743)	(1.291)
Institutional factors				
BBR	-0.117***	-5.104***	-0.132***	-1.841***
	(0.0285)	(0.405)	(0.0438)	(0.632)
BBR × index	0.0351	-0.916**	0.0292	-0.202
	(0.0305)	(0.446)	(0.0428)	(0.716)
Debt limit	-0.132***	-2.589***	-0.0906**	-0.303
	(0.0283)	(0.445)	(0.0441)	(0.722)
Debt limit × index	-0.114***	2.453***	-0.0869*	1.563*
	(0.0336)	(0.557)	(0.0477)	(0.812)
TELs stringency index	0.00603***	-0.164***	-0.00218	0.0332
	(0.00117)	(0.0178)	(0.00186)	(0.0285)
TELs stringency index × index	-0.00400**	0.0561**	-0.00363	0.00555
	(0.00161)	(0.0260)	(0.00227)	(0.0373)
2006 (2001 as reference)	0.444***	-2.400***	0.143***	1.174*
	(0.0266)	(0.363)	(0.0472)	(0.669)
2011 (2001 as reference)	0.677***	-2.305***	0.287***	1.197*
	(0.0281)	(0.406)	(0.0559)	(0.657)
Constant	1.246**	16.49*	2.407***	-10.08
	(0.633)	(9.084)	(0.893)	(15.23)
Observations	6,758	6,750	6,579	6,785
R-squared	0.214	0.154	0.030	0.016

Notes: Results are obtained by estimating model (3). Refer to table 2.4 for the measurements and descriptive statistics of variables. Robust standard errors are reported in parentheses. ***p<0.01, **p<0.05, *p<0.1.

Results in table 2.6 show that the unemployment rate is negatively and statistically significantly correlated with government fiscal conditions for the first two indicators. The signs of the estimated coefficients of the interaction item between the unemployment rate and the municipal structure political-administrative index show that as the municipal structure becomes more administrative, the negative correlation between the unemployment rate and government fiscal conditions is moderated. A potential explanation

is that, as the nature of municipal structure becomes more administrative, increasing managerial professionalism and efficiency as well as adoption of prospecting in strategy stance help government officials effectively mitigate the negative effect of external economic difficulties on government fiscal conditions.

Results in table 2.6 show that the more stringent fiscal constraints by TELs help governments improve fiscal conditions for the first two indicators. Based on the coefficients of the interaction item between the municipal structure index and TELs stringency index, as the municipal structure becomes more administrative, the positive correlation between the TELs stringency index and government fiscal conditions is moderated. One potential explanation is that a higher level of professional autonomy helps government officials adeptly circumvent the fiscal constraints by TELs.

3.6.4 Solving the Endogeneity Problem Using IVs

Structural characteristics may be endogenously adopted in municipalities, which will lead to biased estimates of the effect of municipal structure. The endogeneity problem may result from the unobservable or unmeasurable confounder in the error term in estimation models or the reverse causality between municipal structure and governments' fiscal conditions.

There may be unobservable or unmeasurable factors existing in the error term that can simultaneously determine the municipal structure and affect government fiscal conditions. These factors can presumably involve the political preferences of local citizens and cultural and historical features of municipalities. It is also reasonable to assume that municipalities may appoint a CAO or change other structural characteristics because of poor fiscal performance.

One means to cope with the endogeneity problem is to utilize instrumental variables (IVs) for municipal structure. Appropriate instrumental variables must be strongly correlated with municipal structure and independent of the error term in the fiscal condition determinants model (Arellano and Bover 1995). Selection of instrumental variables is based on existing evidence on the determinants of municipal structure. Nelson (2011) finds that states' statutory or constitutional provisions on municipal governments' autonomy of institutional changes influence local choices of municipal form or structural characteristics. Similarly, Marando and Reeves (1993) find that states' constitutional or legislative decisions to allow for structural changes in local governments substantially affect the structural reforms of county governments.

This article uses existence of the initiative and popular referendum that allow citizens to place changes of the charter, ordinance, and home rule on the ballot as IVs for municipal structure. Data on the initiative and popular referendum in municipalities are derived from the *Municipal Form of Government* surveys by ICMA. As a matter of fact, according to the survey results, many structural changes are made through local charters, resolutions, or ordinances. There is no sufficient or convincing evidence demonstrating that citizens' autonomy to change the charter and ordinance through initiative and popular referendum has independent effects on indicators of government fiscal conditions.

The results of using IVs for the municipal structure political-administrative index and utilizing the Two-Stage Least Squares (TSLS) to regress model (1) are reported in table 2.7. The two IVs perform remarkably well from the statistical perspective. The Cragg-Donald Wald F-statistic from the weak identification test shows that the "weak instruments" hypothesis is statistically significantly rejected in all the four regressions. The Hansen J-

statistic from the over-identification restriction test suggests that the hypothesis of no correlation between the IVs and the error term in the model of interest cannot be statistically significantly rejected.

The coefficients of the municipal structure index are statistically significant in the first three columns, and the signs of coefficients indicate that the administrative municipal structure has a positive effect on government fiscal conditions for the first three indicators. Compared to the results shown in columns (1) and (2) in table 2.5, signs of the coefficients of the municipal structure index remain unchanged, but the magnitudes of effects are much larger. The effect of municipal structure on debt level reported in column (3) in table 2.5 is not statistically significant, but it becomes statistically significant in column (3) in table 2.7 when using IVs to solve the endogeneity problem. The results imply that the positive effect of the administrative municipal structure on government fiscal conditions is underestimated in the original estimation due to the endogeneity problem.

Table 2.7 Effect of municipal structure using IVs

VARIABLES	(1) Cash solvency	(2) Intergov. revenue dependence	(3) Debt level	(4) General budget Surplus/deficit
Municipal structure index	0.491***	-6.931***	-0.494**	1.706
	(0.139)	(2.043)	(0.247)	(3.017)
Socioeconomic factors				
Population size (log)	0.238***	-0.143	0.0419*	-0.568**
	(0.0130)	(0.181)	(0.0254)	(0.276)
Mean household income	0.106*	1.916*	-0.0388	1.940
	(0.0635)	(1.020)	(0.0966)	(1.403)
Unemployment rate	-0.152***	2.505***	-0.115**	0.649
	(0.0329)	(0.491)	(0.0574)	(0.756)
Fraction of residents over 65	0.256***	-0.0535	-0.291***	-1.880**
	(0.0327)	(0.428)	(0.0485)	(0.846)
Structure of local industries	-1.335***	1.175	0.307	2.494
	(0.469)	(5.969)	(0.581)	(8.553)
Fiscal factors				
Function in public health	0.197***	-0.261	-0.215**	3.783***
	(0.0628)	(0.886)	(0.104)	(1.400)
Function in social service	-0.211***	-4.969***	0.227***	-0.334
	(0.0341)	(0.488)	(0.0456)	(0.838)
Function in public school	0.0510	2.598***	0.118*	-2.363***
	(0.0352)	(0.577)	(0.0608)	(0.834)
Structure of general revenues	0.739***	14.28***	0.905***	-8.294***
	(0.122)	(1.762)	(0.201)	(2.096)
Structure of tax revenues	-0.306***	-4.993***	0.255*	0.861
	(0.0784)	(1.074)	(0.147)	(1.594)
Institutional factors				
BBR	-0.354***	-1.082	0.152	-2.966*
	(0.0792)	(1.153)	(0.127)	(1.647)
Debt limit	-0.220***	-1.089**	-0.0655	-0.456
	(0.0336)	(0.485)	(0.0517)	(0.797)
TELs stringency index	-0.00241	-0.0358	0.00655	-0.0117
	(0.00271)	(0.0397)	(0.00490)	(0.0585)
2006 (2001 as reference)	-0.640***	2.180***	-0.308***	-0.815
	(0.0320)	(0.471)	(0.0622)	(0.714)
2011 (2001 as reference)	-0.222***	-0.0997	-0.160***	0.441
	(0.0302)	(0.429)	(0.0475)	(0.707)
Constant	4.568***	-15.45	1.030	-5.554
	(0.959)	(14.33)	(1.361)	(19.38)
Weak identification test (Cragg-Donald Wald F-statistic)	39.1	40.1	39.3	40.3

Table 2.7 (continued)

Over-identification test (Hansen J-statistic)	2.67 (p=0.102)	1.69 (p=0.193)	0.210 (p=0.647)	0.265 (p=0.607)
Observations	5,853	5,844	5,690	5,875

Notes: Results are obtained by estimating model (1), using existence of the initiative and popular referendum that allow citizens to place changes of the charter, ordinance, and home rule on the ballot as IVs for the municipal structure political-administrative index. Refer to table 2.4 for the measurements and descriptive statistics of variables. Robust standard errors are reported in parentheses. ***p<0.01, **p<0.05, *p<0.1.

3.7 Conclusions

Evidence from this article has implications for the effect of municipal structure and the determinants of local government fiscal conditions. Previous empirical studies usually adopt a dichotomous classification of municipal form as the mayor-council or council-manager. However, prevalent cross-adoption of structural characteristics makes the boundary between the nominal forms ambiguous. Absorbing the merits of typologies used by previous studies to reclassify municipal structure, this article constructs a municipal structure political-administrative index by investigating structural characteristics pertaining to managerial professionalism, separation of powers, and local electoral systems. The index measures the political or administrative nature of municipal structure. The former underscores separation of powers and checks and balances between the mayor and council members, direct responsiveness and accountability of the mayor to voters, and influence of parties and special interests on local elections; and the latter highlights managerial professionalism, concentration of powers in the council, and elimination of partisan and special interests' influence on elections.

Municipal structure is correlated with government internal management through a variety of mechanisms. The administrative municipal structure promotes managerial

professionalism and efficiency and stimulates officials to act as prospectors in the choice of managerial strategy stance. These effects lead to a positive correlation between the municipal structure political-administrative index and government fiscal performance. On the other hand, considering the public nature of governments, officials' accountability to the public and prompt reacting to the dynamic demands of voters are also important for improving government performance. This study accordingly hypothesizes that the municipal structure that mixes the political and administrative characteristics may result in better fiscal conditions, which implies an inverted U-shaped relationship between the municipal structure index and indicators of government fiscal conditions. In addition, municipal structure can moderate effects of the factors of external environments on government fiscal performance. The empirical evidence supports the proposed hypotheses for the fiscal conditions of governments in cash solvency, dependence on intergovernmental transfers, and debt level. The evidence becomes stronger when using instrumental variables to solve the endogeneity problem of municipal structure.

This research practices the approaches suggested by Carr (2015) to advance research on the effect of municipal structure on government performance. A potential limitation is that the correlations between municipal structure and officials' strategy stance choices and managerial accountability and efficiency is based on theoretical inference. Therefore, further studies that produce empirical evidence to support the correlations are encouraged.

CHAPTER 4. THE DETERMINANTS OF LOCAL GOVERNMENT FISCAL SLACK: EVIDENCE FROM A POLITICAL-BUDGETARY-MANAGERIAL FRAMEWORK

4.1 Introduction

Classic public finance theories hold that counter-cyclical monetary and fiscal policies are exclusive domains of the national government (Musgrave 1959). Contrary to this conventional wisdom, the seminal work of Gramlich (1987) contends that subnational governments play an important counter-cyclical role in stabilizing the budget (Hou and Moynihan 2007; Wang and Hou 2012). State governments can save fiscal slack, which is commonly called a "rainy" day fund or budget stabilization fund, in economic booms to have resources to spend during downturn periods, thus influencing governmental savings and budgetary stabilization (Hou 2006; Hou and Brewer 2010; Knight and Levinson 1999; Rose 2008; Wagner 2003; Wei and Denison 2019).

The rationale of fiscal slack and budgetary stabilization is also applicable to the local government (Tyer 1993; Wolkoff 1987). Compared to the state, local government has a lower degree of fiscal autonomy amid fiscal constraints by the state and is more dependent on intergovernmental transfers. Moreover, the external fiscal environments of local government changed dramatically in recent decades (Chapman 2008), rendering them more reliant on the pro-cyclical and income-elastic local sales taxes and program charges and fees. The increasing fiscal vulnerability and volatility makes budgetary stabilization a salient challenge of local government fiscal management.

Research on local government fiscal slack has substantial implications for practitioners and academics in the field of public administration and management. Accumulation and usage of fiscal slack is relevant to the effective and efficient management of government fiscal resources, which are the basis on which public services

are provided, government functions are realized, and government performance is measured and evaluated (Jimenez 2017). Also, management of local government fiscal slack pertains to budgetary transparency on the grounds that local government usually uses an informal form of fiscal slack, such as the year-end general fund balances, which are less regulated by legislation and institutional rules compared to the state budget stabilization funds (Rose and Smith 2012; Stewart et al.2015). Moreover, local government usually maintains massive general fund balances as fiscal slack, which is vastly beyond the 5-15 percent of operating budget recommended by credit rating agencies and professional organizations (Gore 2009; Marlowe 2005). Research on local government fiscal slack sheds light on the motivations and consequences of government's saving behavior.

This research specifically focuses on the determinants of local government fiscal slack balance. Scholars have recently advanced studies in this research area (Gianakis and Snow 2007; Gore 2009; Guo and Wang 2017; Hendrick 2006; Snow, Gianakis, and Haughton 2015; Wang and Hou 2012); however, the existing evidence is mixed or inconclusive. This article contributes evidence for the related literature through examining the determinants of local government's fiscal slack in a three-dimensional framework comprised by voters' political preferences, government's budgetary performance, and government internal management. The essential argument is that factors of each dimension work interactively to affect government fiscal slack, instead of exerting influence independently.

The next section of this article introduces the related literature and discusses the limitations. Section three constructs the theoretical framework of government fiscal slack

and proposes three testable hypotheses. Section four introduces the research methodology, followed by the empirical results in Section five. The last section concludes and discusses.

4.2 Related Literature

4.2.1 Determinants of Local Government Fiscal Slack

Prior research on the determinants of local government fiscal slack involves perspectives from multiple disciplines. Organizational slack is first studied by organizational scientists in such classic works as Cyert and March (1963) and Thompson (1967). These scholars hold that organizational slack can serve as the inducement to maintain a coalition of interest groups inside the organization, resources for conflict resolution, buffer of workflow, and facilitators of strategic behavior of organization managers (Bourgeois 1981). Therefore, the organizations that face fierce internal conflicts, that are exposed to external uncertainties, and whose "core technology" is vulnerable to external competition should maintain a high level of slack resources (Bourgeois 1981; Nohria and Gulati 1997; Sharfman et al. 1988). In the field of government fiscal management, scholars have found that local governments whose revenues are more volatile or uncertain are prone to save more fiscal slack (Gore 2009; Guo and Wang 2017); however, there is insufficient evidence on the effects of other organizational factors.

From the perspective of political responsiveness or accountability, voters can substantially influence local government's fiscal policy making by expressing their preferences on the ballot. Although preferences of various groups regarding governmental saving and spending policies may bifurcate, adhering to the preference of the median voter is the optimal political strategy by politicians who want to be re-elected (Downs 1957). The Tiebout (1956) theorem also implies that mobile residents can choose their living

communities based on their preferences for tax and expenditure policies, resulting in relatively unified preferences or sentiment of voters in a community. Snow, Gianakis, and Haughton (2015) find that voters' anti-tax and pro-spending sentiment has a negative effect on the balance of Massachusetts municipalities' stabilization funds.

Managerial factors inside the government can also enormously affect government fiscal slack. Hendrick (2006) argues that the managerial capacity and professional management of local government may be more important than other political and socioeconomic factors in determining government's fiscal behavior. Hendrick (2006) finds that professional management in Chicago's suburban municipalities helps increase their unreserved general fund balances. Snow, Gianakis, and Haughton (2015) point out that sophisticated expertise, professional training, managerial experiences, and commitment to professionalism are necessary components of professional financial management. They find a positive correlation between government's financial management capacity and the balance of Massachusetts municipalities' stabilization funds.

Demographic, economic, and financial factors can affect local government fiscal slack from the supply and demand side. Groups with different demographic characteristics have various demands for public goods and services in both quantity and quality, thus influencing government expenditures and savings (Marlowe 2011). Outstanding economic performance and healthy financial conditions create the ultimate revenue base for government to save (Guo and Wang 2017; Stewart 2009; Wang and Hou 2012). All prior studies on local government fiscal slack control in research models for demographic, economic, and financial factors, such as government revenues and expenditures (Wang and Hou 2012), outstanding debt and debt service (Gore 2009), population size and growth

(Gore 2009; Guo and Wang 2017), and the unemployment rate (Stewart 2009), among others.

4.2.2 Limitations in Previous Studies

An important limitation of previous studies is the lack of integration of various theoretical perspectives into a comprehensive framework and the consequent failure to probe into the interactive effects of multiple factors on government fiscal slack in empirical investigations. Government fiscal management outputs are the products of an interactive process between the external environments and internal government management. However, most previous studies do not take into account the interaction effects, and they implicitly assume that all factors exert their influence on government fiscal slack balance independently.

Inferences based on various theoretical perspectives may result in contradictory conclusions. For instance, organizational theories suggest that government mired in declining economic and fiscal conditions are confronted with an unstable external environment and, therefore, should maintain more fiscal slack for coping with potential crises. Nevertheless, from the perspectives of economics and fiscal management, deteriorating economic and fiscal conditions damage the revenue base and render government incapable of saving much fiscal slack. As another example, scholars and practitioners may predict that government amid voters' anti-tax and pro-spending sentiment will exhaust most surpluses, even with outstanding economic performance and healthy fiscal conditions. However, professioanl management inside government may counteract the influence of voters' sentiment on government fiscal policy making. Therefore, failure to analyze government fiscal slack in a comprehensive multiple-

dimensional framework may result in an unclear or misleading conclusion with regard to what factors motivating government to save.

Another limitation of previous studies is the scarce attention paid to the essential role government internal management plays in determining government fiscal slack balance, as well as the effect of its interaction with the external socioeconomic and political environments. Inputs from the external environment are processed by internal management of policy makers to produce policy outputs. Government internal management can hardly exert direct control over the external environment, but it can influence the external environment to a large extent through strategic policy choices. For instance, government officials can utilize tax credits to attract private investment, thus enhancing local economic vigor. Government internal management can also affect local government fiscal behavior by adjusting managerial practices. For instance, the elected political leader can promote government fiscal management in a professional manner by appointing an experienced fiscal manager who is responsible for budgetary and fiscal affairs and by adopting advanced fiscal management techniques and procedures.

4.3 A Theoretical Framework of Government Fiscal Slack

This article constructs a three-dimensional framework to analyze the determinants of local government fiscal slack balance by addressing (1) the political preferences or sentiment of voters, (2) the budgetary performance of government, and (3) government internal management. This research proposes one appropriate indicator for each of the dimensions, and the hypotheses are introduced accordingly.

4.3.1 Voters' Political Preferences

In the classic principal-agent model, government officials as the agent must defer to the demands and preferences of voters who act as the principal in public policy making (Waterman and Meier 1998). The officials who defy the preferences or sentiment of voters will be voted out in elections. Budgetary savings may trigger political pressure among the anti-tax groups who view the unspent fiscal slack as unnecessary tax levies and the pro-spending groups who view fiscal slack as forgone spending (Rose and Smith 2012; Snow, Gianakis, and Haughton 2015). Therefore, government in the midst of voters' anti-tax or pro-spending sentiment is less likely to accumulate much fiscal slack. In contrast, in communities where voters are risk-averse and fiscally prudent, government is motivated to save more.

It is always a challenge to operationalize the elusive preference or sentiment of voters in empirical studies, especially as the available tool of measurement is limited to secondary administrative data. This research employs and adjusts the method of Snow, Gianakis, and Haughton (2015) to measure the anti-tax and pro-spending sentiment of voters. Anti-tax sentiment makes government hesitate to levy an excessive level of tax, which is manifested in the tax revolt since California's Proposition 13 in 1978. Snow, Gianakis, and Haughton (2015) argue that voters' political sentiment remains stable for a fairly long time. Therefore, they measure voters' anti-tax sentiment in Massachusetts municipalities by averaging the percentage of voters who are in favor to "limit the growth of taxes, reduce tax rates, change tax structures, or repeal them outright" in "eight statewide tax measures appeared on general election ballots in Massachusetts" between 1980 and

2010 (Snow, Gianakis, and Haughton 2015: 306).[15] The authors assume that voters' anti-tax sentiment does not change over decades and use the anti-tax sentiment as a time-invariant variable in empirical research. Appendix 1 presents the eight statewide tax limitation ballot questions and the vote results. All the five proposed tax limitations before 2000 were successfully enacted, but the three after 2000 failed.

Figure 3.1 displays the box plot of the percentages of voters in Massachusetts municipalities who are in favor of tax limitations for each of the eight ballot questions. Although the tax limitation measures are different, the fundamental assumption here is that the vote results can reflect voters' attitudes or sentiment towards taxation at a certain time in a similar way. Figure 3.1 shows that voters' anti-tax sentiment is dynamic across time. It presents a trend of increasing in most time of the 1980s and 1990s and decreasing in the 2000s, and it displays a hint of increasing after 2008. Therefore, this research does not treat voters' anti-tax sentiment as time-invariant. This research uses the percentage of voters in each municipality who are in favor of tax limitation on each of the eight ballots as the indicator of anti-tax sentiment for the municipality in the ballot year. The missing values in the interval (non-ballot) years are interpolated by averaging the percentages for the most recent ballot question before and after the interval year weighted by the time distance.[16]

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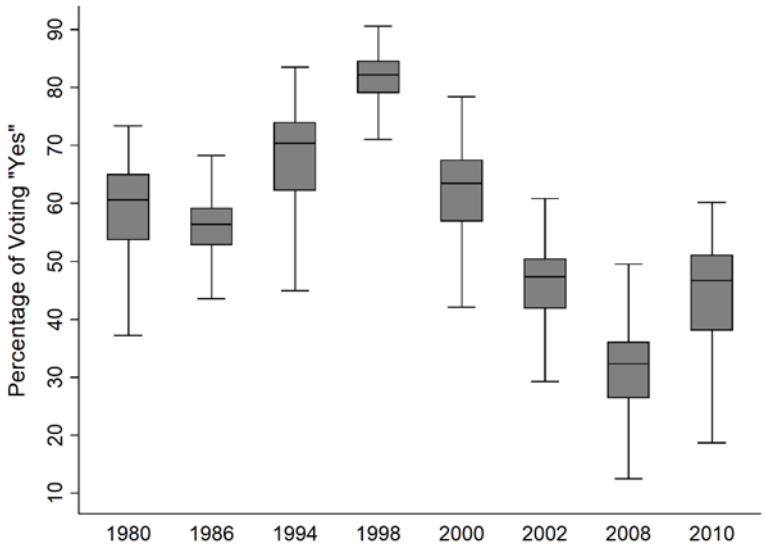
[15] Refer to Wallin (2004) for more details pertaining to the tax limitation measures on general election ballots in Massachusetts.

[16] For instance, the missing value in 2003 is interpolated by averaging the values in 2002 and 2008, weighting the value in 2002 by 5/6 and the value in 2008 by 1/6. The missing value in 2004 is interpolated by averaging the values in 2002 and 2008, weighting the value in 2002 by 4/6 and the value in 2008 by 2/6. The last tax limitation measure was proposed in 2010 in the dataset. This research interpolates the anti-tax sentiment in 2011 by directly substituting into the value in 2010.

Figure 3.1 Box plot of the percentages of voters in Massachusetts municipalities favoring tax limitations in eight statewide ballot questions for 1980-2010



The pro-spending sentiment is measured by the action of voters' override of the state-imposed property tax limit (Snow, Gianakis, and Haughton 2015). The research sample is municipalities in Massachusetts. In 1980, Massachusetts' voters in a statewide referendum initiated and passed Proposition 2½ to limit the levy amount and growth rate of property tax in all municipalities. Meanwhile, the state constitution empowers municipal governments to override the property tax limit and increase the quota of property tax levy amount if government officials propose an override on the ballot and local voters approve it in a referendum. If a property tax limit override is successfully passed in a municipality, the government is able to increase property tax levy and spend more. Snow, Gianakis, and Haughton (2015) use a binary variable to indicate the successful property tax limit override as the measure of voters' pro-spending sentiment. However, Massachusetts municipalities may propose multiple property tax limit overrides on multiple ballots in one single year or propose multiple overrides on one ballot (this is called the "measure" approach). Therefore, one successful override among multiple attempts may reflect a different degree of voters'

pro-spending sentiment compared to one success out of one single attempt. This research adjusts the method of Snow, Gianakis, and Haughton (2015) by using the percentage of the successful property tax limit override amounts among the proposed override amounts as a continuous measure of voters' pro-spending sentiment in a certain year. If no override attempts occur in a given municipality-year observation, a value 0 is assigned.

Hypothesis 1*: Voters' anti-tax and pro-spending preferences are negatively correlated with the balance of government fiscal slack, all else being equal.*

4.3.2 Budgetary Performance

The second important dimension in the framework of government fiscal slack analysis is government's budgetary performance, which is defined as a concept that can comprehensively reflect the situation of budgetary operation of government in the long-term. This article uses the method of Hou (2003) and Wei and Denison (2019) to calculate the budgetary gap, that is, the difference between the actual operating budget and the expected trend of operating budget in the long-term, as a measure of government's budgetary performance. The budgetary gap can be positive or negative. A positive budgetary gap means that the operating budget in a certain year stands above the long-term expected trend, and the contrary for the negative budgetary gap. Specially, the budgetary gap is expressed as follows.

$$Budgetary\_Gap_{it} = B_{it} - B_{it}^{*} \quad (1).$$

B_{it} indicates the actual per capita operating budget in municipality i in year t, and B_{it}^{*} refers to the expected trend value. B_{it}^{*} is obtained "using a time trend ordinary least

squares (OLS) regression model" (Wei and Denison 2019: 11), which can be expressed as follows.

$$B_{it}^{*} = \alpha_i + \beta_i T_t \qquad (2).$$

α_i is the constant for municipality i, β_i is the estimated parameter for the given municipality, and T_t is the coded time value. Based on the available data in the analysis, this research calculates the expected trend of per capita operating budget for 25 years (1991-2015).

Accurate forecasting of government revenues, expenditures and operating budget is a substantial challenge confronted by both practitioners and scholars of government financial management (Mikesell 2018). Numerous technical and structural difficulties hinder government financial managers from minimizing the volatility of government revenues and expenditures and maintaining a long-term smooth operating budget. Whatever the reasons are, intuitively, a positive budgetary gap, which happens when the actual per capita operating budget exceeds the expected trend, presumably manifests affluent revenues and sound fiscal conditions. Therefore, government with a positive (negative) budgetary gap is more likely to save more (less) fiscal slack. In another line of reasoning, fiscal slack is usually saved in economically and fiscally sound times to spend during downturn periods (Hou and Brewer 2010; Hou and Moynihan 2007). Although a positive budgetary gap does noes necessarily result in budgetary surpluses, government with an operating budget exceeding the expected trend level is more likely to save fiscal slack.

Hypothesis 2*: Government's budgetary performance, which is measured by the budgetary gap, is positively correlated with the balance of government fiscal slack, all else being equal.*

4.3.3 Government Internal Management

Scholars of public management generally hold that management matters for government performance (Boyne 2003; Meier and O'Toole 2002; Moynihan and Pandey 2004; Nicholson-Crotty and O'Toole 2004; O'Toole and Meier 1999, 2003). However, comprehensively and accurately operationalizing the managerial factors inside government in empirical studies on the management-performance linkage is a challenge for scholars (Ingraham, Joyce, and Donahue 2003). Government management is an abstract concept which can be examined from the perspectives of managerial structure and managerial practice (Justice and Scorsone 2013). The former primarily focuses on the structural and institutional settings based on which government officials enact and implement public policies and operate the government (Frederickson, Johnson, and Wood 2004; Wei, Butler, and Jennings 2019), while the latter specifically examines the practical or technical aspects of government internal management, such as who takes charge of a certain government function, how public policies are enacted and what the procedures are in implementing the policies.

Prior studies usually employ indicators that can partly reflect the quality or practice of government internal management (Meier and O'Toole 2002; O'Toole and Meier 2003). However, as noted by Nicholson-Crotty and O'Toole (2004), it is infeasible to measure all forms of managerial efforts in public organizations. To operationalize government internal management in a feasible manner and considering data availability in measurement, this

article focuses on the government structure of municipalities in Massachusetts as an appropriate indicator of government internal management by classifying the municipal structure on a political-administrative dimension using the method of Wei, Butler, and Jennings (2019). Under different municipal structures, the political officials and professional bureaucrats are elected or appointed in different methods and they have various responsibilities, motivations, and behavior in government internal management (Demir and Reddick 2012), resulting in different combinations of management efficiency and accountability (Wei, Butler, and Jennings 2019; Zhang 2014; Zhang and Feiock 2009). Similarly, the political market framework of Lubell et al. (2009) argues that the institutional structure "determines the balance of administrative and electoral power in any given city." (Lubell et al. 2009: 653).

The conventional wisdom that separates the primary municipal structure into the mayor-council or council-manager is problematic because the prevalent cross-adoption of structural characteristics between different municipal structures makes the structure boundaries ambiguous (Frederickson, Johnson, and Wood 2004; Lubell et al. 2009; Wei, Butler, and Jennings 2019).[17] Scholars have proposed various approaches to reclassify the municipal structure (Carr and Karuppusamy 2008, 2009; Frederickson, Johnson, and Wood 2004; Wei, Butler, and Jennings 2019).[18] This study applies the method of Wei, Butler, and Jennings (2019) by focusing on six fundamental structural characteristics, coding the

[17] There are five statutory forms of municipal structure in the U.S. municipalities: mayor-council, council-manager, commission, town meeting, and representative town meeting. The basic characteristics of these forms can be found on the website of the National League of Cities at http://www.nlc.org/forms-of-municipal-government.

[18] Wei, Butler, and Jennings (2019) in their study introduce the prior efforts to reclassify municipal structure in detail and discuss the merits and limitations of various approaches of reclassification. Also, the authors propose the method of classifying municipal structure on a political-administrative dimension.

structural characteristics based on their political or administrative nature, and using factor analysis to construct a municipal structure political-administrative index. The "approach of constructing an index to reclassify municipal structures on a political-administrative dimension has the merit of comprehensively evaluating the political or administrative nature of municipal structures by investigating more structural characteristics." (Wei, Butler, and Jennings 2019: 192).

The standards for constructing the municipal structure index are presented in table 3.1. For each of the six structural characteristics, a value 0, 0.5, or 1 is assigned based on their political or professional nature.[19] This research constructs the municipal structure political-professional index by predicting the principal factor after factor analysis of the six coded values. The factor analysis reports only one eigenvalue above one, which is 3.11, and the second largest eigenvalue is 0.11. Appendix 2 reports the factor loadings of components for the obtained principal factor, which is positively and heavily loaded by the first five structural characteristics. The principal factor is used as the municipal structure index, and it ranges between -2 and 0.57 in the research sample, with mean 0.04 and standard deviation 0.94. A lower index indicates a more political municipal structure and a higher index indicates a more administrative or professional municipal structure.

[19] Wei, Butler, and Jennings (2019) have discussed the political or administrative nature of each structural characteristic in detail. Readers who are interested in the method of municipal structure classification can refer to their study.

Table 3.1 Standards for constructing the municipal structure political-professional index

Standards\Coded values	0	0.5	1
Does a chief administrative officer (CAO) exist?	No		Yes
How is the government head elected?	Direct election		Non-direct election
Is the government head independent of council (board)?	Yes		No
Does the government head have authority to veto council (board)?	Yes		No
Is the election of council (board) members partisan or nonpartisan?	Partisan		Nonpartisan
Is the election of council (board) members at-large or by-district?	By-district	Combination	At-large

Notes: The method of constructing the municipal structure political-administrative index is borrowed from Wei, Butler, and Jennings (2019). Refer to table 1 of their research for comparison. Note that this article deletes one structural characteristic here (the statutory form as mayor-council or council-manager) on the grounds many Massachusetts municipalities among the research sample use the town meeting or representative town meeting form but Wei, Butler, and Jennings (2019) only involve the mayor-council and council-manager municipalities in their study.

Wei, Butler, and Jennings (2019) have discussed the validity and reliability of the municipal structure political-professional index in detail. This research here only briefly introduces some results from the related statistical tests. The Pearson correlation coefficients show that almost each pair of the six index components (namely, the coded values of the structural characteristics) is statistically significantly correlated at the 0.001 level. This research then uses the Cronbach's alpha to test the internal scale reliability and consistency of the index components. The alpha value 0.82 indicates that the six index components are closely related to be measurements of a single concept. Further, the fact that only one eigenvalue value after the factor analysis is above the threshold value one demonstrates the unidimensional nature of the six index components.

The primary purpose of this research is to investigate how government internal management can interact with the factors of voters' preferences and government's budgetary performance to influence government fiscal slack balance. Government internal management under the more political structure underscores officials' political leadership and direct responsiveness and accountability to voters, as well as the influence of partisan politics on policy making. In contrast, government internal management under the more administrative or professional structure stresses the effective and efficient management by professional managers who possess managerial experience and expertise and the elimination of partisan influence on local affairs. Therefore, government officials under the municipal structure with more administrative or professional nature can more easily moderate the influence of voters' preferences and the pressure from economic and budgetary performance in fiscal policy making by taking advantages of professional

expertise and skills. This research accordingly proposes the third testable hypothesis as follows.

> ***Hypothesis 3****: Government internal management, which is operationalized by the municipal structure political-administrative index, modifies the negative effect of voters' anti-tax and pro-spending preferences and the positive effect of the budgetary gap on the balance of government fiscal slack, all else being equal.*

4.4 Methodology

This study uses Massachusetts municipalities as the sample for empirical analysis. Although focusing on municipalities from one state has a limitation in external generalizability, it mitigates the problem of inconsistence in the measurement of local government's fiscal slack across states. It also has the advantage of having a consistent set of state rules that apply to the municipalities. Almost all Massachusetts municipalities have adopted stabilization funds as the main form of fiscal slack (Snow, Gianakis, and Haughton 2015). Moreover, the rich data resources provided by the Division of Local Services (DLS) of Massachusetts Department of Revenue facilitate the empirical investigation.

4.4.1 Model Specification

This research first uses the OLS regression model with fixed effects to examine the direct effects of the variables of interest depicted in the previous section on government fiscal slack. Although the primary purpose of this study is to investigate the determinants of government fiscal slack in an interactive framework, this effort corresponds to the endeavors of previous studies and serves as the basis of comparison to the results from the multiplicative interaction regression model. The first model is specified as follows.

$$FS_{it} = \alpha_0 + \alpha_1 P_{it} + \alpha_2 B_{it} + \alpha_3 M_{it} + \alpha_4 X_{it} + \theta_i + \lambda_t + \varepsilon_{it} \quad (3).$$

This research then employs the multiplicative interaction regression model with fixed effects to test the modifying effect of government internal management on the effects of voters' preferences and government's budgetary performance on government fiscal slack. All constitutive terms of the interaction items should be included in the multiplicative interaction model (Brambor, Clark, and Golder 2005).[20] The second model is specified as follows.

$$FS_{it} = \beta_0 + \beta_1 P_{it} + \beta_2 B_{it} + \beta_3 M_{it} + \beta_4 M_{it} \times P_{it} + \beta_5 M_{it} \times B_{it} +$$
$$+\beta_6 X_{it} + \delta_i + \gamma_t + \mu_{it} \quad (4)$$

FS_{it} is the fiscal slack balance of municipality i in year t. This study uses the per capita stabilization fund balance as the measure of the amount of government fiscal slack in Massachusetts municipalities. P_{it} refers to voters' preferences, measured by the anti-tax and pro-spending sentiment. B_{it} indicates the budgetary performance of government, which is measured by the budgetary gap. Lastly, M_{it} denotes municipal government's internal management, indicated by the municipal structure political-administrative index. X_{it} represents a vector of control variables, which will be described below. Municipality fixed effects are θ_i (in equation 3) and δ_i (in equation 4) that control for the effects of the time-invariant, unobserved characteristics of municipalities. Time fixed effects are λ_t (in equation 3) and γ_t (in equation 4), which control for the environmental variations along with time that are common to all municipalities. The estimated parameters are α and β, and ε and μ are the disturbance terms.

[20] Refer to Brambor, Clark, and Golder (2005) for details about the multiplicative interaction regression model and the interpretation of regression results.

4.4.2 Data Collection

The units of analysis are municipality-year observations in Massachusetts. Data are derived from two sources. Data on fiscal slack (stabilization funds), operating budget, demographic characteristics and fiscal indicators are collected from the DLS of Massachusetts Department of Revenue.[21] This research collects the data on the structural characteristics of Massachusetts municipalities from the *Municipal Form of Government* surveys implemented by the International City/County Management Association (ICMA) in 1991, 1996, 2001, 2006 and 2011.[22] The ICMA mails survey questions to clerks of all municipalities with population size above 2,500 and to selected ones with population size below 2,500. The five surveys used in this study have response rates around 50%. These surveys are by far the most comprehensive resources about municipalities' structural characteristics, and they have been widely used in previous studies (Carr and Karuppusamy 2008, 2009; Coate and Knight 2011; Lubell et al. 2009).

This research focuses on municipalities in Massachusetts; therefore, only the respondents from Massachusetts are involved in analysis. The surveys are implemented every five years, with missing data in the interval years. Each survey includes questions about structural characteristics in various aspects (e.g., Does your municipality have the position of chief administrative officer? How is your government head elected?). Also, there is a question that asks whether there have been any attempts to change the structural characteristics since the previous survey. If the answer is "yes", the respondent is asked to

[21] The data are accessible at https://www.mass.gov/municipal-databank-data-analytics.

[22] The ICMA implements the *Municipal Form of Government* survey every five years. The survey in 2011 is the most recent one that is available on the ICMA's official website when this study is conducted.

pinpoint which structural changes have been made and whether and when the changes have been approved.

Some fundamental assumptions are made to interpolate the missing survey data in the interval (non-survey) years. If the survey results show that a municipality has the same structural characteristics in two consecutive surveys and the respondent answers "no" to the question in the latter survey that asks whether the municipality has adjusted structural characteristics since the previous survey, this study assumes that the municipality's structural characteristics remain consistent in the interval years between the two consecutive surveys. The missing data of the interval years are filled in accordingly. If the survey results show that a municipality has different structural characteristics in two consecutive surveys and the respondent answers "yes" to the question in the latter survey that asks whether the municipality has adjusted structural characteristics since the previous survey, this study fills in the missing data in the interval years by referring to the answer to the question that asks when the adjustments are approved and effective. If a municipality does not reply to two surveys consecutively, the missing data in the interval years cannot be interpolated. After merging datasets from the DLS and ICMA's surveys and deleting the observations with missing data, this study obtains an unbalanced panel of 1,306 municipality-year observations for 1993-2011.

4.4.3 Control Variables

Table 3.2 reports the names, measures, and descriptive statistics of all variables. The three explanatory variables of interest have been introduced in the previous section. This article next briefly discusses effects of the control variables (X_{it} in the regression

models). Selection of the control variables is based on findings from previous studies and data availability.

Table 3.2 Variable names, measures, and descriptive statistics

Variable	Measure	Mean	S. D.	Min	Max
Dependent variable					
Fiscal slack size	Log of per capita stabilization fund balances	93.95	93.91	0.00	596.17
Explanatory variables of interest					
Municipal structure index	Refer to the introduction in manuscript	0.04	0.94	-2.00	0.57
Pro-spending sentiment	Refer to the introduction in manuscript	7.76	26.07	0	100
Anti-tax sentiment	Refer to the introduction in manuscript	55.55	18.22	12.91	90.56
Budgetary performance	Per capita budgetary gap	-7.51	464.55	-4154.92	3519.59
Control variables					
Population size		23041.66	21524.24	1496	166761
Population growth rate	%	0.59	2.38	-49.18	21.39
Unemployment rate	%	4.62	2.25	0.90	27.50
Total assessed value of properties	per capita	132288.70	84530.13	36218.80	860985.60
State aid	State aid as percentage of total revenues (%)	18.32	12.35	0.82	60.57
Revenue diversity	Hirschman-Herfindahl Index	0.74	0.12	0.34	0.96
Excess tax capacity	Per capita	40.71	87.56	0	966.49
Free cash	Per capita	128.10	125.73	-137.71	943.78
Overlay reserve	Per capita	28.31	15.30	5.93	128.58
Debt level	Outstanding debt as percentage of budget (%)	58.36	36.15	0	232.70
Government creditworthiness	Credit ratings from Moody's (5=Aaa, 4=Aa, 3=A, 2=Baa, and 1=Ba)	3.37	0.72	1	5

Notes: The number of municipality-year observations in the main analysis is 1,306. All the fiscal values have been adjusted to the 2011 real dollars.

Population size and growth rate. Community population size and growth rate can determine the amount of public services demanded by residents and the economies of scale in public service provisions. A large and increasing community population creates pressure on government's expenditures. However, the government may save cost per unit when providing public services to a larger size population. Therefore, the effects of population size and growth rate on government fiscal slack are indeterminate.

Unemployment rate. This study uses the unemployment rate as an indicator of local economic conditions. Governments with a higher unemployment rate should save more fiscal slack to cope with potential economic and fiscal crises. However, the government may be fiscally incapable of saving much because it is difficult to collect sufficient revenues when economic conditions are deteriorating and the unemployment rate is high. Therefore, the relation of unemployment rate to government fiscal slack is ambiguous.

Assessed value of properties. The assessed value of properties reflects the amount of accumulated wealth in a community and serves as the base of local property tax revenues. In communities with a higher value of properties, the capacity of government in coping with potential fiscal crises is stronger. Therefore, the government can save less fiscal slack and invest fiscal resources for economic development. There is a predicted negative correlation between the assessed value of properties with the fiscal slack.

State aid. Municipalities that rely heavily on intergovernmental transfers are more vulnerable to external fiscal environment fluctuations, such as state aid reductions. Governments with a higher share of revenues from the state should save more to prepare for potential reductions. On the other hand, undue reliance on state aid may be a manifestation of weak fiscal capacity of local communities that do not have fiscal resources

to save. Therefore, the correlation between the dependence on state aid and government fiscal slack may be either positive or negative.

Revenue diversity. Local government's revenue structure (concentrated or diversified) can substantially affect its revenue volatility (Yan 2011). Governments with diversified revenue sources are less vulnerable to fluctuations of external fiscal environments. Therefore, it is less necessary to save fiscal slack to prepare for fiscal uncertainties. However, diversified revenue sources may result in continuous accumulation of fiscal surplus and lead to government amassing a large size of fiscal slack.[23]

Free cash, excess tax capacity, and overlay reserve. Massachusetts municipalities maintain some alternative tools of fiscal reserves or informal forms of fiscal slack in budgetary operations. The free cash is the unrestricted funds from the previous fiscal year's operating budget that are available for appropriation for the current fiscal year. Massachusetts' Proposition 2½ sets a property tax levy limit for all municipalities.[24] The excess property tax levy capacity is the difference between the property tax limit and the actual property tax levy. Another informal form of fiscal slack is the overlay reserve, which is an account used to fund the potential property tax abatements, exemptions and uncollected taxes in a certain fiscal year. All these fiscal resources can be utilized by the government to hedge against unforeseen revenue shortfalls and cope with sharp fiscal

[23] Revenue diversity is measured by the Hirschman-Herfindahl Index (HHI) by the formula as follows (Suyderhoud 1994):

$$HHI_{it} = \frac{1-(\sum_{j=1}^{n} X_{jit})^2}{1-\frac{1}{n}},$$

where i indicates the individual municipality, t refers to time, and X_j specifies the proportion of revenue j out of n revenue resources. HHI ranges between 0 and 1 with a higher value indicating a more diversified revenue structure.

[24] The property tax limit is calculated by "(1) adding an automatic increase of 2½ percent to the previous year's levy limit and (2) adding an allowance for growth in service demands by multiplying the value of new construction by the prior year's tax rate." (Snow, Gianakis, and Haughton 2015: 308).

fluctuations or crises. This research uses the per capita free cash, excess tax capacity, and overlay reserve as measures of informal fiscal slack, which may substitute or complement stabilization funds. The sign of the correlation between these informal forms of fiscal slack and the stabilization funds depends on the substitutional or complementary effect.

Outstanding debt. A government holding more outstanding debt has heavier fiscal obligations in interest and principal payment. To prevent debt default, government with a higher level of outstanding debt should save more fiscal slack. On the other hand, it is fairly possible that government borrows due to fiscal difficulties; therefore, it does not have fiscal resources to save. The correlation between government's outstanding debt and fiscal slack is indeterminate.

Government credit rating. Credit rating is an important indicator of government's overall fiscal conditions. It represents a comprehensive evaluation of the default risk of governmental debt. A higher credit rating makes it easier for government to get access to the financial market in fiscal emergencies, and it helps to reduce the borrowing cost. In this vein, a higher credit rating reduces the importance of fiscal slack because it leaves government more fiscal space to raise funding amid fiscal difficulties. On the other hand, a higher credit rating implies healthier fiscal conditions and more stable revenues. Thus, the correlation between government credit rating and fiscal slack size can be either positive or negative.

4.5 Empirical Results

4.5.1 Direct Effect of the Variables of Interest

This research first regresses equation (3) using the municipality and year fixed effects with neither the municipal structure political-administrative index nor the interaction items, which echoes the practice of most previous studies. This research takes the natural logarithm of per capita stabilization fund balances as the dependent variable, and the results are reported in model 1 of table 3.3. The effects of voters' pro-spending and anti-tax sentiment and government's budgetary performance are consistent with hypothesis 1 and 2, and these results echo the findings of Snow, Gianakis, and Haughton (2015).

Table 3.3 Empirical results

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3
Variables of interest			
Municipal structure index		-0.174	-0.497
		(0.313)	(0.332)
Pro-spending sentiment	-0.00232***	-0.00233*	-0.00253**
	(0.000724)	(0.00131)	(0.00129)
Anti-tax sentiment	-0.0223***	0.00341	0.00223
	(0.00669)	(0.0110)	(0.0111)
Budgetary gap	0.000640***	0.000716***	0.000848***
	(0.000132)	(0.000243)	(0.000254)
Interaction terms			
Municipal structure index × Pro-spending sentiment			0.000610
			(0.00167)
Municipal structure index × Anti-tax sentiment			0.00529**
			(0.00264)
Municipal structure index × Budgetary gap			-0.000383*
			(0.000230)
Control variables			
Population size (log)	-0.584	-1.719**	-1.616**
	(0.407)	(0.744)	(0.727)
Population growth rate (%)	0.0126*	0.0252*	0.0259*
	(0.00726)	(0.0136)	(0.0138)
Unemployment rate (%)	0.00811	-0.0823	-0.0848
	(0.0270)	(0.0738)	(0.0732)
Total assessed value of properties (per capita, log)	-0.880***	-1.678***	-1.508***
	(0.200)	(0.403)	(0.399)
State aid as percentage of total revenues (%)	-0.00911	-0.0547***	-0.0499**
	(0.0106)	(0.0211)	(0.0210)
Revenue diversity (HHI)	0.794	2.192*	2.268*
	(0.503)	(1.199)	(1.182)
Free cash (per capita)	0.00267***	0.00192***	0.00198***
	(0.000305)	(0.000614)	(0.000612)
Excess tax capacity (per capita)	0.000380	-0.000317	-0.000249
	(0.000367)	(0.000655)	(0.000642)
Overlay reserve (per capita)	0.00882***	0.00872*	0.00954**
	(0.00214)	(0.00468)	(0.00453)
Outstanding debt as percentage of budget (%)	-0.000556	0.00138	0.00155
	(0.000691)	(0.00154)	(0.00152)
Government creditworthiness	0.248***	0.104	0.0739
	(0.0698)	(0.136)	(0.134)

Table 3.3 (continued)

Constant	16.49***	36.87***	33.93***
	(4.622)	(10.02)	(9.862)
Observations	4,177	1,306	1,306
R-squared	0.653	0.715	0.717
Municipality fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The results from regressing equation (3) using the municipality and year fixed effects with the municipal structure index but not the interaction items are reported in model 2 of table 3.3. The effect of the municipal structure index is not statistically significant, implying that the political or administrative nature of municipal structure does not directly exert influence on government fiscal slack. The pro-spending sentiment of voters is negatively and statistically significantly related to government fiscal slack. Based on the descriptive statistics presented in table 3.2 and the magnitude of effect, one standard deviation increase in the measure of the pro-spending sentiment in a municipality makes the per capita budget stabilization fund balances decline by over six percent, holding other factors constant. The results support hypothesis 1. The results in model 2 also show that the effect of budgetary gap is positive and statistically significant. This finding supports hypothesis 2, implying that the government with an operating budget above the long-term expected trend level is likely to save more fiscal slack. One standard deviation increase in the per capita budgetary gap leads approximately to a 33 percent increase of the per capita stabilization fund balances, holding other factors constant. The anti-tax sentiment is not statistically significantly related to the dependent variable.

4.5.2 Interactive Effect of the Variables of Interest

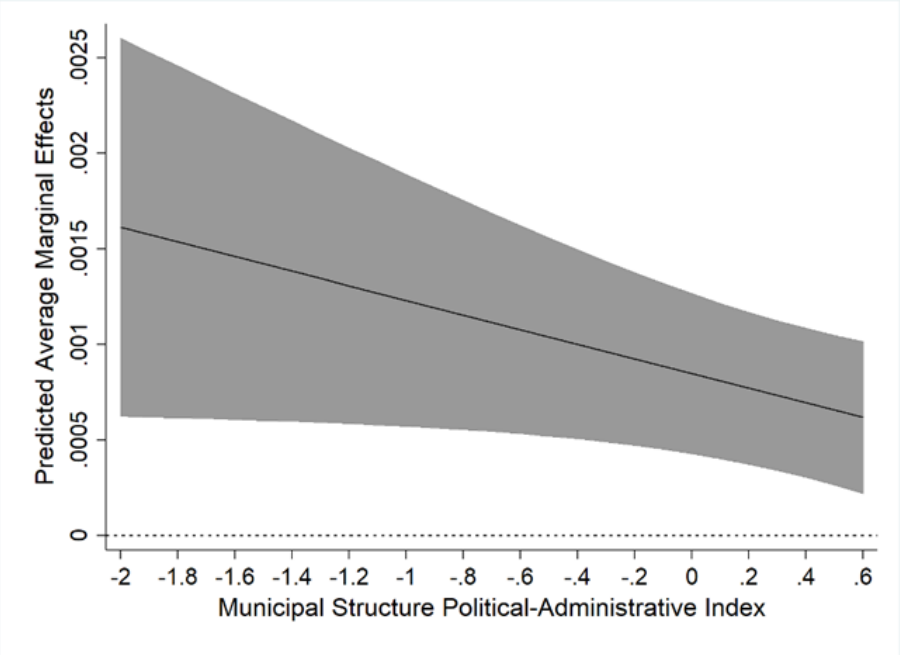
The last model of table 3.3 reports the results from regressing equation (4) using the municipality and year fixed effects with the municipal structure index and the interaction items. In the multiplicative interaction regression model, the effects of voters' pro-spending and anti-tax sentiment and government's budgetary gap on government fiscal slack size are conditional on the municipal structure index. Therefore, interpreting the coefficients as unconditional or average effects is problematic (Brambor, Clark, and Golder 2005).

The budgetary gap is still positively and statistically significantly related to the dependent variable in model 3 with a magnitude of the effect close to those in model 1 and 2. Meanwhile, the effect of the interaction item between the municipal structure index and budgetary gap is negative and statistically significant, meaning that the positive effect of budgetary gap is modified and weakened by government internal management. As the nature of government internal management becomes more administrative or professional, the positive effect of budgetary gap becomes weaker. The results are consistent with hypothesis 3. A possible explanation is that the more administrative or professional government internal management may invest the fiscal slack resources for long-run economic development, to fund capital projects, or to achieve certain policy goals in times with vigorous budgetary performance, instead of saving the fiscal resources, due to the potential opportunity cost it brings about.

Figure 3.2 shows the predicted marginal effect of the budgetary gap on stabilization fund balances of Massachusetts municipalities conditional on the municipal structure index with 95% confidence intervals. The vertical axis indicates the predicted marginal effect of

the budgetary gap, holding other variables at means, and the horizontal axis denotes the municipal structure political-professional index at an interval of 0.2. Figure 3.2 shows that the predicted marginal effect of the budgetary gap is always positive. However, the positive predicted marginal effect decreases as the nature of government internal management become more administrative or professional. The predicted marginal effect of the budgetary gap is statistically significant because the upper and lower bounds of the confidence intervals are always above the zero line (Brambor, Clark, and Golder 2005).

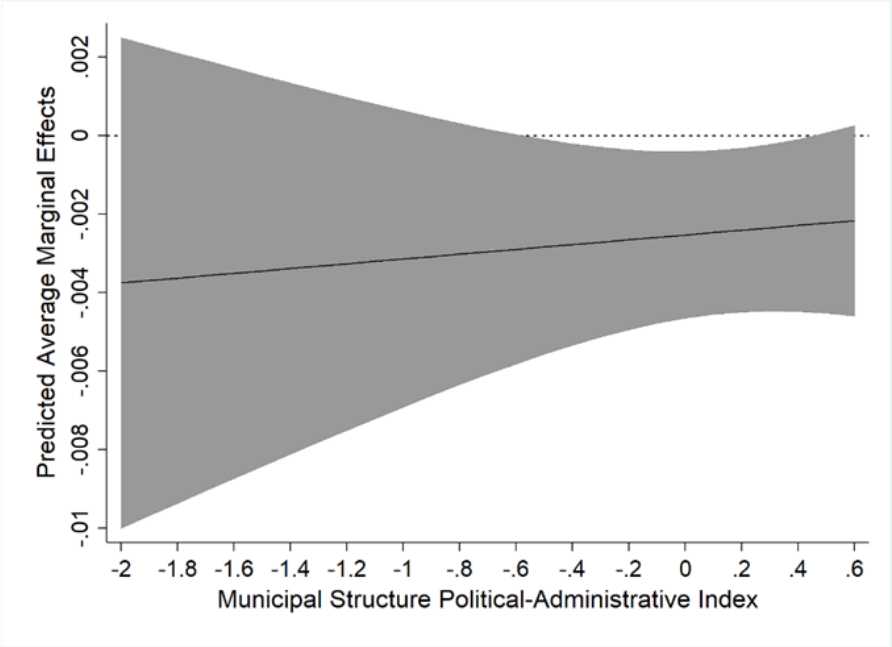
Figure 3.2 Average marginal effects of budgetary gap on stabilization fund balances conditional on municipal structure index with 95% CIs



Results in model 3 of table 3.3 also show that the effect of voters' pro-spending sentiment is negative and statistically significant, and the magnitude of the effect is close to those in model 1 and 2. However, the effect of the interaction item between the municipal structure index and pro-spending sentiment is positive but not statistically significant. Figure 3.3 shows the predicted marginal effect of the pro-spending sentiment of voters is

always negative. As the nature of government internal management become more administrative or professional, the magnitude of the negative predicted marginal effect decreases. This finding implies that the negative effect of voters' pro-spending sentiment on government fiscal slack size is modified or weakened by government internal management. Based on the confidence interval lines, the conditional effect of pro-spending sentiment is statistically significant when the municipal structure index ranges between around -0.6 and 0.4, which suggests the more administrative municipal structure.

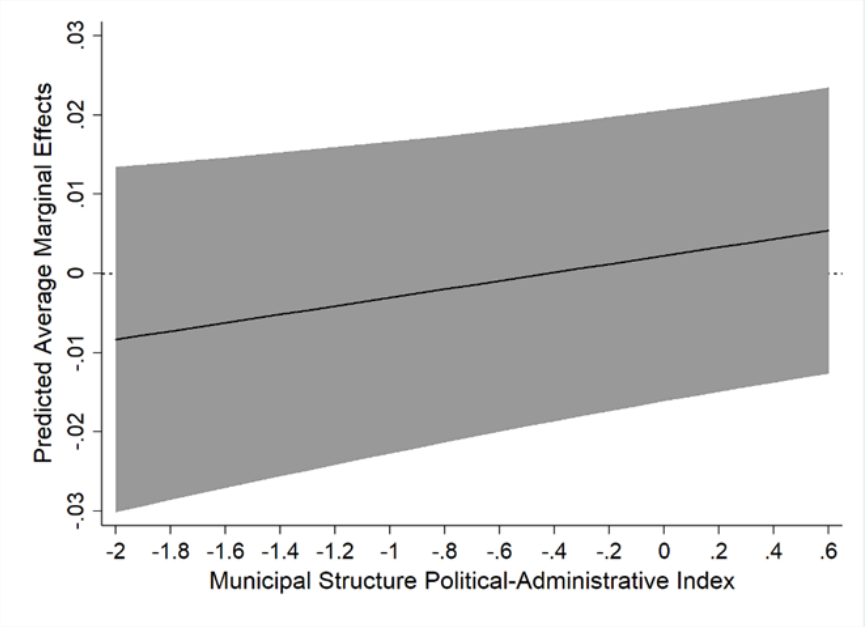
Figure 3.3 Average marginal effects of voters' pro-spending sentiment on stabilization fund balances conditional on municipal structure index with 95% CIs



Lastly, the effect of anti-tax sentiment of voters is not statistically significant. However, the effect of the interaction item between the municipal structure index and anti-tax sentiment is positive and statistically significant. Figure 3.4 shows that although government internal management modifies or weakens the negative predicted marginal effect of the anti-tax sentiment on government fiscal slack size, the effect is not statistically

significant because the zero line traverses the area between the upper and lower bounds of the confidence intervals.

Figure 3.4 Average marginal effects of voters' anti-tax sentiment on stabilization fund balances conditional on municipal structure index with 95% CIs



4.5.3 Robustness Checks

Massachusetts municipalities maintain the stabilization funds as their formal fiscal slack. However, as aforementioned, there are other forms of fiscal resources that play similar roles with government fiscal slack. Employing a broader definition, government fiscal slack can be any fiscal resources reserved in various governmental funds that are used to make up for unexpected revenue shortfalls and prepare for potential fiscal difficulties in the future (Wei and Denison 2019). In this vein, the excess tax capacity, free cash, and overlay reserve can be deemed as informal fiscal slack of government, although they have different purposes, features and functions. Previous studies have investigated the relation between different forms of government fiscal slack in the U.S. states, and most

find that the substitution effect is trivial (Hou and Brewer 2010; Knight and Levinson 1999). The results in table 3.3 show that two informal forms of fiscal slack, the free cash and overlay reserve, are positively and statistically significantly related to the stabilization fund balances in Massachusetts municipalities.

As a robustness check, this study uses the natural logarithm of per capita total of the stabilization funds, excess tax capacity, free cash and overlay reserve as an alternative measure of government fiscal slack. The results from regressing the same estimation models are reported in table 3.4. The statistical significance of the effects of variables of interest remain similar, but the magnitudes of effects is different on the grounds that the measure of fiscal slack has changed.

Table 3.4 Robustness check using an alternative measure of fiscal slack

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3
Variables of interest			
Municipal structure index		0.0431	0.191**
		(0.0639)	(0.0958)
Pro-spending sentiment	-0.00216***	-0.00250***	-0.00247***
	(0.000301)	(0.000613)	(0.000686)
Anti-tax sentiment	-0.00665**	0.00492	0.00531
	(0.00272)	(0.00438)	(0.00436)
Budgetary gap	0.000341***	0.000337***	0.000259**
	(4.55e-05)	(9.11e-05)	(0.000103)
Interaction terms			
Municipal structure index × Pro-spending sentiment			1.81e-05
			(0.00114)
Municipal structure index × Anti-tax sentiment			-0.00240**
			(0.00114)
Municipal structure index × Budgetary gap			-0.000211*
			(0.000109)
Control variables			
Population size (log)	-0.834***	-1.473***	-1.511***
	(0.187)	(0.341)	(0.343)
Population growth rate (%)	0.00716**	0.0107**	0.0105**
	(0.00335)	(0.00498)	(0.00487)
Unemployment rate (%)	-0.00520	-0.0371*	-0.0357
	(0.00856)	(0.0219)	(0.0218)
Total assessed value of properties (per capita, log)	-0.408***	-0.281*	-0.358**
	(0.0913)	(0.165)	(0.158)
State aid as percentage of total revenues (%)	-0.00265	-0.0126	-0.0145*
	(0.00467)	(0.00824)	(0.00815)
Revenue diversity (HHI)	1.172***	1.080**	1.034**
	(0.234)	(0.463)	(0.468)
Outstanding debt as percentage of budget (%)	-0.000496	0.000700	0.000609
	(0.000334)	(0.000644)	(0.000649)
Government creditworthiness	0.224***	0.162***	0.173***
	(0.0342)	(0.0573)	(0.0569)
Constant	15.59***	20.99***	22.23***
	(2.267)	(4.575)	(4.489)
Observations	4,231	1,286	1,286
R-squared	0.679	0.753	0.756
Municipality fixed effects	Yes	Yes	Yes

Table 3.4 (continued)

Year fixed effects	Yes	Yes	Yes

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Another robustness check regards the measure of the pro-spending sentiment of voters. As previously mentioned, this research adjusts the method of Snow, Gianakis, and Haughton (2015) to measure the pro-spending sentiment of voters. As a robustness check, this research then firmly follows the practice of Snow, Gianakis, and Haughton (2015) to use a binary measure, with 1 indicating the occurrence of a successful property tax limit override in a certain municipality and 0 otherwise. The occurrence of successful overrides suggests stronger pro-spending sentiment of voters. The results from regressing the same models with the previous robustness check by substituting the measure of voters' pro-spending sentiment are reported in table 3.5. The results in table 3.4 and 3.5 are similar in both the statistical significance and magnitudes of effects of the variables.

Table 3.5 Robustness check using an alternative measure of pro-spending sentiment

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3
Variables of interest			
Municipal structure index		0.0407	0.188**
		(0.0636)	(0.0954)
Pro-spending sentiment (occurrence)	-0.225***	-0.236***	-0.242***
	(0.0288)	(0.0554)	(0.0606)
Anti-tax sentiment	-0.00691**	0.00485	0.00526
	(0.00271)	(0.00438)	(0.00436)
Budgetary gap	0.000335***	0.000336***	0.000259**
	(4.55e-05)	(9.11e-05)	(0.000103)
Interaction terms			
Municipal structure index × Pro-spending sentiment			0.0215
			(0.103)
Municipal structure index × Anti-tax sentiment			-0.00242**
			(0.00114)
Municipal structure index × Budgetary gap			-0.000210*
			(0.000108)
Control variables			
Population size (log)	-0.837***	-1.472***	-1.509***
	(0.187)	(0.340)	(0.341)
Population growth rate (%)	0.00743**	0.0109**	0.0106**
	(0.00337)	(0.00499)	(0.00489)
Unemployment rate (%)	-0.00435	-0.0378*	-0.0364*
	(0.00839)	(0.0220)	(0.0219)
Total assessed value of properties (per capita, log)	-0.405***	-0.286*	-0.364**
	(0.0912)	(0.165)	(0.158)
State aid as percentage of total revenues (%)	-0.00240	-0.0126	-0.0145*
	(0.00467)	(0.00821)	(0.00812)
Revenue diversity (HHI)	1.192***	1.076**	1.031**
	(0.233)	(0.463)	(0.468)
Outstanding debt as percentage of budget (%)	-0.000497	0.000694	0.000601
	(0.000333)	(0.000643)	(0.000650)
Government creditworthiness	0.226***	0.161***	0.173***
	(0.0342)	(0.0573)	(0.0569)
Constant	15.57***	21.05***	22.30***
	(2.266)	(4.565)	(4.478)
Observations	4,231	1,286	1,286
R-squared	0.680	0.753	0.756
Municipality fixed effects	Yes	Yes	Yes

Table 3.5 (continued)

Year fixed effects	Yes	Yes	Yes

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

4.6 Conclusion and Discussion

Saving fiscal slack in economic booms to prepare for fiscal crises in the future is a prevailing strategy adopted by the U.S. state and local governments. Fiscal slack of local government is a more salient issue compared to the state due to the large size and informal forms. This research focuses on one of the most fundamental inquiries about local government fiscal slack, namely, the determinants of its size. This research constructs a three-dimensional framework to analyze local government fiscal slack, including the preferences of voters (anti-tax and pro-spending sentiment), government's budgetary performance (budgetary gap), and government internal management (municipal structure index on the political-administrative dimension). The three dimensions work interactively to determine local government fiscal slack. This study uses Massachusetts municipalities as a research sample. The empirical findings show that the defined budgetary gap is positively and statistically significantly related to government's fiscal slack balances, which is measured by either the level of stabilization funds or the sum of stabilization funds and other informal forms of fiscal slack resources. However, the municipal structure political-administrative index weakens the positive effect of the budgetary gap. The pro-spending sentiment of voters has a negative effect on government fiscal slack, and the municipal structure index weakens the negative effect.

Findings from this study have substantial implications for academics and government financial management practitioners. Fiscal resources shape "many of the

outcomes that matter to public administration, including the effectiveness of public service delivery networks, the decision to undertake management reforms, performance implications of managers' networking activities, and nonprofits' decisions to pursue 'entrepreneurial' activities." (Kioko et al. 2011). In-depth understanding of the determinants of government fiscal slack helps government officials wisely save and spend in the cyclical economic upturn and downturn times and maintain a long-term fiscal sustainability.

Government fiscal slack is an important public management issue pertaining to budgetary transparency (Rose and Smith 2012; Stewart et al. 2015). Local government usually uses such informal fiscal slack as the year-end general fund balances (Guo and Wang 2017; Wang and Hou 2012). The informal form renders local government fiscal slack a nontransparent "grey area". Scholars of economics and organizational science have investigated the misuse of fiscal slack and the agency problem between managers and shareholders of private sector organizations (Bebchuk and Fried 2003; Jensen 1986). Similar problems exist in the public sector. The lengthiness and complexity of government financial reports, such as the *Comprehensive Annual Financial Reports* (CAFRs), create difficulties for ordinary voters and the media to monitor the fiscal management of local government effectively and efficiently, thus forging opportunities for officials' misuse of public fiscal resources and corruption actions (Benito and Bastida 2009; Stewart et al. 2015). Moreover, the size of local government fiscal slack is generally larger compared to the state government. Credit rating agencies and professional organizations commonly recommend that government maintains 5-15 percent of their operating budget as fiscal reserves (Gore 2009). However, many local governments hold a much higher level of fiscal

slack (Marlowe 2005). Understanding the determinants of local government fiscal slack facilitates voters and the media to properly monitor and regulate the saving behavior of government and help government officials to enact and implement prudent fiscal slack policies.

It is also helpful to discuss the potential limitation of this research in external generalizability. Considering the substantial variation in the measurement of local government fiscal slack and differences in institutional rules and external fiscal environments confronted by the local governments across states, this research focuses on municipalities from one single state. This is a common practice employed by scholars of many previous studies, such as Minnesota in Marlowe (2005), Florida in Guo and Wang (2017), North Carolina in Wang and Hou (2012), and Massachusetts in Gianakis and Snow (2007). As noted by Snow, Gianakis, and Haughton (2015), "research that crosses state lines must cope with the lack of a common dependent variable, a problem that is not easily resolved." Further studies that use similar research approaches but take research examples from other states are highly encouraged.

APPENDICES

APPENDIX 1 Summary of statewide tax limitation ballot questions (1980-2010)

Question number	Year	Summary of ballot questions	Statewide fraction of "yes"	Statewide fraction of "no"	Enacted?
1	1980	The proposed law would impose a limit on state and local taxes on real estate and personal property equal to 2.5% of the full and fair cash value of the property being taxed.	59.00%	41.00%	Yes
3	1986	The proposed law would reduce and then repeal the 7.5% surtax on Massachusetts state income taxes and would limit state tax revenue growth to the level of growth in total wages and salaries of the citizens of the state.	54.40%	45.60%	Yes
6	1994	This proposed constitutional amendment would require Massachusetts income tax rates to be graduated, in order to distribute the burden of the tax fairly and equitably.	69.60%	30.40%	Yes
3	1998	This proposed law would change the state income tax rate on interest and dividend income, which was 12% as of September 1997, to whatever rate applies to Part B taxable income (such as wages and salaries), which was 5.95% as of September 1997. The change would take effect starting in tax year 2000.	81.90%	18.10%	Yes
4	2000	This proposed law would repeal the law setting the state personal income tax rate on Part B taxable income (such as wages and salaries), which was 5.95% as of September 1,1999 and would set the rate at 5.6% for tax year 2001, 5.3% for tax year 2002, and 5% for tax year 2003 and after. If the Legislature set a lower rate for any of those years, that lower rate would apply.	59.40%	40.60%	Yes

1	2002	This proposed law would provide that no income or other gain realized on or after July 1, 2003, would be subject to the state personal income tax.	45.30%	54.70%	No
1	2008	This proposed law would reduce the state personal income tax rate to 2.65% for all categories of taxable income for the tax year beginning on or after January 1, 2009, and would eliminate the tax for all tax years beginning on or after January 1, 2010.	30.60%	69.40%	No
3	2010	This proposed law would reduce the state sales and use tax rates (which were 6.25% as of September 2009) to 3% as of January 1, 2011.	43.20%	56.80%	No

Notes:

1. The fractions of "yes" and "no" are for statewide voting results. There are records for the corresponding voting results for each Massachusetts municipality, which are utilized to calculate the anti-tax sentiment of voters in each municipality.
2. Information presented in this table is accessible from the website of Massachusetts Election Statistics at http://electionstats.state.ma.us/ballot_questions/search/year_from:1972/year_to:2016.
3. Snow, Gianakis, and Haughton (2015) report similar information in their research. Refer to the table 1 in that article for details.
4. Question 6 in 1994 regards the distribution of tax burden. The proposed amendment would require tax rates be progressive as the income increases. Therefore, this amendment has the equivalent consequence of increasing tax burdens of taxpayers with higher incomes. "Yes" in this question means in favor of tax increase and "no" means supporting tax limitation. The percentages of "yes" and "no" are switched to make them consistent with other questions.

APPENDIX 2 Factor analysis of components of the principal factor

Index components	Principal factor	Uniqueness
Existence of a chief administrative officer	0.7727	0.4018
Election method of the government head	0.5694	0.6348
Independence of government head from council (board)	0.9395	0.115
Authority of government head to veto council (board)	0.9257	0.1425
Partisan or nonpartisan election of council (board) members	0.6669	0.5484
At-large or by-district election of council (board) members	0.0552	0.9381

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VITA

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EDUCATION

Ph.D. in Public Policy and Administration, Martin School of Public Policy and Administration, University of Kentucky, 2019 (expected)

M.A. in Public Policy, School of Public Policy, University of Maryland, 2013

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RESEARCH

***Peer-reviewed journal articles*:**

[2] **Wei, Wenchi**, J.S. Butler, and Edward T. Jennings. 2019. "The Determinants of Municipal Structures on a Political-Administrative Dimension." *American Review of Public Administration*. 49(2): 189–202. DOI: 10.1177/0275074018814876

[1] **Wei, Wenchi**, and Dwight Denison. 2019. "State Rainy Day Funds and Government General Fund Expenditures: Revisiting the Stabilization Effect." *Public Finance Review*. 47(3): 465-492. DOI: 10.1177/1091142118819991

***Conference presentations*:**

[10] Association for Public Policy Analysis and Management (APPAM). "The Effect of Local Government Managerial Professionalism on Fiscal Slack Size." Washington, DC, November 8-10, 2018.

[9] Association for Public Policy Analysis and Management (APPAM). "Municipal Structure Matters: Evidence from Government Fiscal Performance." Washington, DC, November 8-10, 2018.

[8] Association for Budgeting and Financial Management (ABFM). "The Effect of Local Government Managerial Professionalism on Fiscal Slack Size." Denver, Colorado, October 4-6, 2018.

[7] Association for Budgeting and Financial Management (ABFM). "Municipal Structure Matters: Evidence from Government Fiscal Performance." Denver, Colorado, October 4-6, 2018.

[6] American Society for Public Administration (ASPA). "Does Professional Management of Municipalities Impact Government Fiscal Slack?" Denver, Colorado, March 9-13, 2018.

[5] Association for Public Policy Analysis and Management (APPAM). "Municipal Structures and Government Fiscal Performance: A Visit of the Bond Ratings." Chicago, Illinois, November 2-4, 2017.

[4] Southeastern Conference for Public Administration (SECoPA). "Municipal Structures and Government Fiscal Performance: A Visit of the Bond Ratings." Hollywood, Florida, October 4-7, 2017.

[3] Association for Public Policy Analysis and Management (APPAM). "Revisiting the Effect of Rainy Day Funds on Stabilizing State Government Expenditures." Washington, DC, November 3-5, 2016.

[2] Association for Budgeting and Financial Management (ABFM). "Revisiting the Effect of Rainy Day Funds on Stabilizing State Government Expenditures." Seattle, Washington, October 6-8, 2016.

[1] Association for Public Policy Analysis and Management (APPAM). "Rainy Day Funds and Expenditure Volatility of State Governments: An Analysis during the Great Recession (2007-2010)." Miami, Florida, November 12-14, 2015.

AWARDS & HONORS

[8] Research Assistantship, Martin School, University of Kentucky, 2014-2018

[7] Graduate School Travel Grant, University of Kentucky, 2014-2018

[6] Board of Visitors Fellowship, School Public Policy, University of Maryland, 2012

[5] Graduate Assistantship, School Public Policy, University of Maryland, 2012-2013

[4] Second Class Scholarship, Wuhan University, 2010

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