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HOME RULE, SELECTIVITY AND OVERLAPPING JURISDICTIONS: EFFECTS ON STATE AND LOCAL GOVERNMENT SIZE

BY

ROBERT FRANCIS SALVINO

A Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree
of
Doctor of Philosophy
in the
Andrew Young School of Policy Studies
of
Georgia State University

GEORGIA STATE UNIVERSITY
2007

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ACCEPTANCE

This dissertation was prepared under the direction of the candidate's Dissertation Committee. It has been approved and accepted by all members of that committee, and it has been accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Economics in the Andrew Young School of Policy Studies of Georgia State University.

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I also thank my mother, Debbie Czewski, for always supporting and sharing in my quest for learning and understanding the world in which we live. After my father passed away when I was eight years old, my mother did all she could to make sure that I believed in myself and pursued my dreams. I also thank my brother, Joe, and sisters, Tara and Rachael, for always being there for me. We are spread across the country now, but we grow closer and closer as time goes on, and I am proud of them all.

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS vi

List of Tables x

List of Figures xii

Abstract xiii

CHAPTER 1: INTRODUCTION 1

CHAPTER 2: HOME RULE BACKGROUND 12

CHAPTER 3: LEVIATHAN AND DECENTRALIZATION LITERATURE REVIEW 23

Leviathan 24

Decentralization in a Federal System of Government 31

Vertical Relationships and Effects on Spending 35

Fiscal Illusion 41

Indirect Constitutional Constraints on Leviathan. 42

Direct Constraints. 46

Other Explanations for Government Size and Growth. 47

Home Rule and Government Sector Size. 48

Conclusion. 50

CHAPTER 4: STATE AND LOCAL SHARE EMPIRICAL MODEL 51

Leviathan Model Methodology and Data 51

Model Specification and Estimation 55

Estimation Technique 56

Empirical Results 57

Conclusion 60

CHAPTER 5: HOME RULE IN THE STATE AND LOCAL SELECTION MODEL.....68

Home Rule and Self-selection 68

The Self-selection Model.....69

Instrumental Variables for Home Rule: Traditional IV and Self-Selection Models 70

Traditional IV Results.....71

Empirical Self-selection Model for Home Rule. 72

First Stage Procedure and Results.....72

Second Stage Procedure and Results. 77

Conclusion. 79

CHAPTER 6: ANALYSIS OF SEPARATE LOCAL AND STATE GOVERNMENT

SECTORS 89

Local Level and State Level Leviathan Models 90

Local Level and State Level Selection Models.....94

Conclusion 99

CHAPTER 7: STATE BUDGET STABILIZATION FUNDS AND

EMINENT DOMAIN 119

State Budget Stabilization Funds.....120

Empirical Budget Stabilization Fund Model. 121

Eminent Domain for Private Economic Development. 124

Combined State and Local Size Effects.....126

Separate State and Local Size Effects.....127

Conclusion. 130

CHAPTER 8: HOME RULE AND OVERLAPPING JURISDICTIONS. 138

Overlapping Jurisdictions. 138

Overlapping Jurisdictions Model. 141

County Centralization with Overlapping Jurisdictions. 146

Empirical Analysis. 149

Conclusion. 151

CHAPTER NINE: CONCLUSION 157

REFERENCES. 164

VITA…….. 169

LIST OF TABLES

Table Page

1. States in Sample by Degree of Home Rule 21

2. ACIR Rankings 22

3. Variable Definitions and Sources 62

4. Summary Statistics 63

5. Leviathan Model Logit Estimates 64

9. Self-selection Model Variable Definitions and Sources 81

10. Self-selection Model Summary Statistics 82

11. IV Estimates 83

13. Self-selection-corrected Leviathan Model Sub-samples 85

15. Testing Selectivity-corrected Government Sizes under HR and DR 87

16. Home Rule Structural Probit Equation Estimates 88

17. State and Local Leviathan Models Variables Definitions and Sources 101

18. State and Local Leviathan Models Summary Statistics 102

19. Local Leviathan Model Logit Estimates 103

21. State Leviathan Model Logit Estimates 105

23. Comparison of Local, State, and State and Local Leviathan Model Results 107

24. State and Local Self-selection Models Variable Definitions and Sources 108

25. State and Local Self-selection Models Summary Statistics 109

26. Local Self-selection-corrected Leviathan Model Sub-samples. 110

28. State Self-selection-corrected Leviathan Model Sub-samples. 112

30. Home Rule Structural Probit Estimation: Local Size. 114

31. Self-selection-corrected Predicted Mean Shares. 115

32. Comparison of Local and State and Local Self-selection. 116

33. Home Rule Structural Probit Estimation: Local and S&L Comparison. 117

34. Comparison of Local and S&L Self-selection-corrected Predicted Mean Shares. 118

35. State Budget Stabilization Funds and Eminent Domain Variable Definitions and Sources. 131

36. State Budget Stabilization Funds and Eminent Domain Summary Statistics. 132

37. State Budget Stabilization Fund Coefficient Estimates. 133

38. Eminent Domain Model Logit Estimates. 134

39. Overlapping Jurisdictions Model Variable Definitions and Sources. 135

40. Overlapping Jurisdictions Model Summary Statistics. 136

41. Self-selection-corrected Leviathan Model OJ Estimates. 152

LIST OF FIGURES

Figure Page

1. Home Rule: State-Local Relationship 15

2. Slack-maximizing Model.....29

3. Negative Revenue Externality from Two-tier Taxation. 38

4. Tax Revenue with Two Taxing Jurisdictions. 39

5. Tax Revenue with Two Taxing Jurisdictions and Constraints. 41

6. Strong Complement Nash Equilibrium.....145

7. Effect of Transfer in Home Rule State. 147

8. Effect of Transfer in Dillon's Rule State. 148

ABSTRACT

Home Rule, Selectivity and Overlapping Jurisdictions: Effects on State and Local Government Size

By

Robert F. Salvino

August, 2007

Committee Chair: Dr. Geoffrey K. Turnbull

Major Department: Economics

Home rule power gives local governments greater authority to obtain and manage fiscal resources and determine the distribution and extent of public services. By design, this authority alters government outcomes. The vast decentralization and local government structure literature examining horizontal and vertical competition demonstrates the complexity of predicting the effect of home rule on government sector size. Adding to the complexity, home rule is fundamentally distinct from decentralization. Home rule power gives local governments greater fiscal, structural, and functional authority, while state governments may retain partial authority. This can result in duplication of revenue generation and service provision.

Under the leviathan hypothesis direct and indirect constitutional constraints are necessary to control government expansion. State restrictions on home rule authority may serve as a form of direct constitutional constraint that has been overlooked in the economic literature. This dissertation uses 1990 and 2000 Census data to empirically test

home rule and other institutional factors' effects on government size. The results of the studies in this dissertation confirm that home rule relaxes a constraint on government size, finding that home rule states tend to have larger government sectors. The empirical evidence supporting the role of institutions in public sector performance is a primary contribution of this dissertation.

Chapter I

Introduction

Public finance and public choice scholars devote great effort to understanding and determining how direct and indirect constitutional constraints affect the local, state, and combined local and state government sectors. Related efforts examine factors associated with decisions to impose these constraints. The literature focuses on tax and expenditure limitations and fiscal decentralization as the main objects of investigation for direct and indirect constraints respectively. The focus on fiscal measures is a common theme in much of the analysis.

Economists devote less attention to incorporating measures of decentralization or local discretion beyond purely fiscal powers. We expect institutional factors affecting decision-making behavior and capabilities to affect government size. Studies attempting to quantify attributes of discretionary authority in efforts to make comparisons across various forms of local government within a given state as well as to make comparisons across states find considerable variation on both levels.

This dissertation is the first study of local discretion to examine the impact of home rule power and related institutional factors on government size. The measure of home rule power extends that developed in Turnbull and Geon (2006) and captures two unique dimensions of local discretionary authority not captured by traditional measures of fiscal decentralization. First, local governments may enjoy greater functional, structural, and/or fiscal discretion without necessarily limiting powers at the state level. Second, considering functional and structural components of local government expands

the scope of decentralization beyond the context of purely fiscal decisions traditionally measured by how revenues or expenditures are divided between the local and state levels of government. This dissertation ultimately answers the question of how differing degrees of home rule power affect the size and composition of the state and local government sector. The approach is general and can be applied to a number of other institutional factors that may affect government size or efficiency.

Public finance scholars uphold the social welfare maximizing and efficiency enhancing benefits of decentralized powers in a federal system of government, and international economic development experts see fiscal decentralization as a key component of their efforts aimed at government reforms across the world (Martinez-Vazquez & Alm, 2003). Public choice scholars promote greater fiscal decentralization as a form of indirect constitutional constraint, encouraging competition between political jurisdictions, creating an effect on government size and power analogous to that of firm competition in the private sector and its minimizing effects on the threat of monopoly power (Brennan & Buchanan, 1980; Oates, 1985).

Home rule power refers to a local government that has wide latitude in interpreting a state constitution's rules of authority concerning local government. Dillon's Rule, the antithesis of home rule, characterizes local governments that have little to no latitude in interpreting these rules of authority. A straightforward explanation defines home rule as the ability to liberally interpret local government authority in terms of the powers that are not reserved to the state or expressly denied local governments in the constitution. Contrast this with a strict Dillon's Rule interpretation whereby only powers expressly granted to local governments are available (Richardson, Gough, &

Puentes, 2003). A complication involving the classification of a state as either home rule or Dillon's Rule arises from the fact that home rule power may derive itself from a variety of sources: the constitution, legislative power, or legal precedent. To emphasize, a state that has a very limited home rule amendment may have a local government sector with less discretionary authority than a state with a tradition of legal precedent that grants greater local discretionary authority in the absence of an explicit home rule amendment.

Home rule powers affect three components of government: government structure, functions government performs, and government finance. Greater home rule power may yield greater freedom in regard to these three components. Alternatively, the latter may come to resemble greater home rule power regardless of any explicit assignment of home rule power.

Home rule freedoms under the structural component may include any or all of the following: ability to and steps of incorporation for a community; rules and restraints of annexation; other legal factors such as extraterritorality–whether local governments can own facilities or property beyond their boundaries, such as for airports, landfills, or water supplies; and form of county or municipal government.

Functional home rule freedoms can include the ability to choose different forms and/or levels of public services provided by a local government. They may extend to economic development activities ranging from funding such activities to creating economic development organizations. Home rule freedoms may also affect planning, zoning, or land use controls, administrative procedures, contracting and purchasing decisions, or the authority to cooperate with surrounding localities as in good neighbor policies.

Finally, home rule reflects local government fiscal freedoms regarding revenues, expenditures, grants-in-aid, and funded and unfunded mandates from state governments. Debt limits, tax base limits, limits on local tax sources, spending limits, rules for distributing funds, balanced-budget requirements, or rules regarding bankruptcy limit home rule.

Traditional measures of decentralization ignore local discretionary authority. Might the increase in local sector discretionary authority open the possibility for the emergence of local government leviathans? Is it necessarily the case that greater competition among jurisdictions will dominate the effect of greater local government power? Do the restraining effects of competition differ for county governments and municipal governments?

In a partial equilibrium framework extending greater powers of taxation to the local sector while maintaining at least a constant level of taxation in the state sector should lead to an increase in the size of government.[1] This notion serves as a point of departure from the influencing decentralization literature. Extending this notion beyond fiscal powers to include functional and structural aspects of local government adds complexity to questions concerning economic effects of greater local discretion. Does greater home rule power enhance government efficiency overall? Does it increase the size of the state and local sector? Is there a trade-off of service provision between the state and local sectors? This dissertation examines the extent to which greater home rule power and other institutional factors increase the size of the state and local government

[1] Sobel (1997) and Flowers (1988) present an alternative outcome based on the "common pool" problem of two vertical tiers taxing the same tax base. Assuming the first tier sets its tax rate for optimal revenue, the addition of a second tier taxing the same base will result in a decrease in total revenue. Additionally, Sobel (1997) and Wagoner (1995) demonstrate that even if each tier taxes a separate tax base, the combined tax rate increases and income effects and interrelated markets lead to a revenue externality.

sector and to what extent these differences create trade-offs in service provision between the state and local sectors.

Empirical analysis of the effects of greater discretion in the local government sector must consider the various hypotheses for and against greater constitutional constraints on the reach of government. The Tiebout hypothesis maintains that citizens of a region will sort themselves into jurisdictions that provide the desired bundle of taxes and services according to citizen preferences. Under certain restrictive assumptions, the ability of citizens to vote with their feet will have a constraining effect on competing jurisdictions, so that no local government could extract undesirable excess revenues from its citizens. Under this hypothesis, the mere threat of mobility constrains government.

To explain the behavior of politicians in a representative democracy, public finance and public choice scholars have frequently relied on the median voter theorem. With single-peaked preferences and single-dimensional issues majority voting satisfies the preferences of the median voter, which implies that politicians seeking reelection will appeal to the median voter. However, nothing ensures efficiency of the median voter outcome, and in the case of double-peaked preferences majority voting cannot consistently aggregate preferences. Additionally, the median voter theorem ignores the role of political ideology, the influence of special interests, and the rational ignorance of voters. Furthermore, there are many circumstances in which government decisions are not subject to a majority vote.

The homevoter hypothesis (Fischel, 2001) maintains that homeowners have a vested interest in the value of their homes and thus their communities, giving them incentive to actively participate in local elections in order to protect the value of their

homes. This hypothesis rests on the findings of a vast literature demonstrating that taxes are capitalized into home prices (DeBartelome & Rosenthal, 1999; Hughes & Sirmans, 1992; Yinger, Bloom, Borsch-Supan, & Ladd, 1988). The homevoter hypothesis reinforces the argument for greater decentralization so that these politically active homevoters can monitor the value of public goods bundles through their participation in local elections. Turnbull and Mitias (1995) provide evidence supporting the notion that a government's responsiveness to voters increases the lower the government is on the fiscal tier. They find that the median voter model does a good job describing public demand for city services, but the model does not perform well for county and state level services.

Niskanen's (1968, 1971) bureaucracy theory asserts that civil servants motivated by their own rational self-interest increase their utility by increasing the output of their organization. This greater output increases the likelihood of greater compensation, promotions, power, and other perks. The incentive to increase the bureau's output does not generally increase efficiency, especially since there is no motivation to minimize cost. Some have criticized the bureaucracy theory on the grounds that it assumes the legislature is not capable of monitoring and constraining this output-maximizing behavior (Miller & Moe, 1983). A response to this criticism suggests that it is not in the interest of the legislature to restrain output-maximizing behavior (Breannan & Buchanan, 1980).

The Leviathan hypothesis takes bureaucracy theory one step further and combines the bureaucracy and the legislature into a monolithic, revenue-maximizing monopoly (Brennan & Buchanan, 1980). This averts the criticism of bureaucracy theory that the legislature should be able to control the bureau by asserting that such control is not in the legislature's interest. Rather all of government is made-up of rational, self-interested

individuals who benefit either directly or indirectly from government revenue maximization.

The remainder of this dissertation is organized as follows. Chapter 2 begins with a brief presentation of the historical context of Dillon's Rule and home rule. It describes the federal and state constitutional laws determining local government powers and the competing perspectives of Dillon's Rule and home rule regarding the interpretation of these laws. It defines the main functional aspects of home rule power and demonstrates how the degree of home rule power varies across states. This chapter also discusses the literature characterizing local discretionary authority, discussing the existing empirical evidence about how limitations on state or local government powers affect the public sector size.

Chapter 3 reviews the Leviathan and fiscal decentralization literature beginning with a discussion of Brennan and Buchanan's (1980) Leviathan hypothesis and related developments by Tiebout (1956), Niskanen (1971), Oates (1972), Fischel (2001), and others. The ensuing empirical tests of decentralization and the Leviathan hypothesis by Oates (1985), Nelson (1987), and Zax (1989) demonstrate effects on government size arising through horizontal competition. Turnbull and Djoundourian's (1993) overlapping jurisdictions theory helps define the vertical relationship within states and implications for government size. Oates (1979) and Turnbull (1998) present well-developed theories of fiscal illusion and its potential to hinder size-reducing effects of greater decentralization. Sobel (1997) discusses implications for revenue and efficiency in a multi-tiered system where two or more tiers are allowed taxing power. Institutional factors add a level of complexity to vertical and horizontal relationships, and this chapter

discusses relevant studies such as Turbull and Geon's (2006) analysis of various external constraints and empirical studies of tax and expenditure limitations such as Alm and Skidmore (1999) and Skidmore (1999).

Chapters 4 through Chapter 8 present separate empirical models. Data for each chapter is discussed therein. In general, the samples for the five chapters comprise 1990 and 2000 pooled cross-sectional data from 47 states in the U.S. Chapter 4 presents the state and local share empirical model, data, and results from the investigation of the role of home rule and tax and expenditure limitations in the Leviathan model. The empirical model in this chapter is based on previous studies of decentralization's effect on the size of government (Oates, 1985; Nelson, 1987; Zax, 1989). Home rule or the lack thereof is introduced in this model as an additional constitutional constraint. This state and local share model controls for the effect of tax and expenditure limitations and finds effects of exogenous controls for decentralization consistent with previous studies, decentralization constrains government size. Relying on measures of tax and expenditure limitations presented in Skidmore (1999) these results are consistent with Skidmore's findings that properly designed tax and expenditure limitations do constrain government size. However, the model presented in this chapter indicates that home rule power has no significant impact on the size of government. No attempt is made in this model to control for the expected endogeneity of home rule choice.

Chapter 5 addresses the possible endogeneity of home rule. The results reveal the presence of a self-selection effect. Failure to control for this source of endogeneity produces downward-biased estimates of the revealed effect of Dillon's Rule's ability to constrain government size. Unobservable factors in Dillon's Rule states are consistent

with a larger government sector, thus states that choose Dillon's Rule tend to have larger government sectors than states that choose home rule. The selection-corrected results imply that had home rule states instead chosen Dillon's Rule, the size of government in these states would be smaller. Correcting for the selectivity bias, measuring size of government as either the share of state and local taxes in total state personal income or state and local own source revenue in personal income, home rule states are predicted to have 21 percent to 22.8 percent larger government sectors. These results are consistent with the Leviathan hypothesis.

Chapter 6 conducts an independent analysis of state and local government sectors. The purpose of this chapter is to identify whether the effects of constitutional constraints affect the tiers of state government in different ways. Results are presented both with and without selectivity correction. The separate state and local share analyses verify that greater decentralization increases the size of the local sector and decreases the size of the state sector, while there is also evidence that greater home rule power increases the size of the local sector. The selectivity-corrected results in the separate analysis reinforce this finding. Consistent with the combined state and local sector analysis, local governments in Dillon's Rule tend to have larger government sectors than in states that choose home rule, and correcting for the underlying selectivity bias predicts local governments in home rule states would be smaller under Dillon's Rule.

Chapter 7 considers the effects of two additional types of constitutional limitations on government powers, eminent domain and state budget stabilization funds. The eminent domain section examines the impact of the U.S. Supreme Court's decision in *Kelo v. New London (2005)* to uphold government use of eminent domain to acquire

land for transfer to private parties when it serves a broadly defined public purpose like economic development. The empirical results are consistent with the Leviathan model; ceteris paribus, states that explicitly empower their local governments to use eminent domain for private economic development have larger government sectors than those that do not. The section on state budget stabilization funds extends a study by Wagner and Sobel (2006) analyzing differences in constitutional and statutory funds and their correlation with tax and expenditure limitations. As their study implies, the empirical examination in Chapter 7 finds that states using constitutional state budget stabilization funds tend to have smaller public sectors than states using more strictly-defined funds.

Chapter 8 applies the overlapping jurisdictions model of Turnbull and Djoundourian (1993) to examine home rule's influence concerning the effect of county centralization on the size of the public sector. Drawing upon the empirical findings from Turnbull and Djoundourian (1993) and Campbell (2004), the demand relationship between county and municipal general expenditures is modeled as complementary. This chapter investigates the possibility that counties have greater leviathan power than municipalities. Controlling for the share of county general expenditures in total local sector spending, the analysis implies that pushing service provision to the lowest level possible, municipalities as opposed to counties, will have no effect on the size of government in home rule states; however, it will reduce the size of the public sector in Dillon's Rule states. This suggests that county governments have greater leviathan power than municipal governments in Dillon's Rule states.

Chapter 9 brings the analysis of the previous chapters together and discusses the policy implications and concludes the dissertation. This dissertation provides an answer

to the question of whether allowing greater home rule powers for local governments has any effect on the size of the state and local public sector. Why decentralization has not completely extended to local discretionary power is an interesting question with policy implications. The Leviathan model predicts that states that allow their local governments to have broad local discretion, greater home rule powers, will have larger public sectors than those that do not, so greater local discretionary power may have consequences in contrast to the constraining notion of decentralization.

Extending measures of decentralization beyond fiscal relationships to include local discretionary authority as captured by the choice for home rule, this dissertation identifies states that allow greater home rule powers to their local governments. These states generally have larger public sectors, results that are consistent with Brennan and Buchanan's (1980) leviathan hypothesis. States may choose home rule rather than Dillon's Rule if they value the increase in public sector size or Dillon's Rule if they wish to constrain government's spending powers. The empirical results show that state choices are consistent with the leviathan hypothesis.

Chapter 2

Home Rule Background

The 10th Amendment of the Constitution of the United States of America reserves for the states or the people, those powers not delegated to the federal government in the Constitution nor prohibited by the same. The entire Constitution makes no mention of local government. In general states determine the local-state intergovernmental relationship, and so it follows that this relationship varies greatly from state to state, even locality to locality. The U.S. Supreme Court had this to say about the power of local governments in *Community Communication Co. v. Boulder* (1982), declaring:

> all sovereign authority within the geographic limits of the United States resides either with the government of the United States, or [with] the states of the Union. *There exist with the broad domain of sovereignty but these two.* There may be cities, counties, and other[s]…but they are all derived from, or exist in, subordination to one of the other of these. (Citations omitted; emphasis in original.)[2]

Thus, local governments whether they are counties, townships, cities, or the like, are creatures of their respective states, and hence the debate of local government freedoms and powers begins where the constitution ends, providing the opportunity for each state to ultimately determine these powers and freedoms for its local governments (Richardson et al., 2003).

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[2] As published in Richardson, Gough, and Puentes (2003), page 3.

Given the above, the debate about home rule versus Dillon's Rule is best understood after examining the historical context from which the terminology derives itself. In the pursuit of economic development, the questionable behavior of many typical municipal governments leading up to Judge John Dillon's Iowa state court decision should provide additional state perspective regarding either the reluctance or the willingness to provide local governments with greater home rule powers even today.

The term home rule is actually an afterthought of Dillon's Rule, the latter term coming into use after Judge Dillon was forced to interpret the rules of authority in an Iowa state court case in 1865. Judge Dillon's decision came about during a time in American history that saw widespread corruption in municipal governments. Much of this corruption was related to the pursuit of municipalities in steering railroads into their towns in the interest of economic development and private gain. Similar to the great debate going on in our states today following the *Kelo v. City of New London* decision concerning the extension of eminent domain powers for purposes of private economic development, the focus on property rights in these debates was a prominent one.

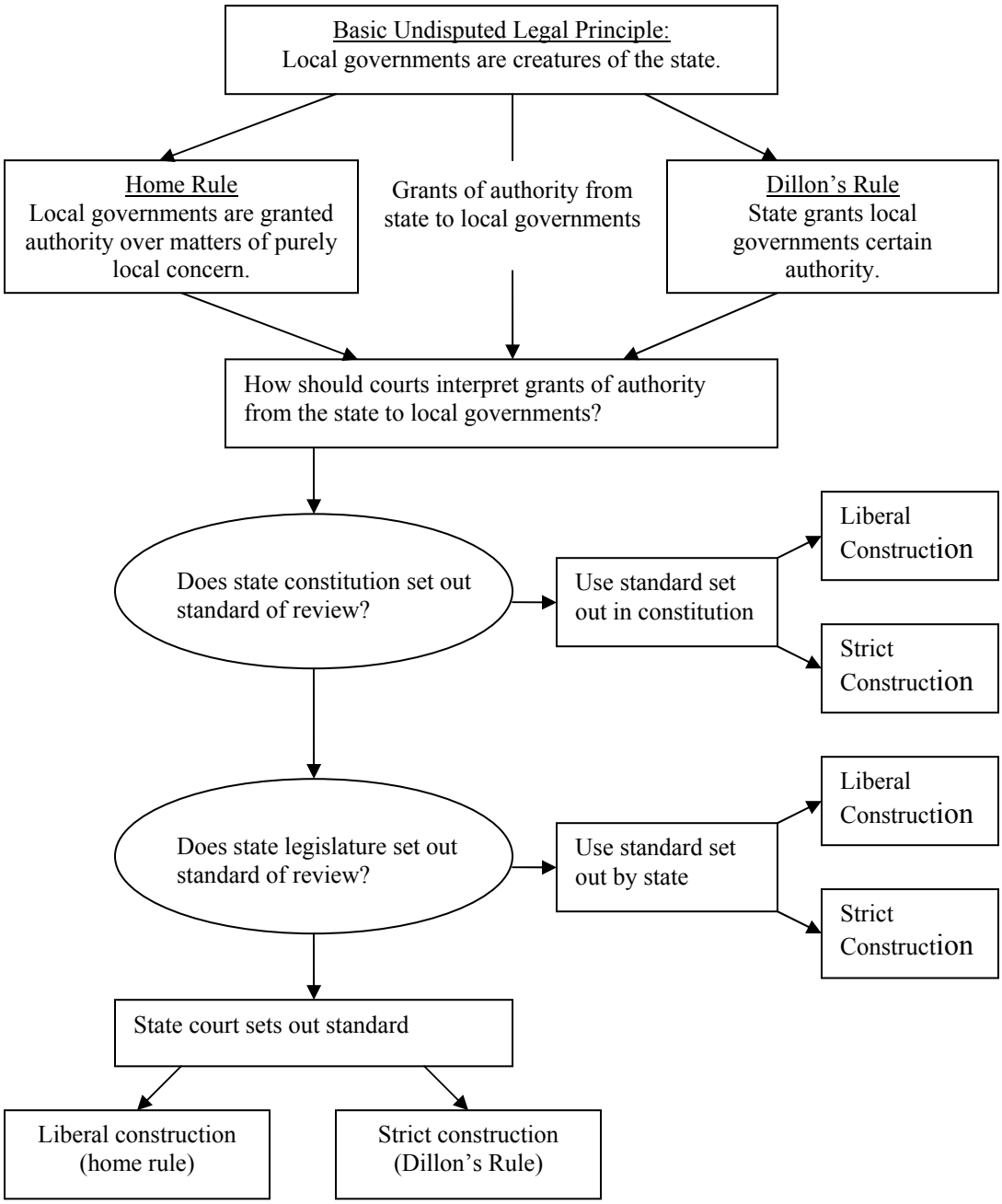
Another major point of contention regarded municipalities often financing all or portions of economic development projects with the issuance of municipal bonds. In many cases municipalities avoided payment on these bonds, and in one case in particular the fact that one such municipality had no authority to issue bonds gave the municipality legal standing on which to deny any payment on such bonds. Ironically, it was such a decision from which the term Dillon's Rule came about. In *Clark v. City of Des Moines* (1865), Dillon applied a strict construction interpretation to determine that the city had no authority to issue bonds, and therefore could not be held responsible for paying on the

same bonds. The irony is that Dillon generally was uncomfortable with the conflict of interest formed by municipalities' pursuits of economic development and the effects these pursuits had on personal property rights, but his decision enabled this particular municipality to completely avoid responsibility for essentially stealing funds from individuals in order to finance an economic development project. However, the ultimate legacy of the decision was that local governments and potential purchasers of bonds were made aware of the fact that local governments could not authorize bonds or more importantly engage in any activity without the authorization of the state (Richardson et al., 2003).

Dillon's strict construction interpretation became a popular approach of many state courts when faced with similar cases involving rules of authority with municipal governments as well as other forms of local governments. In this view, local governments have no power unless explicitly granted by the state. This is one of two possible ways of interpreting constitution and law, the other being a liberal interpretation, which assumes that local governments have those powers that are not expressly denied by law or constitution. This latter interpretation has come to be referred to as home rule (when applied to the rules of authority for local governments). See Figure 1 (Richardson et al., 2003) below for a graphical representation of the manner states assume in determining resolutions to questions of local authority. In general it demonstrates that resolution is first sought in the state's constitution. If no answer can be found here, the legislative decisions may contain the proper ruling. However, it is often the case that neither of the above addresses the question, and then it is up to the state courts to determine how to interpret grants of authority (Richardson et al., 2003).

Figure 1[3]

State–Local Relationship



[3] Figure adopted from Richardson et al. (2003), figure 1, page 5.

After considering the combined effects of constitutional, legislative, and judicial interpretations of the rules of authority as they apply to various facets of local government, it follows then that a state can be classified generally as either a home rule or a Dillon's Rule state.[4] Many assume that Dillon's Rule states have weak local governments and strong state government oversight, while localities in home rule states have greater freedom to govern with less state interference. Proponents of home rule often assert that home rule states have the benefit of less bureaucratic restraint, allowing them to more effectively handle local problems (Richardson et al., 2003). Krane, Rigos, and Hill (2001) note that government reformers, public officials, and civic groups regard home rule power as a key ingredient for improving local-state government relations and thereby improving the efficiency of local governments. Whether this supposition is true or not remains an empirical question.

Having provided the historical context from which the home rule-Dillon's Rule debate originated, it is appropriate to discuss the specific components of local governance to which states may grant home rule or local discretionary authority.[5] Zimmerman's (1981) ACIR study examining varying degrees of local discretionary authority across counties and cities in the United States looked specifically at four separate components: structure, function, finance, and personnel. The home rule study of Krane, Rigos, and

---

[4] It should be noted that a state with a home rule amendment may in fact behave more like a Dillon's Rule state or vice versa. For this reason, classification is not based on legislation or constitutional designations alone, but must consider how the courts in a state have applied and interpreted home rule or Dillon's Rule in past cases. Thus it is not possible to identify exact points in time when a state may have shifted from a home rule to a Dillon's Rule state or back.

[5] In addition to home rule freedoms varying from one component of local government to another, they are often applied with varying degrees for counties and municipalities in a given state. For example Zimmerman's (1981) ACIR study found that on average, municipalities were given greater freedoms than county governments.

Hill (2001), essentially looks at three categories: structure, function, and finance, while including personnel freedoms in the function category.[6]

States may grant greater local discretion to any or all of the following structural functions or tasks: ability to and steps of incorporation for a community; rules and restraints of annexation; other legal factors such as extraterritorality–whether local governments can own facilities or property beyond its boundaries, such as for airports, landfills, or water supplies; and finally government form, which for counties describes whether the internal decision-making structure of the government is elected executive, council-administrator, or county commission with similar choices for municipal governments.

Functional home rule freedoms can include the ability to choose different forms and/or levels of public services provided by a local government. They may extend to economic development activities ranging from funding such activities to creating economic development organizations. Planning, zoning, or land use controls can be affected by varying degrees of home rule freedoms. Administrative procedures as well as contracting and purchasing decisions may be affected. The authority to cooperate with surrounding localities, such as in good neighbor policies, can also be restricted or freely allowed.

Finally, home rule can affect local government fiscal freedoms regarding revenues, expenditures, grants-in-aid, and funded and unfunded mandates from state governments. There can be debt limits, tax base limitations, limitations concerning

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[6] The following categorization can be viewed in greater detail in Krane, Rigos, and Hill (2001), which provides a state by state analysis of each component as to the degree of local discretion allowed; however they do not provide explicit rank comparisons of the varying degrees of home rule power among states.

choice of fiscal instruments, spending limitations, rules for distributing funds, balanced-budget requirements, as well as rules regarding bankruptcy.

The process of determining the degree of home rule power for the purpose of this study is subjective. Creating a reliable dataset from the Krane, et al. (2001) study demands an objective eye capable of sifting through each chapter's inherent biases. In general the authors have commissioned local government experts, mostly political scientists in academia, in each of the 50 states to prepare the chapter for their respective states. If the book has one overriding purpose, it is to provide support for an argument in favor of greater home rule power for local governments. Each chapter is unique in its presentation while adhering to a basic template governing basic content and aspects of home rule to address. There is no cardinal ranking system suggested to the chapter authors by the book's main authors. There is a set of tables in an appendix that summarizes important quantitative details from each chapter and provides general home rule information for each state. In general, when making the home rule determination is not clear for a particular, the individual category addressing fiscal freedoms serves as the tiebreaker. For a study of government size, this method is not unreasonable. For studies with other purposes, for example characterizing effective growth management policy, another method may serve better.

A number of studies have examined the effects of various limitations on fiscal freedoms for local governments. In general these studies have not been concerned with local discretion or home rule powers in particular. Ladd (1978) analyzed state-imposed local tax and spending limitations, focusing on the motivation of states to impose such restrictions as well as the costs and benefits of the restrictions. The study employed a

linear probability model to determine the likelihood that a state would impose restrictions given levels and growth in property taxes and expenditures respectively, finding a positive correlation between likelihood of imposing restrictions and property tax burdens and growth in expenditures per capita. Alm and Skidmore (1999) find positive correlation between likelihood of tax and expenditure limitation, TEL, passage and tax burden and historical growth in tax burdens. Skidmore (1999) finds evidence that TEL's have a constraining effect on the size of government. Other studies have examined, from various perspectives, the effects of Proposition $2^1/_2$ in Massachusetts and Proposition 13 in California, approved by voters to reduce the property tax burden (Ladd & Wilson, 1982; Downes & Figlio, 1999; McGuire, 1999; Sexton, Sheffrin, & O'Sullivan, 1999).

One benefit of considering local discretion, or home rule, in an analysis of government size is that traditional measures of decentralization cannot reveal differences in pure local discretionary power. Proportional measures of expenditure or revenue concentration or differences in the number of local government units in a state or region do not say anything about decision-making powers. One state may be highly decentralized in terms of direct expenditures, but the ultimate decisions regarding these expenditures may be heavily regulated by the state. One aspect of the home rule investigation in a study analyzing the effect of home rule on government size concerns whether or not greater local discretionary authority enhances the competition effect seen from fiscal decentralization, or whether this greater discretion contributes to a loss of scale economies as local governments take over functions previously consolidated at a higher level. Alternatively, from the perspective of local taxpayers, John Wallis's idea of government growth suggests that government size may increase with greater home rule

power if home rule localities are better able to meet the demands of local tax payers wanting a greater level of government services than that being provided under a state of less local discretion. Musgrave's theory, on the other hand, implies that greater home rule power may lead to a decrease in size if home rule localities can better meet the demands of the more homogeneous voters to decrease the level of redistribution programs.[7] Supporters of Dillon's rule would argue that without proper constitutional constraints, local governments will use their power to achieve their revenue-maximizing objective against the demand of the median voter (Downes, 1996; Dye & McGuire, 1997). Ceteris paribus, extending greater powers of taxation to the local sector and maintaining at least a constant level of taxation in the state sector should lead to an increase in the size of the government sector. Extending this notion beyond fiscal powers to include functional and structural aspects of local government adds complexity to questions concerning economic effects of greater local discretion. Fiscal decentralization will not offset any revenue-maximizing tendency, assuming it exists, if state and local spending exhibits a complementary relationship or in non-urban settings where horizontal competition is not as strong. Thus, the Leviathan hypothesis would imply that governments operating under Dillon's rule would tend to be smaller than those under home rule (Turnbull & Geon, 2006). For a listing of states categorized by their home rule rankings and some basic characteristics, see Table 1.[8] For comparison, Table 2 summarizes Zimmerman's (1981) rankings of local discretionary authority.

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[7] Wallis and Musgrave's theories appear as brief side notes in the Oates (1985) study of Leviathan.
[8] Virginia counties and cities have a unique jurisdictional relationship in which counties are independent of cities; therefore omitting Virginia avoids this complication. Alaska and Hawaii are omitted in order to focus only on the continental states.

Table 1. States in sample by degree of home rule

State	Degree of HR[1]	Population 2000	Population 1990	2000 Size of Government S+L Tax Share[2]	2000 Size of Government S+L OSR Share[3]	Averages per Home Rule Rank	
Indiana	1	6,080,485	5,544,159	0.099	0.132	2000 Tax Share	0.103
Nebraska	1	1,711,263	1,578,385	0.106	0.134		
Nevada	1	1,998,257	1,201,833	0.097	0.129	2000 OSR Share	0.138
North Carolina	1	8,049,313	6,628,637	0.099	0.136		
Oklahoma	1	3,450,654	3,145,585	0.097	0.134	Average Population	3,138,412
West Virginia	1	1,808,344	1,793,477	0.107	0.138		
Wyoming	1	493,782	453,588	0.117	0.162		
Alabama	2	4,447,100	4,040,587	0.085	0.138	2000 Tax Share	0.099
Idaho	2	1,293,953	1,006,749	0.097	0.136		
Kentucky	2	4,041,769	3,685,296	0.104	0.131	2000 OSR Share	0.131
Maine	2	1,274,923	1,227,928	0.126	0.149		
Minnesota	2	4,919,479	4,375,099	0.111	0.140	Average Population	5,418,568
Mississippi	2	2,844,658	2,573,216	0.102	0.150		
New Hampshire	2	1,235,786	1,109,252	0.083	0.101		
New Jersey	2	8,414,350	7,730,188	0.102	0.123		
New Mexico	2	1,819,046	1,515,069	0.108	0.136		
Pennsylvania	2	12,281,054	11,881,643	0.098	0.127		
Tennessee	2	5,689,283	4,877,185	0.082	0.114		
Texas	2	20,851,820	16,986,510	0.094	0.120		
Washington	2	5,894,121	4,866,692	0.099	0.132		
Arizona	3	5,130,632	3,665,228	0.100	0.120	2000 Tax Share	0.102
Arkansas	3	2,673,400	2,350,725	0.102	0.133		
California	3	33,871,648	29,760,021	0.105	0.136	2000 OSR Share	0.128
Connecticut	3	3,405,565	3,287,116	0.103	0.115		
Florida	3	15,982,378	12,937,926	0.091	0.121	Average Population	7,973,260
Georgia	3	8,186,453	6,478,216	0.098	0.127		
Illinois	3	12,419,293	11,430,602	0.100	0.119		
Iowa	3	2,926,324	2,776,755	0.101	0.141		
Maryland	3	5,296,486	4,781,468	0.100	0.120		
Michigan	3	9,938,444	9,295,297	0.101	0.132		
Missouri	3	5,595,211	5,117,073	0.094	0.118		
Montana	3	902,195	799,065	0.093	0.126		
New York	3	18,976,457	17,990,455	0.131	0.158		
Rhode Island	3	1,048,319	1,003,464	0.108	0.124		
Vermont	3	608,827	562,758	0.109	0.133		
Colorado	4	4,301,261	3,294,394	0.091	0.121	2000 Tax Share	0.100
Delaware	4	783,600	666,168	0.101	0.136		
Kansas	4	2,688,418	2,477,574	0.102	0.128	2000 OSR Share	0.132
Louisiana	4	4,468,976	4,219,973	0.108	0.147		
Massachusetts	4	6,349,097	6,016,425	0.096	0.111	Average Population	3,673,829
North Dakota	4	642,200	638,800	0.103	0.145		
Ohio	4	11,353,140	10,847,115	0.109	0.136		
Oregon	4	3,421,399	2,842,321	0.088	0.127		
South Carolina	4	4,012,012	3,486,703	0.094	0.138		
South Dakota	4	754,844	696,004	0.090	0.111		
Utah	4	2,233,169	1,722,850	0.104	0.147		
Wisconsin	4	5,363,675	4,891,769	0.114	0.144		

[1]Degree of Home Rule: 1=Strong Dillon's Rule, 2=Weak Dillon's Rule, 3=Weak home rule, 4=Strong home rule

[2]State and local tax revenues as share of personal income

[3]State and local own source revenues as share of personal income

Table 2. ACIR rankings

ACIR (1981) Classifications of Local Discretionary Authority.

Composite Ranking: 1=state dominant fisal partner, 2=state strong fiscal partner, 3=state junior fiscal partner
Index of city, county rankings by states for structure, functional, finance, personnel are 1 to 5
where 1 = great local freedom, 5 = small local freedom

		CITY				COUTNY			
	Composite	Structure	Functional	Finance	Personnel	Structure	Functional	Finance	Personnel
Alabama	1	4.50	2.50	2.00	1.75	4.50	4.00	4.75	2.25
Alaska	1	1.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00
Arizona	2	2.50	2.00	1.75	1.75	4.00	4.00	4.00	4.00
Arkansas	1	5.00	3.00	3.00	1.50	1.00	3.00	3.00	1.50
California	3	2.00	2.00	2.00	2.00	3.00	3.00	3.00	3.00
Colorado	2	2.50	3.00	3.50	2.00	4.50	5.00	4.50	3.00
Connecticut	2	1.00	1.00	2.00	2.00				
Delaware	1	1.50	2.00	3.00	2.50	3.00	2.00	2.00	2.00
Florida	2	1.00	1.30	4.50	2.50	1.00	1.30	4.50	2.75
Georgia	2	5.00	1.00	3.00	1.00	5.00	5.00	3.00	3.00
Hawaii	1					1.00	3.20	4.00	3.50
Idaho	2	3.00	2.00	5.00	4.00	5.00	3.00	5.00	4.00
Illinois	2	1.10	2.00	1.50	2.60	2.10	3.30	2.80	3.80
Indiana	2	5.00	2.50	4.00	2.00	4.00	3.50	4.00	2.00
Iowa	2	1.80	1.90	4.50	3.30	4.00	2.50	4.50	3.60
Kansas	2	1.00	1.00	3.00	1.50	2.50	2.50	3.00	3.00
Kentucky	1	1.50	3.50	2.60	3.50	3.50	3.50	2.60	2.50
Louisiana	1	1.00	1.50	3.00	1.00	2.00	2.00	3.50	2.00
Maine	2	1.00	1.00	1.50	1.50	1.75	4.00	3.50	2.00
Maryland	2	1.00	1.50	2.25	1.25	2.60	2.33	3.20	2.20
Massachussetts	3	1.00	2.00	5.00	3.00	5.00	5.00	5.00	5.00
Michigan	2	1.00	1.00	2.00	1.00	4.50	3.50	3.50	3.50
Minnesota	2	1.00	1.00	4.00	1.00	3.00	3.00	3.00	2.00
Mississippi	1	2.00	2.00	4.00	2.00	5.00	4.00	4.00	3.00
Missouri	2	1.00	1.00	3.00	1.00	5.00	5.00	5.00	4.00
Montana	3	1.00	2.00	5.00	2.00	1.00	2.00	4.00	3.50
Nebraska	3	1.50	2.00	3.50	1.00	3.00	4.00	5.00	3.00
Nevada	2	2.50	3.50	4.00	3.00	2.00	4.00	4.00	4.00
New Hampshire	3	2.00	1.50	4.00	1.00	5.00	4.00	5.00	1.00
New Jersey	3	3.00	2.00	4.00	2.00	3.00	3.50	4.50	3.00
New Mexico	1	3.00	5.00	3.00	5.00	3.00	3.00	3.00	5.00
New York	3	1.50	3.00	4.00	4.00	1.50	3.00	4.00	4.00
North Carolina	1	1.00	1.00	2.50	1.00	1.00	1.25	2.50	2.50
North Dakota	2	1.80	1.50	3.50	2.00	3.00	3.00	4.00	2.00
Ohio	3	1.00	1.50	2.50	1.50	4.00	4.00	4.00	4.50
Oklahoma	1	1.00	1.50	2.50	1.50	4.00	3.50	3.50	3.50
Oregon	2	1.00	1.50	2.00	1.50	1.00	1.50	2.00	1.50
Pennsylvania	2	2.00	2.00	2.50	2.00	2.00	2.00	2.00	2.00
Rhode Island	2	1.00	2.00	5.00	3.00				
South Carolina	1	4.00	2.00	2.00	2.00	4.00	3.00	2.00	2.00
South Dakota	3	3.00	4.00	3.00	3.00	5.00	3.00	5.00	3.00
Tennessee	2	3.00	3.00	3.00	2.00	5.00	3.00	5.00	2.00
Texas	2	1.00	1.20	1.50	1.00	5.00	4.80	4.50	2.00
Utah	2	2.50	2.00	3.50	2.00	3.50	3.00	3.00	1.50
Vermont	2	5.00	2.00	5.00	3.00	5.00	5.00	5.00	3.00
Virginia	2	3.00	1.50	2.00	1.25	4.00	2.50	3.00	2.25
Washington	2	1.30	2.00	3.50	3.00	3.00	2.80	4.00	4.50
West Virginia	1	4.00	2.00	5.00	3.00	5.00	3.00	5.00	3.00
Wisconsin	2	1.00	2.00	3.00	2.00	2.50	3.00	3.00	2.50
Wyoming	2	1.00	3.00	3.00	2.50	5.00	4.00	3.00	3.00

Chapter 3

Leviathan and Decentralization Literature Review

Devolution of power from the federal to sub-national levels of government has implications for the size of the government sector. These implications stem from the well-documented effects of horizontal and vertical competition and fiscal illusion as well as effects from institutional factors yet to be explored. Significant bodies of literature in the fields of public finance and public choice consider and investigate the first three of these concepts beginning with the early works of Brennan and Buchanan (1980), the ensuing Leviathan studies of Oates (1985), Nelson (1987), and Zax (1989), and more recently Turnbull and Djoundourian's (1993) and Campbell's (2004) exploration of the effects of overlapping jurisdictions in vertical competition. Empirical research into the effects of institutional factors, such as the use of court systems to influence government policy, the effect of ideology or political entrenchment on the reach of government, or local discretion or home rule power are less abundant (Turnbull & Geon, 2006; Bjornskov, 2005; Kau & Rubin, 2002; Keefer & Knack, 2002; Barro, 1997). Zimmerman's (1981) ACIR study attempts to measure local discretionary authority and Krane, Rigos, and Hill (2001) present findings of a state by state examination of home rule power; however, neither study employs any empirical analysis or discusses effects on government size. Turnbull and Geon (2006) investigate home rule effects in an application of GARP analysis to median voter outcomes. Their finding that non-urban home rule counties tend to violate median voter demands while urban counties do not violate, suggests that horizontal competition may be a stronger factor in urban settings. This chapter will discuss the findings from relevant studies that have influenced this work

and demonstrate to the reader how home rule and other institutional factors add another dimension to the government size investigation.

Leviathan

Brennan and Buchanan (1980) provide an explanation for growth of the public sector that portrays government as a monolithic entity whose primary motivation is to maximize its revenue. They agree that electoral processes alone are not sufficient to constrain this growth. Thus their basic claim is that electoral constraints and direct and indirect constitutional constraints are necessary to restrain leviathan and obtain efficient outcomes. They present three observations to support their contention.

1. For certain types of decisions regarding the use of resources, electoral processes would not achieve desirable outcomes (regardless of majority decisions).

Brennan and Buchanan present three main arguments to support this observation. First, at the constitutional level basic property rights and protection of those rights are given. These rights must not be alterable by the whimsy of a majority vote, preferences of which surely will change from time to time. Second, preferences of the electorate depend on perspective, whether the vote is at the constitutional stage or in-period stage. In-period voting may not consider the full future costs of current period decisions. They give as an example the determination of welfare spending levels. In-period voting fails to consider the negative incentive effect of the welfare program creating potential recipients in the current period, while this can be taken into account at the constitution stage. Differences in outcomes for decision-making in Rawlsian-type preference schemes and the veil of

ignorance provide a similar example; individuals will make different decisions ex ante about the level of redistribution they would like to pay for in the tax system compared with the level they would choose after they have information about their own economic position. Third, rational ignorance prevails when information has a public good quality, and thus voters will be underinformed. Brennan and Buchanan suggest two possible outcomes as a result of such ignorance. If voters recognize this likelihood of ignorance, they may choose to constrain the discretionary power of politicians/bureaucrats as well as limit the number of politicians/bureaucrats that may assume such power. On the other hand, information asymmetry between the electorate and the politician-bureaucrat shifts the power of information toward the politician-bureaucrat and consequently the potential to manipulate the process. The fiscal illusion literature in part derives itself from this asymmetry (Turnbull, 1998).

2. Inherent characteristics of majoritarian political processes suggest an inability of such processes to constrain governments.

Whereas the context of Brennan and Buchanan's previous observation takes as given the ability to achieve an outcome in line with preferences, this second observation questions the ability to achieve such an outcome at all. Two factors suggest outcomes to the contrary: (1) the operation of majority rule and (2) the role of bureaucracy. Regarding the first, it is well known that in the absence of single-peaked preferences or simultaneous policy announcements majority rule generates cyclical preferences wherein a case exists for each of three possible outcomes to become the majority outcome. In addition, they demonstrate that simultaneous announcement of policies does not

necessarily fully constrain the tendency of the process to allow for candidates to extract surplus from an outcome.[9] Secondly, in the common case where the actions of bureaucrats are not constrained by majority vote (bureaucrats have substantial freedoms in the day to day decisions that are not determined by voting outcomes), Niskanen's (1971) theory of bureaucracy maintains that bureaucrats enjoy a monopoly power over the supply of public goods and services as well as the ability to set political agendas and more importantly that electoral constraints do not threaten this power.

3. *Historical observation of the growth of government and attempts of the electorate to limit this growth suggest that democratic electoral processes may not constrain growth.*

Brennan and Buchanan refer to the fact that United States government spending as a share of gross national product rose from 7 percent in 1902 to over 30 percent by 1970, and they agree that this in and of itself does not suggest that this growth was against the will of the electorate or that 7 percent in 1902 was the "right size". Their main question is whether or not electoral constraints would allow the electorate to reverse the growth trend if desired. As evidence to support the contention that a majority of voters in some areas would rather rely on constitution-level constraints rather than electoral constraints, they point to California's Proposition 13.[10] Furthermore, to motivate their arguments Brennan and Buchanan maintain that the writers of the United States Constitution simply

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[9] Brennan and Buchanan (1980), pp. 21-23 demonstrate this in reference to Downs' (1957) voting model where it is assumed that politicians maximize their expected returns from election described as $R = P_e S$, where P_e = Probability (election) and S= Surplus taken by the politician upon winning election.

[10] Further evidence came later with Massachussetts' Proposition 2-1/2. Additionally the current uproar in many states in response to the Supreme Court decision in *Kelo v. City of New London,* which effectively removes a constitutional constraint on state and local governments concerning their ability to obtain private property for the broader public purpose of economic development, a departure from the public use interpretation originally set forth in the 5th Amendment to the Constitution.

failed to perceive a need for greater constitutional constraints as they "could not bring themselves to imagine governments with the authority and appetites that the modern Leviathan is observed to possess."

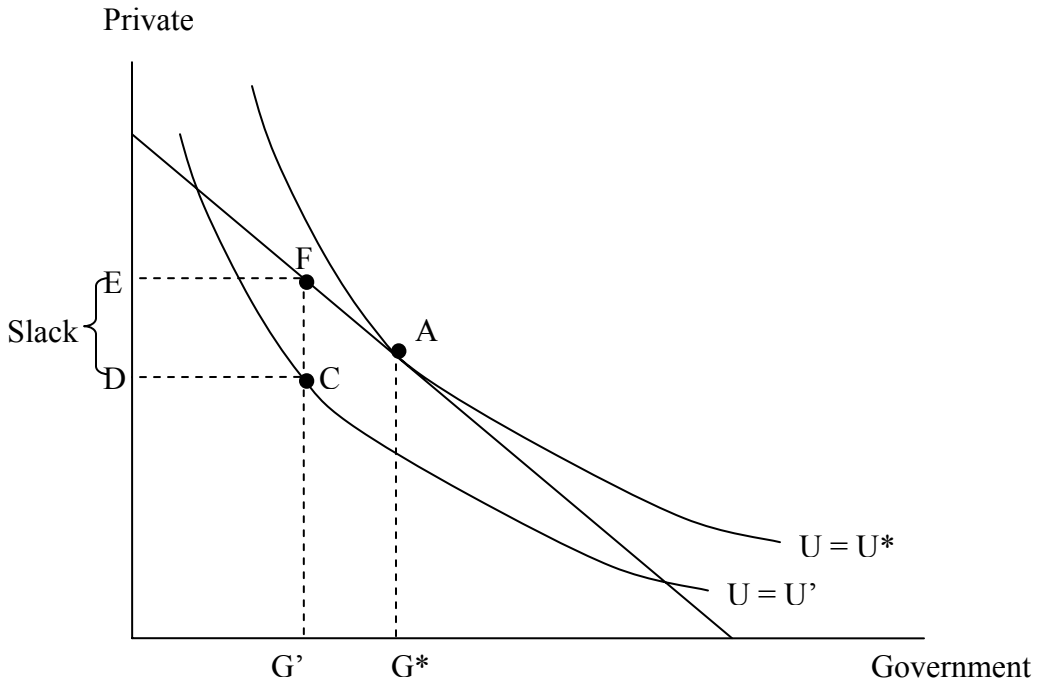
Before discussing Brennan and Buchanan's (1980) simple revenue maximizing model of government, it is helpful to discuss Niskanen's (1968, 1971) theory of bureaucracy behavior as well as the popular criticisms, some of which Niskanen himself has acknowledged and addressed (Niskanen, 2001). Niskanen developed his bureaucracy theory while he was a bureau official in the Institute for Defense Analysis. Gordon Tullock had direct involvement helping Niskanen pull his theory together. Tullock had also published his own criticisms of bureaucracies based on his personal experience serving in the Department of Labor (Tullock, 1965).

It will prove beneficial to review three of Niskanen's original modeling assumptions regarding the bureaucrat-legislator bargaining environment that took the most criticism and present the revised assumptions and implications. The three criticized assumptions are as follows: 1) bureaus maximize their total expected budget, 2) legislative sponsors are assumed to be passive in accepting or rejecting the bureau's proposed budget-output bundle without evaluating alternative bundles, 3) bureaucrats and sponsors bargain over the full range of the possible combinations of budget and output. The following revisions to the theory stand today. First, bureaus maximize the discretionary budget or slack defined as the total budget less the minimum cost of producing that output expected by the sponsor. The implications of this assumption are the budget is too large, output in terms of demand revealed by the sponsor is too small, and inefficiency in production is the normal condition. Second, the sponsor is not passive

in accepting or rejecting the bureau's proposal. Notwithstanding this change, two biases inherent in the review process still remain. In terms of effective reviewing, there is a freerider problem whereby the cost of reviewing is mainly borne by the committee members responsible for reviewing the bureau's proposal, and the benefits of a thorough review accrue to a broader population, resulting in lower quality reviewing. Third, rather than bargaining over the full range of possible combinations of budget and output, the sponsors and bureaucrats only bargain over the sponsors' preferred budget level and the "reversion level" or baseline usually defined as the previous year's budget. This revised assumption recognizes the potential for the agenda setter to manipulate the outcome of the bargaining process by strategically choosing the reversion level that maximizes slack. See Figure 2 below taken from Niskanen (2001) for an intuitive description of the bargaining process. Point A represents the optimal bundle of public and private goods for the decisive voter of the sponsor group with utility equal to U* and output of the bureau equal to G*. The discretionary- or slack-maximizing bureaucrat proposes output G' where utility equals U' under the reversion-level budget. Slack equals E – D. Note that the bureau's output will be higher and the slack or excess budget lower, the higher the reversion utility level.

Figure 2

Slack-maximizing Model



Apart from the above criticisms, some further disagree with the bureaucracy theory on the grounds that it assumes the legislature is not capable of monitoring and constraining this slack-maximizing behavior (Miller & Moe, 1983). This is the point of departure for Brennan and Buchanan's (1980) Leviathan hypothesis where they take bureaucracy theory one step further and combine the bureaucracy and the legislature into a monolithic, revenue-maximizing monopoly, thus averting the criticism that the legislature should be able to control the bureau by asserting that such control is not in the legislature's interest. Rather all of government is made-up of rational, self-interested individuals who benefit either directly or indirectly from government revenue maximization.

Brennan and Buchanan's (1980) simple revenue maximizing model of Leviathan is as follows:

$$S = R - G \quad (1)$$

where $G = \alpha R$ implies

$$S = (1 - \alpha)R \quad (2)$$

where S is the surplus government obtains for discretionary use, R is total government revenue, G is government spending, and α is the proportion of R that must be spent on G, as determined by a constraint.

If $\alpha = 1$ then $S = 0$, but they maintain that a value even close to 1 still leaves considerable room for leakage. Even if no leakage occurs, they demonstrate that revenue maximization is still a good approximation for Leviathan with the following scenarios. First, if the decision makers can manipulate the tax system they can arrange it so they pay no tax themselves. Second, in the more realistic case where there are private aspects to publicly provided goods, the decision makers can benefit from indirect transfers to themselves via the bureaucracy that is in place to carry out the provision of the public good. The welfare bureaucracy is an example. It would be impossible to transfer tax revenues earmarked for direct payments to the poor, but providing services for the poor in lieu of direct financial transfers requires a bureau through which surplus can be redirected to the bureaucrats. In this case minimizing direct financial transfers to the poor allows the bureaucracy to expand. This supports utility maximization since power, prestige, pay, and patronage enter directly into the utility function and are positively associated with the expanding bureaucracy.

It is important to note that Brennan and Buchanan do not assume that this revenue maximization is an explicit objective entering into the direct utility function of each or any politician or bureaucrat.[11] Rather they draw upon the analogy of Adam Smith's public interest outcome whereby self-interested, independent buyers and sellers in a competitive market generate an efficient outcome for society. According to Brennan and Buchanan, the interest of Leviathan, "revenue maximization, emerges from the interaction of the whole set of governmental decision makers even if no person explicitly sets maximum revenue as the goal of his own action."

Decentralization in a Federal System of Government

Inman and Rubinfeld (1997) discuss the evolution of federalism in the United States and the role of decentralization. From 1790 to 1860 states and the federal government had comparable responsibilities and hence they refer to this period of federalism as "dualism". Beginning in 1860 and ending in 1933 federal responsibilities grew and they refer to this period as "centralizing federalism". A period of "cooperative federalism" from 1933 until 1964 saw social programs grow in response to fears manifested by the Great Depression. After 1964 "creative federalism" saw the federal government take a more direct and active role in state and local government. Inman and Rubinfeld do not discuss the current period of federalism; however, many refer to the present as part of the "devolution revolution" whereby the federal government has relinquished some of its hold on state and local programs, beginning for example with welfare reform in the 1990's under the Clinton administration.

[11] See Brennan and Buchanan (1980) chapter 2, section 4.

Three institutions are fundamental components of federalism. There are a number of lower tier governments under the central government. States make up the second tier in the U.S. and local governments comprise the third tier. There may be lower tiers than cities or counties, namely special districts with very specific functions. These state and local tier governments have representation in the central government through state delegations of popularly elected representatives. Finally, and perhaps most importantly in regards to decentralization, there is a specific assignment of policy responsibilities between these vertical tiers of government. This assignment of responsibilities may change according to the will of the voters or politicians, and it varies greatly between states and local governments.

Fiscal federalism (Oates 1972, 1999), rather than describing the appearance of the split of duties among the different tiers of a federalist government structure, concerns itself with identifying the appropriate vertical tier of government for each function or instrument in an effort to maximize efficiency or social welfare.[12] It considers the interrelation of these tiers and the effects various instruments will have if exercised at one level versus another or at two or more levels simultaneously. Fiscal federalism attempts to account for positive effects of policies including the mobility of tax bases or the role of externalities, and normative concerns such as distributional effects of various instruments or government programs. It examines tax instruments, user fees, debt financing, intergovernmental grants, or any combination thereof as potential revenue sources for providing government services and suggests efficient and equitable approaches to financing programs or distributing funds across the various tiers of government. In general the theory of fiscal decentralization maintains that social welfare is maximized

when decentralized tiers provide local public goods because it is likely that preferences and costs of provision of local public goods will vary across jurisdictions, hence the efficient level of provision will also differ.[13] If instead a centralized government determines a uniform level of provision for a particular service benefiting a local area, for example public park amenities, different localities will be forced to provide this level of service for which there may be very little demand among its residents. Decentralization allows local preferences to determine local provision and helps ensure that marginal cost of provision equals the sum of residents' marginal benefits.

Fiscal decentralization should not be considered a fixed rule. The No Child Left Behind Act of 2002 has initiated great debate among economists, politicians, and community leaders, a debate driving right to the heart of fiscal federalism theory. K-12 education has traditionally been a locally-provided public good throughout the United States, keeping with the notion that local preferences for education vary significantly across jurisdictions.[14] Determining which tier of government should provide this local public good must account for externalities that may affect other jurisdictions. Education is generally thought to have positive spillovers; whereas the lack of education may produce a negative spillover. Considering the negative externality associated with low levels of educational attainment, with No Child Left Behind the Bush Administration has asserted that in the case of public K-12 education matching local interests may not be in the national interest (Gruber, 2007).

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[13] Oates (1999) summarizes the decentralization theorem (Oates, 1972) stating that "…in the absence of cost-savings from the centralized provision of a [local public] good and of interjurisdictional externalities, the level of welfare will always be at least as high (and typically higher) if Pareto-efficient levels of consumption are provided in each jurisdiction than if *any* single, uniform level of consumption is maintained across all jurisdictions."

[14] A few states have maintained a central control at the state level, though the reasons for this are not always related to maximizing social welfare. West Virginia is an example of a state that has maintained control of education policy in an attempt to equalize educational provision across jurisdictions.

Fiscal federalism has indirect implications for the Leviathan hypothesis. These implications derive more directly from Charles Tiebout's (1956) model of efficient public good provision. Tiebout was interested in exploring why private markets efficiently provide private goods, but do not fare so well in the provision of public goods. He determined that shopping and competition in private markets keeps firms from providing inferior, inefficiently-produced goods. Consumers have alternatives. Tiebout recognized that it is not likely for residents of a country to move frequently move from one country to another because of inefficient public good provision. Even inter-state migration is unlikely to discipline public good provision in this way. However, he reasoned that competition for residents among local jurisdictions may provide the efficient level of public goods, since residents can more easily choose a particular location in a select region as well as move from one jurisdiction to another if they become dissatisfied with a jurisdiction's bundle of public services. In this way, pushing public good provision down to the local tier will discipline local governments to effectively and efficiently provide public services in order to keep existing residents and attract new residents.

Fischel's (2001) homevoter hypothesis provides another argument for decentralization that does not directly depend upon the existence of interjurisdiction competition, reinforcing Oates' (1999) suggestion that interjurisdiction competition is not necessary to attain the efficiency-enhancing results associated with fiscal decentralization. Citing evidence from numerous empirical studies that taxes and public services and amenities are capitalized into the value of homes, Fischel argues that homeowners make efficient decisions in the interest of protecting the value of their largest asset, their homes (Hughes & Sirmans, 1992; Katz & Rosen, 1987; Yinger,

Bloom, Borsch-Supan, & Ladd, 1988). Drawing upon the analogy of municipal corporations to private corporations, Fischel maintains that homeowners are the largest "stockholders" of municipal corporations. They have a vested interest in maintaining the value of their communities and ultimately their homes. Pushing more responsibilities down to the local governments incorporates the homevoter into the local government process. Exercising their voting options to approve decisions that enhance the community and increase the value of their homes has the direct benefit of helping ensure that local practices and policies are carried out efficiently.

Vertical Relationships and Effects on Spending

As fiscal federalism concerns the appropriate assignment of revenue and expenditure functions for separate tiers of government, it is not sufficient to consider only horizontal effects associated with interjurisdiction competition. Turnbull and Djoundourian (1993) present a theory of overlapping jurisdictions and implications for government size. Recognizing that there are certain types of public services that county and municipal governments simultaneously provide, such as police and fire protection, road building and maintenance, and park services their theory explains the effect of greater (less) spending at the county (municipal) level on spending at the municipal (county) level. The demand relationships between county and municipal service provision may reinforce, counter, or have no contribution to the existing effects of horizontal competition. For example, if spending on services at the county level is complementary to spending at the municipal level, then vertical competition results in even greater total spending at all levels when either jurisdiction increases its spending.

Turnbull and Djoundourian (1993) examine data from 139 municipalities in five mid-western states and find a strong complementary relationship between county and municipal direct general expenditures. These findings have implications for the Leviathan hypothesis, suggesting that greater fragmentation, the number of municipal governments in the local government sector, may increase the total size of the total local government sector rather than restrain the monopoly power of county government.

Campbell (2004) extends their analysis examining 1980 data on police, park and recreation, and highway expenditures from the 50 largest MSA's outside of the northeast consisting of 205 counties and 665 municipalities belonging to these counties. The results suggest that leviathan behavior is more likely at the county level than the municipal level, possibly a result of the lower degree of competition among county governments relative to municipal governments and their greater number of competitors. Campbell (2004) also finds a complementary relationship between county and municipal expenditures consistent with Turnbull and Djoundourian's (1993) results.

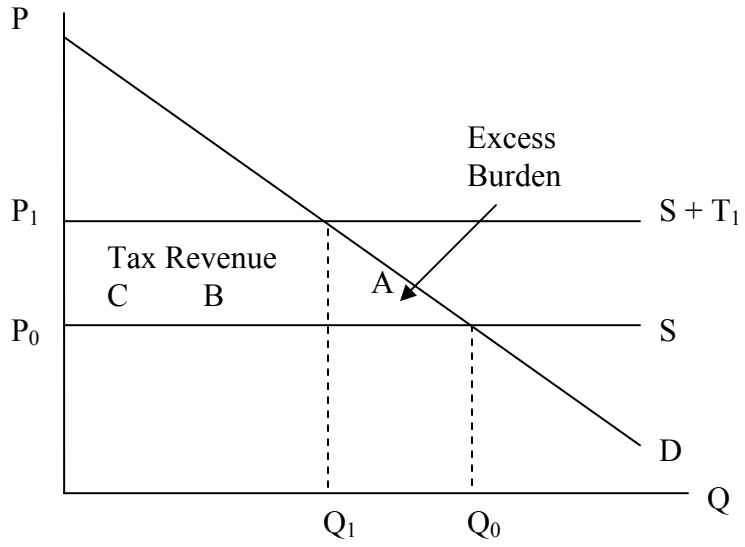
Sobel (1997) examines the interrelationship of vertical tiers in a federal system of government from an optimal taxation perspective. The main result of this study is the potential for a negative revenue externality to exist when two levels of government are both allowed taxing power. Sobel (1997) focuses on federal and state tiers, but the concept extends to a state level analysis where the state and local tier governments share taxing authority. The theory demonstrates that the common pool problem results whether the same tax base or separate tax bases are taxed causing the combined tax rates of the two levels of government to be greater than the optimal tax rate. Three adverse effects arise. There is an increase in the deadweight loss of taxation, an inefficiency bias in

government spending, and possibly lower tax revenue in total. The third effect depends on the tax rate elasticity of the tax base. See Figures 3a and 3b for an intuitive description of the negative revenue externality as demonstrated in Sobel (1997).

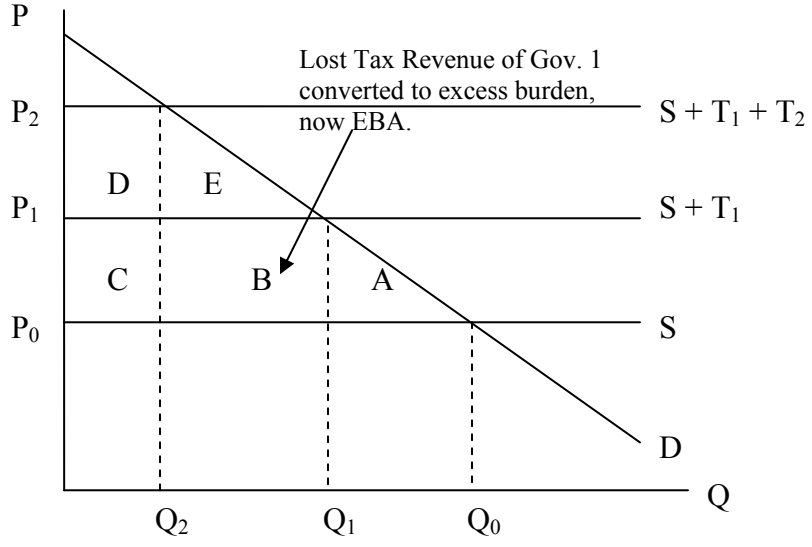
Figure 3a depicts the typical deadweight loss associated with a unit tax. This is the triangle labeled A in Figure 3a. Tax Revenue when one level of government levees a tax equals the area of the rectangle labeled CB. In figure 3b showing two levels of government taxing the same tax base, total revenue equals the area of the rectangle labeled DC. The portion of revenue labeled B under one level of taxing authority has become part of the larger excess burden, EBA. Revenue DC is less than, equal to, or larger than revenue BC depending on whether or not B is larger than, equal to, or less than C, which depends on the tax rate elasticity of the tax base. Recalling that the above analysis extends to the case of two jurisdictions taxing separate tax bases, a further implication is the difficulty of determining the effect of one jurisdiction's decision to levee a tax while another jurisdiction levees a separate tax. Consider the effect of the state government increasing the income tax rate. This affects the labor-leisure tradeoff, causing the income tax base to contract. Local governments also taxing this base will lose revenue, but there is also an effect on consumption, which may decrease due to this income effect, affecting the sales tax base.

Figure 3. Negative Revenue Externality from Two Tier Taxation

3a. One Taxing Jurisdiction

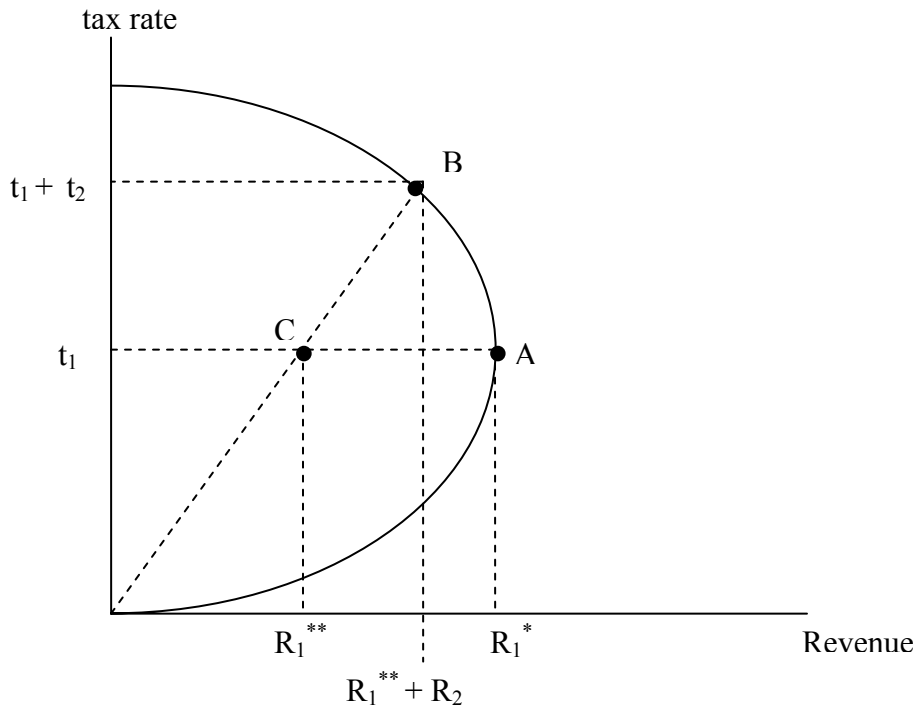


3b. Two Taxing Jurisdictions



Flowers (1988) examines the interrelationship of vertical tiers in a federal system of government in a Leviathan model framework. When two jurisdictions in separate vertical tiers have taxing authority there are implications for the combined revenue collected from both tiers. Unconstrained leviathan maximization behavior is a crucial assumption for the results of this analysis. An unconstrained leviathan government acting independently will set the tax rate to maximize tax revenue. If a second tier government is subsequently allowed the power to tax, the combined tax rates from the first and second tier governments will be greater than the revenue-maximizing tax rate, causing total revenue to decrease. Flowers (1988) demonstrates this result using the Laffer curve. See Figure 4 adapted from Sobel (1997).

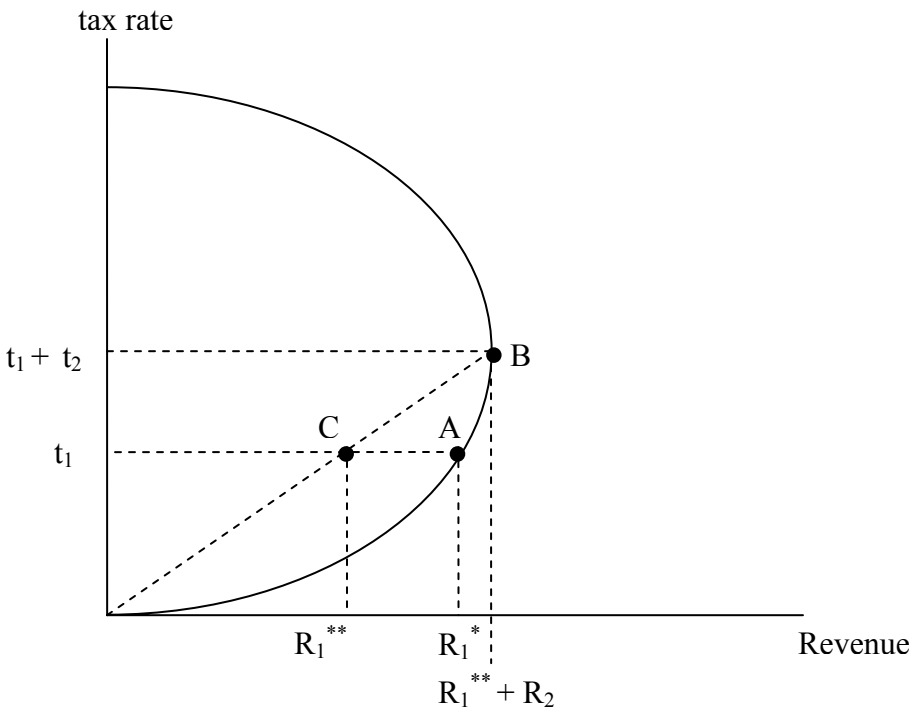
Figure 4. Tax Revenue with Two Taxing Jurisdictions



R_1^* represents the first level government's tax revenue without an additional tax levied by the level two government. The level two government additionally taxing the base has the effect of decreasing total revenue extracted from the base, shown as a move from point A to point B on the backward-bending portion of the Laffer curve with total revenue from both tiers equal to $R_1^{**} + R_2$. Level one's revenue has decreased from R_1^* to R_1^{**}.

For the purpose of exploring the effect of greater home rule power on the size of the state and local government sector, the above scenario suggests that allowing greater taxing authority in a municipal or county jurisdiction would cause combined tax rates from the separate fiscal tiers in a state to exceed the revenue-maximizing rate, decreasing the size of the state and local sector. However, the model Flowers (1988) presents does not consider the effect of constitutional constraints already in place. It may be the case that existing constraints keep tax rates below the revenue-maximizing rate. In this case, granting the power to tax to more than one tier of government in a state may increase the total size of the state and local public sector. See Figure 5 below for an illustration of the revenue effect of two vertically related taxing jurisdictions when constitutional constraints are in place.

Figure 5. Tax Revenue with Two Taxing Jurisdictions and Constraints



Fiscal Illusion

Oates (1979) and Turnbull (1998) develop and present two important theoretical perspectives in the fiscal illusion literature describing two separate sources of misperception regarding costs or benefits of public services. Oates (1979) suggests that complex tax structures can allow governments to extract revenue from citizens who are unable to recognize the true marginal burden of their taxes. Since taxpayers do not directly observe intergovernmental grants from higher levels, they underestimate the true tax price of public goods. This tax price misperception has two effects. An overspending effect arises from the inability to recognize the magnitude of external funding in the form of grants from higher levels. Voters underestimate their tax price, thus the quantity of

public services demanded is greater than if their true tax price were revealed. Second, a flypaper effect allows funds from higher level governments to stay in the public sector rather than revert to the taxpayers in the form of a reduction in local taxes. Since taxpayers do not directly observe these grants, they are not aware of the excess funds, which in turn remain in the public sector or are extracted as a result of rent-seeking behavior.

Turnbull (1998) provides a more general model of fiscal illusion based on uncertainty or imperfect information. One implication of the model maintains that the total benefits of public services are not clear, leaving taxpayers with the impression that they are getting a lower level of services for their tax dollars. He shows that tax price uncertainty supports a flypaper effect consistent with Oates (1979) notion of fiscal illusion and further demonstrates that Oates' notion of fiscal illusion is a special case of the uncertainty-based model of fiscal illusion.[15] Thus either model suggests that intergovernmental transfers provide a countervailing decentralization effect on the size of government. Recent trends see governments increasing the use of intergovernmental aid to achieve greater decentralization, which partially offsets decentralization's negative effect on government size. Empirical models describing government size should include voter incomes and grants as separate variables in order to control for this countervailing effect.

Indirect Constitutional Constraints on Leviathan

A basic, indirect constitutional constraint on Leviathan is inherent in a federal system of government, whereby decentralization of taxing authorities serves to diminish

[15] For a comparative review of this literature, see Campbell (2004)

the maximum power any one unit of government can achieve. This notion first put forth by Brennan and Buchanan (1980) is certainly their most scrutinized pontification, having been empirically tested in a number of studies (Oates, 1985; Nelson, 1987; Marlow, 1988; Zax, 1989) with somewhat inconsistent results.[16] Comparing government to a monopoly in the private sector, as competition is a method for controlling monopoly power, decentralization can limit government's power in the market for public goods (Oates, 1985; Brennan & Buchanan, 1980). Brennan and Buchanan's resulting decentralization hypothesis is, "total government intrusion into the economy should be smaller, ceteris paribus, the greater the extent to which taxes and expenditures are decentralized…" This dissertation brings one overlooked facet of their analysis to the forefront. Once locational value and mobility costs are brought into the model of taxing power in a federal system of government, local leviathans may arise even in the presence of the indirect constraint of decentralization.[17] Recall that home rule power describes the degree of freedom granted to local governments for making functional, structural, and fiscal decisions without interference from state government. When local governments have unlimited powers, decentralization constrains this power most effectively under the assumption that citizens have low to no costs of migrating between competing jurisdictions and that they place no greater value on inherent characteristics of one jurisdiction over another.[18] This chapter has summarized evidence demonstrating that county and municipal spending exhibit a complementary relationship and that counties

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[16] Sobel (1997) and Flowers (1988) imply that rather than the interjurisdiction competition effect of greater decentralization, the revenue externality resulting from overtaxing the same or even separate tax bases may primarily drive the result of smaller government size with increasing jurisdictions.

[17] See pp. 176-179 of Brennan and Buchanan (1980) for the progression of models used to demonstrate the efficiency characteristics of centralized and decentralized government structures in their fiscal constitution analysis.

[18] With greater locational value citizens are less likely to move even with zero mobility costs. See Krupka (2004) for an empirical analysis of the effects of locational ammentities on migrating decisions.

with greater home rule power are less likely to achieve the outcome the median voter most prefers (Turnbull & Djoundourian, 1993, Turnbull & Geon, 2006). Assuming that local governments behave as revenue maximizers, greater home rule power will result in greater local spending, ceteris paribus. Since locational value and mobility costs diminish the effects of the constraining power of fiscal decentralization, Brennan and Buchanan (1980) suggest that "local governments should not be allowed unconstrained taxing power."[19] It follows that greater home rule power may facilitate a larger state and local government sector. Alternatively, denying greater home rule power may lead to a decrease in the size of the combined state and local government sector.

A series of empirical studies in the *American Economic Review,* beginning with Oates (1985), employ different modeling approaches and variable formulations to test the decentralization hypothesis. Oates (1985) estimates three separate models. Using cross-section census data from 1970 and 1972, each model regresses the aggregate state and local tax receipts as a share of personal income on measures for income, population, urbanization and intergovernmental aid, but the first model adds a measure of revenue centralization, the second includes a measure of expenditure centralization, and the final model includes a measure of fragmentation. He finds no evidence that any of these measures of centralization or fragmentation has a minimizing effect on the size of government.

Nelson (1987) extends Oates' (1985) approach, also using 1970 and 1972 census data, but adjusts the dependent variable to control for differences among states in the

[19] Epple and Zelenitz (1981) demonstrate that the resulting greater potential for interjurisdiction competition does not by itself completely restrain leviathan, on the other hand Oates (1999) suggests that decentralization can affect outcomes even when agents are completely immobile, making the theory more appealing to European countries.

division of state and local services responsibilities. His models do not include a measure of fiscal decentralization, instead focusing on fragmentation. He creates two separate measures of fragmentation, a general purpose government measure and a single purpose government measure. In addition, he includes separate measures for intergovernmental grants and funded mandates. Nelson finds some support for decentralization in the positive coefficient on his measure of general fragmentation, which he defines as population divided by general purpose fragmentation.

Zax (1989) extends the approaches of Oates (1985) and Nelson (1987), but focuses on the local government sector, using a more comprehensive model and a richer data set consisting of over 3000 county observations from the 1982 Census of Governments and 1980 general Census data. He includes measures of fiscal centralization, general and single-purpose fragmentation and intergovernmental aid simultaneously with demographic and socio-economic variables. His fragmentation measures additionally control for differences in population density and proximity of competing jurisdictions. In his model that does not separate fragmentation into two separate measures based on general or single purpose governments, all four government structure variable coefficients have significant signs consistent with the decentralization hypothesis. It is interesting to note that Campbell (2004) finds that controlling for vertical relationships in overlapping jurisdictions has a countervailing effect on fragmentation's effect on spending. Her results are not consistent with studies that show fragmentation has a negative effect on government size.[20] See studies from Forbes and

[20] Other studies that model fragmentation at the municipal level include Sjoquist (1982), Schneider (1986), and Eberts and Gronberg (1990).

Zampelli (1989), Grossman (1989) and Marlow (1988) for additional examples of modeling approaches to testing Leviathan.

Direct Constraints

Brennan and Buchanan (1980) also examine the role of direct constitutional constraints to restrain Leviathan. The empirical studies previously mentioned overlook these direct constraints; however, such constraints are widely used to differing degrees by state governments. Tax and expenditure limitations are the most notable examples, such as Proposition 2-1/2 in Massachusetts and Proposition 13 in California. A number of studies have examined the motivation behind the approval of such measures (Alm & Skidmore 1999; Fischel 2001; Ladd & Wilson, 1982). Employing probit analysis with a correction for selection bias, Alm and Skidmore (1999) find that high relative tax burdens and the growth in tax burdens over time are consistent with voting decisions to approve tax and expenditure limitations. Skidmore (1999) examines the effects of tax and expenditure limitations on government size, finding that strict tax and expenditure limitations have a constraining effect on government size. This evidence contrasts with previous studies finding no effect, reasoning that the availability of other revenue sources not limited by the restriction washes out any constraining effect. In a very recent study extending the analysis of constitutional constraints beyond tax and expenditure limitations, Turnbull and Geon (2007) investigate home rule effects in an application of GARP analysis to median voter outcomes. They find that non-urban home rule counties tend to violate median voter demands while urban counties do not, suggesting that horizontal competition may be a stronger restraining factor in urban settings.

Other Explanations for Government Size and Growth

Holcombe (2005) presents a review of three distinct views or general explanations for government size and growth: budget-maximization models, rational-choice models, and path-dependent models. The reviews of Niskanen (1968, 1971) and Brennan and Buchanan (1980) presented in this chapter of the dissertation are sufficient summaries of the budget-maximization models. Rational choice models maintain that government size is a reflection of a collective decision-making process. The median voter model is an example that suggests government size is a reflection of voter demand. Thus rational choice models suggest that government size and growth are the result of voters' preferences for larger government. Path dependency theories suggest that government size is influenced by historical events. If an extraordinary event creates a need for greater government spending, such as a war, previously imposed constraints may be relaxed, never to return to the pre-war level. Thus there is a "ratcheting" upward of government spending. A current example of the ratchet hypothesis is the increased defense spending for the war in Iraq. After the turnover of the House and Senate by the Republicans to the Democrats, there is ongoing debate about when to pull American military troops out of Iraq. The rachet hypothesis says that while this troop reduction would allow for a decrease in government, it is more likely that some or most of the war-time spending level will remain in the form of other government programs.[21] There is great debate among politicians concerning which government programs should see an increase in spending, while very little discussion centers on reducing spending to the pre-war level.

[21] See Holcombe (2005) for various examples and scenarios for the above explanations for government growth and size.

Historical observation shows that post-war spending never fully returns to pre-war levels, evidence supporting the rachet hypothesis.

Oates (1985) presents other theories of government size that suggest voter preferences determine the size of government.[22] These range from Musgrave's complementary (to the predicted outcome of the decentralization hypothesis) idea to John Wallis's counter-hypothesis. Musgrave suggested that decentralization would alter the redistribution function by creating more income-homogenous jurisdictions that would have less need to redistribute income within jurisdictions, while Wallis posited that since citizens have greater control over their local government decisions, they will empower the local governments to provide greater services, a conclusion exactly opposite of what the decentralization hypothesis predicts.

Home Rule and Government Sector Size

Home rule gives local government greater authority to obtain and manage fiscal resources and determine the distribution and extent of public services. By design, this authority alters government outcomes. The vast decentralization and local government structure literature demonstrates the complexity of predicting home rule's effect on government sector size. Adding to the complexity, home rule is fundamentally distinct from decentralization. Unlike decentralization of government, home rule gives local government greater authority, while state government retains its authority, which may result in duplication of revenue generation and service provision.

The sources of the economic effects of home rule on government size are numerous. Greater home rule power enhances the complexity of the state and local tax

[22] These two explanations appear as side discussions in Oates (1985).

environment, and this contributes to greater fiscal illusion. Complementarity of the public service demand relationships between the fiscal tiers in the state and local public sector, well-documented between counties and municipalities at the local tier, imply that greater home rule power will cause an increase in local government size. If this complementarity extends to the state and local interrelationship, home rule facilitates an increase in the size of the total state and local public sector. On the other hand, depending on the combined sector's tax rate in reference to revenue maximization, separate vertical tiers with taxing authority may produce more or less total sector revenue. Furthermore, according to either the homevoter hypothesis or the effects of interjurisdiction competition, greater home rule authority will yield public service provision outcomes more in line with the median voter's demand. This could increase or decrease government size depending on the preferences of the median voter. In a separate vein, home rule alters the boundary between public and private activity. Powers of incorporation, annexation, extraterritorality, and eminent domain give local governments the ability to change their revenue and service bases. Tax revenues will transfer between jurisdictions as these bases change and shuffle within jurisdictions and as resources move in and out of private and government sectors.

All of this complicates government planning and public policy determination. Consider a recent real-world example in the home rule state of Georgia. In 2005 Sandy Springs, a previously unincorporated locale just north of Atlanta, Georgia in Fulton County became the third largest city in the United States to incorporate. As evidence of the complexity and magnitude of the economic and fiscal consequences, the bill proposing Sandy Springs' incorporation numbered over 40 pages. The ramifications of

Sandy Springs' incorporation include efficiency and equity considerations of government functions that range from administration to service provision. Only time will allow economists to determine the full effect on Sandy Springs, the rest of Fulton County and the state of Georgia.

Conclusion

This chapter has presented the major theories of government size and the underlying structural implications of decentralization, home rule, and other constitutional constraints. The extensive theoretical and empirical literature examining the interrelationships of jurisdictions that comprise the state and local government sector is evidence that determining the impact of policy changes on the performance of the public sector is a complicated process with sometimes unpredictable results. An empirical analysis of home rule and other institutional constraints on government behavior demands a rigorous understanding of the theory underlying these factors. The following chapters present a series of empirical investigations of home rule's effect on government size grounded in the structural theory of state and local government behavior.

Chapter 4

State and Local Share Empirical Model

Leviathan Model Methodology and Data

This chapter discusses empirical logit estimation methods and results for home rule and other institutional factors' effects on government size. The approach is general and follows previous empirical leviathan tests in the economic literature (Oates, 1985; Nelson, 1987; Zax, 1989). The basic empirical model specifies government size as a function of state and local government structure and socio-economic factors. The variables are consistent with the different forms used in the empirical leviathan literature (Campbell, 2004; Oates, 1985; Nelson, 1987; Zax, 1989).

This is the first empirical test to include a measure for home rule power. Additional exogenous variables include a measure of the dominant political ideology, a proxy variable to capture the effect of using the legal system to influence public policy, and a measure of tax and expenditure limitations in each state. Census data from the periods of 1990 and 2000 comprise the sample, which pools 94 observations from 47 continental U.S. states.[23] Chow tests do not reject that the effects of variables are structurally similar across this time period, thus enabling pooling.

TEL is a dummy variable obtained from Skidmore (1999) that signifies whether or not a state has any kind of tax or expenditure limitation in force. It captures another type of direct constitutional constraint on state and local governments. The *lawyers per capita* variable employs data on occupations from the Equal Employment Opportunity Files of

[23] Virginia is omitted from this study because cities are independent of counties in Virginia, a unique institutional arrangement that by itself can lead to as yet undetermined effects on public sector size.

the Census for 1990 and 2000. This variable is a crude proxy for the extent to which special interests in a state may use courts to advance public policy initiatives. This variable contains any person in the Census whose occupation is lawyer or judge, thereby excluding people who may have a degree in law but do not practice it as their primary occupation. Baker, Micelli, Sirmans, and Turnbull (2001) introduced this variable to capture differences in the efficiency of the legal institution in each state in a study examining length of statutes with regard to adverse possession of land.

Decentralization and fragmentation are commonly used measures to test the Leviathan hypothesis dating back to Oates (1985), who models Leviathan using two measures of fiscal decentralization and a measure of "non-fiscal decentralization" (now referred to in the literature as "fragmentation"). *E Decentralization* measures the degree to which direct expenditures are carried out at the local level as opposed to the state level. Other studies use the share of own-source revenues as a measure of fiscal decentralization as an alternative specification (Nelson, 1987; Zax, 1989). This study also uses this variable as an alternative for *E Decentralization* in certain model specifications included in Tables 4 and 5. *Fragmentation* is the number of local governments in the state including all county governments, sub-county general purpose governments, public school systems, and special districts. This definition is consistent with that of Oates (1985). Nelson (1987) and Zax (1989) argue that this measure of fragmentation is too broad and propose splitting single purpose governments from general purpose governments. Models using this break-out were tested, but the results do not change significantly. Zax further suggests that the effects of fragmentation may not be picked up at a level of aggregation beyond that of county or metropolitan statistical

area. He reasons that, since fragmentation measures local inter-jurisdiction competition, state-level data will include many jurisdictions that are not in direct competition with one another, thus masking the effects of inter-jurisdiction competition going on at local levels. Nevertheless, an attempt is made here to measure fragmentation effects consistent with Oates (1985). The effects of fragmentation are significant in some studies (Nelson, 1987; Zax, 1989) and insignificant in others (Oates, 1985). *Intergovgants* controls for the effects of fiscal illusion. The fiscal illusion literature suggests that intergovernmental grants may have a positive impact on government spending if taxpayers underestimate the marginal tax price of public services due to the greater complexity of a tax system using intergovernmental grants. Furthermore, the flypaper effect says that a dollar increase in grants to local governments yields a larger increase in local government spending than a dollar increase in voter incomes. On the other hand, benefit uncertainty may cause taxpayers to underestimate the benefit of public services, decreasing overall demand for public services.

The socio-economic variables control for factors other than the fiscal effects described above that also have an impact on government size. For example *income* tests Wagner's Law, which states that increasing levels of personal income, generally consistent with higher levels of economic development, should have a positive effect on the share of government expenditures in gross state product (Oates, 1985). *Unemp* attempts to capture changes in demand for government-provided services as the proportion of the population needing government assistance changes. Higher levels of unemployment may put a greater strain on state and local governments for the services they provide, but may also reduce the level of demand for the same services. The MSA

variable, *MSApop,* controls for effects due to economies of scale. Unit costs of certain public services, for example capital infrastructure, decrease with greater population density. *Population* captures the effect of low population density because the model also controls for urban density. As a state tends to have a more rural population, government spending may increase or decrease depending upon whether high fixed cost services dominate or whether a general lower demand for public services dominates.

Incomevariance, defined as the variation in household median incomes across counties in a state, controls for differences in the level of demand for services within each state. A greater variance of median household incomes across counties indicates a more diverse population in terms of income, which in turn may create a greater need for wider range of local government services to meet the divergent demands of different groups within the state. *Democratvote* captures the proportion of state popular votes for the democrat presidential candidate and is a proxy for political ideology. Other measures of ideology were also tested, but the measured effects were not significantly different.[24] While the expected effect might be for largely democrat states to favor bigger government, ceteris paribus, Holcombe (2005) suggests that the power of minority special interest groups may overcome political party interests, thus masking or neutralizing effects of ideological controls.

Two separate model specifications differ according to the method of classifying home rule authority. The first specification employs an ordinal ranking formulation first presented in Turnbull and Geon (2006), which ranks the discretionary authority in each state from a low of 1, strong Dillon's Rule, to a high of 4, strong home rule. An

[24] For a description of other measures of political ideology, see Berry, Ringquist, Fording, and Hanson (1998).

alternative specification uses a dichotomous formulation that aggregates weak and strong home rule into one general home rule category and weak and strong Dillon's Rule into a general Dillon's Rule category. Turnbull and Geon (2006) define an ordinal rank variable of home rule power for 38 states in a county-level analysis. Since the current study is not a county-level analysis, it is not necessary to exclude the New England states, which do not have county government functions comparable to other states (Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, or Vermont). For similar reasoning we can add states that have only a limited number of county governments (Arizona, Delaware, and Nevada) for this study. Adding these states, this study classifies 47 states according to weak or strong home rule or weak or strong Dillon's Rule. The current sample includes 20 weak or strong Dillon's Rule states and 27 weak or strong home rule states. The home rule designation is consistent across 1990 and 2000. This state-level analysis characterizes some states differently than Turnbull and Geon's (2006) county-level analysis.[25] Table 1 in Chapter 2 provides a list of all states in the sample categorized by degree of home rule authority. See Table 2 for a definition of the variables used in the analysis and Table 3 for summary statistics.

Model Specification and Estimation

This study uses two dependent variable formulations. *Taxshare* is the level of combined state and local tax revenues as a share of total personal income in a state and *osrshare* is the level of combined state and local own source revenues as a share of

[25] Idaho, Indiana, Michigan, Minnesota, Missouri, Montana, New Mexico, and Texas have a different home rule classification than that presented in Turnbull and Geon (2006).

personal income. The general fractional logit model describing government size is as follows:

$$G_i = f(\mathbf{i}_{ij}, \mathbf{w}_{ik}, \mathbf{x}_{il}) + u_i \qquad (3)$$

where $0 < G < 1$ in either *taxshare* or *osrshare* as defined above. The vector, **i**, consists of institutional variables: *home rule, TEL*- measuring a composite of state tax and expenditure limitations and *lawyers per capita*. The vector, **w**, includes fiscal variables: *E decentralization*- decentralization measured as the share of local expenditures in total state and local spending, *fragmentation*- fragmentation as measured by the total number of local governments in a state, and *intergovgrants*- a measure of grants to local governments as a share of state expenditures. The vector, **x**, comprises socio-economic and political variables: *income*- median household income, *population*, *msapop*- Metropolitan Statistical Area population, *unemployment*- unemployment rate for state, *incomevariance*- the variance of median household incomes across counties in a state, and *democratvote*- the percent of state population voting for democrat president in1992 and 2000 elections, and u is a random error ~ N $(0, \sigma^2)$.

Estimation Technique

Past studies of government size using a fractional dependent variable bounded between 0 and 1 perform a log-odds transformation and estimate the model in a logit framework to address the possibility of estimated dependent variable values of $\beta_0 + \boldsymbol{\Gamma}' \boldsymbol{\beta}$ lying outside the unit interval, where $\boldsymbol{\Gamma}'$ includes the vectors **i**, **w**, and **x** discussed above. This study makes use of a technique that Papke and Woolridge (1996) present in an application to determinants of 401(k) contribution levels, where contribution levels are

measured in percent of salary terms. They provide the details necessary to run the regression in a program such as *Gauss*® or *Matlab*®, and *Stata*® now includes commands specifically for fractional logit regressions.[26]

Compared with log-odds type procedures, there is no difficulty in recovering the regression function for the fractional variable, and nesting the logit function in a more general functional form gives new robust specification tests. This approach expands on the generalized linear models (GLM) literature from statistics and the quasi-likelihood literature from econometrics to obtain robust methods for estimation and inference, and a brief summary of their format and basic assumptions follows below.

Assume an independent (not necessarily identically distributed) sequence of observations $\{(\acute{\Gamma}_i y_i): i = 1,2,\ldots,N\}$, where $0 \leq y_i \leq 1$ and N = sample size for all i element of $(y_i|\acute{\Gamma}_i) = G(\acute{\Gamma}_i, \beta)$ where G is a known function and $0 < G(z) < 1$ for all z element of $\Re$. No assumption for the underlying distribution of G is necessary, so the quasi-maximum likelihood of β can be obtained from the maximization of the Bernoulli log-likelihood over $G(\acute{\Gamma}_i, \beta)$.

Empirical Results

Tables 5 and 6 show results of the logit estimation of the Leviathan model using the ordinal rank home rule variable. Looking at the regression results we find that *E-decentralization* is significant at the .01 level, carries a negative sign and is robust across all specifications for both dependent variables. This suggests that a local sector taking on more fiscal responsibility relative to the state is consistent with a decreasing size of the

[26] See this link to the STATA support page addressing this problem in response to the Papke and Woolridge (1996) paper. McDowell and Nicholas (2004)-www.**stata**.com/support/faqs/stat/**logit**.html

combined state and local sector. This result is consistent with the notion that forces of inter-jurisdiction competition have a constraining effect on government size, a result that is consistent with the Leviathan hypothesis advanced by Brennan and Buchanan (1980) and the empirical relationship found in Zax (1989).

Intergovgrant is significant at the .01 level in the positive direction when decentralization is measured in terms of expenditures. However, when decentralization is measured in terms of own source revenues, models 2 and 3 for both dependent variables, z-scores drop slightly for the models using own source revenue as the dependent variable and drop to insignificant levels when taxes are used in the construction of the dependent variable. Additionally the magnitudes and significance of the own source revenue measure of decentralization are weaker than those for *E-decentralization.* Nevertheless, as the share of state aid to localities increases relative to own-source revenues, the size of government increases. This is consistent with the effect of grants decreasing local taxpayers' perceived tax price of public goods, which increases the quantity demanded and thus the revenue collected. The positive sign is also consistent with the flypaper effect (Turnbull, 1998). Assuming balanced budgets so that increases in revenue shares coincide with increases in expenditure shares, then increases in intergovernmental aid translate into higher government spending. The positive significant coefficient on *intergovgrant* is also consistent with the results of Oates (1985).

Fragmentation is positive and significant in most of the specifications using taxes as the dependent variable in Table 6. This result is not consistent with that of Zax (1989); however, it could be the case that the positive sign is picking up effects from a loss of scale economies as more and more small local governments provide services to a given

total population. When own source revenues are the measure of government size, *fragmentation* has no explanatory power. Not one of the demographic variables is significant at the 5% level in Tables 5 and 6. For *population* and *msapop*, this is consistent with other studies. These variables by themselves are not usually found to have a significant effect on government size. The effect of *income* varies in the literature and is sensitive to model specification (Oates, 1985; Nelson, 1987; Zax, 1989). Most studies do not include *unemployment* as a separate variable.

Democratvote is negative and significant in the model specifications for the dependent variable, *OSR share.* It is not significant in the specifications for the dependent variable, *tax share.* The negative sign in the *OSR share* model is not the expected result. It indicates that states with a greater proportion of democrat voters tend to have lower taxes as a share or personal income. As a proxy for ideology, this result appears to be evidence against the general belief that democrats favor bigger government than republicans. On the other hand, the result may be evidence that largely democrat states are more successful in securing federal funds that partially offset state and local own source revenues.

Of the institutional variables included in this model, *home rule* and *lawyers per capita,* only *lawyers per capita* is significant, and then only when the measure of government size is based on taxes. It carries a positive sign, suggesting that special interest groups use the court system on average to uphold policies that have the effect of increasing government expenditures, and challenge those that restrict expenditures. The *TEL* variable, tax and expenditure limitations, is positive and significant in models with

both dependent variable measures. This sign is consistent with that found in Skidmore (1999). Tax and expenditure limitations do have an effect on the size of the public sector.

We tried several model formulations to test the *home rule* variable, including dropping *E-decentralization,* but it was never significant. Tables 7 and 8 show that measuring home rule as a dummy variable does not significantly change the results for the tax share model or the own source revenue share model. The *hr dummy* variable is not significant in either Table 7 or Table 8. Tables 7 and 8 reveal that there are no significant differences in the estimated coefficients of the remaining exogenous variables between the models that use the binary variable for home rule, *hr dummy,* versus the ordinal rank variable for home rule, *home rule*.

The leviathan hypothesis and the theory of constitutional constraints suggest that home rule choice is endogenous. The empirical results in this chapter provide a starting point for the analysis in the next chapter. States and their citizens collectively determine the degree of home rule power available to localities. The previous chapters discussed the economic literature and empirical evidence of institutions' impact on government size. Home rule power is an important institutional factor in local government behavior. Chapter 5 addresses the endogenous nature of home rule and discusses the results of a more rigorous empirical test of home rule's impact on government size.

Conclusion

This chapter extended the leviathan model of government behavior to include institutional factors previously unaddressed in the economic literature. Additionally, it provided additional evidence reducing the discrepancies of previous studies of fiscal

decentralization's effect on government size that do not find consistent results (Oates, 1985; Nelson, 1987; Zax, 1989). Using 1990 and 2000 census data, this study benefited from a greater number of state and local sector observations than Oates's (1985) empirical decentralization test. The addition of institutional factors expanded the model's capacity to explain government behavior under the leviathan hypothesis.

The empirical results are consistent with the decentralization hypothesis and the leviathan model of government behavior. Additionally, the regression results provide evidence that institutional factors affect government size, as the positive and significant coefficients on *lawyers per capita* and *TEL* indicate. Home rule is not significant in these models; however, the theory of constitutional constraints suggests the parsimonious empirical logit model does not effectively capture the effect that the constitutional stage home rule choice has on government size. Chapter 5 addresses home rule endogeneity and examines self-selection bias in the choice of home rule and its impact on observing the estimated home rule effect.

Table 3. Variable definitions and sources

Variable Name	Variable Definition	Source
Dependent Variables		
Taxshare	state and local tax revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
OSRshare	state and local own source revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
Independent Variables		
Home rule	Degree of home rule power for localities; 1=Dillon's Rule, 2=Weak Dillon's Rule, 3=Weak home rule, 4=Strong home rule	Variable compiled by author with reference to Turnbull & Geon (2004), Krane, Rigos, Hill (2001). See Chapter 2
HR Dummy	Binary variable. 1 = Weak or Strong home rule. 0 = Weak or Strong Dillon's Rule	See above.
E-decentralization	share of local expenditures in total state and local spending	Computed from *Census of Governments*
OSR decentralization	share of local own source revenue in total state and local own source revenue	Computed from *Census of Governments*
Fragmentation	total number of all local government units in a state	*Census of Governments: Vol.1, No. 2, Individual State Descriptions*
Intergovgrants	dollar value of grants to local governments as a share of state expenditures	Computed from *Census of Governments*
Population	state population	*Census of Population*
MSApop	share of population in MSA	*Census* Tiger Database
Medhhincome	median household income (1989 $'s)	*Census* SF3
Incomevariance	variance in *Medhhincome* across counties divided by state population	Calculated by author
Unemployment	state rate of unemployment	BLS: Local Area Unemployment Statistics
Democratvote	% of state popular vote for democrat presidential candidate (1992 and 2000)	1994 City and County Data Book and http://www.cnn.com (Date: 01/06/01)
Lawyers per capita	# of lawyers (primary occupation) in state divided by state population	Equal Employment Opportunity Files of *Census 1990* and *2000*
TEL	dummy variable for whether state has any type of tax or expenditure limitation on the state	variable used in Skidmore (1999)
Year2000	dummy variable for year 2000 = 1, base year is 1990	compiled by author

Table 4. Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variables					
Taxshare	94	0.101	0.011	0.067	0.141
OSRshare	94	0.130	0.012	0.101	0.166
Independent Variables					
Home rule	94	2.681	1.018	1	4
HR Dummy	94	0.574	0.497	0	1
OSR decentralization	94	0.412	0.076	0.2	0.545
E-decentralization	94	0.514	0.082	0.323	0.654
Fragmentation	94	1,829	1,500	119	6,835
Intergovgrants	94	0.246	0.060	0.089	0.411
Population	94	5,448,832	5,921,957	453,588	33,900,000
MSApop	94	4,388,063	5,469,860	134,368	29,300,000
Medhhincome	94	$29,465	$4,939	$20,136	$41,721
Incomevariance	94	1033	582	293	2808
Unemp	94	0.050	0.016	0.024	0.096
Democratvote	94	0.434	0.075	0.250	0.610
Lawyers per capita	94	0.003	0.001	0.001	0.005
TEL	94	0.404	0.493	0	1
Year2000	94	0.500	0.503	0	1

Table 5. Leviathan model logit estimates with *OSR share* dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
OSR share	**mfx**	**mfx**	**mfx**	**mfx**	**mfx**	**mfx**	**mfx**	**mfx**
year2000								**0.007** *
								1.88
E-decentralization	**-0.06** ***			**-0.06** ***	**-0.08** ***	**-0.092** ***	**-0.092** ***	**-0.070** ***
	-2.95			-3.05	-3.49	-4.4	-4.41	-(3.39)
osrdecentralization		**-0.03** **	**-0.03** **					
		-1.99	-2.04					
fragmentation	**1.90E-07**	**-6.45E-08**	**-1.09E-07**	**1.52E-07**	**-2.16E-07**	**-4.06E-07**	**-3.71E-07**	**-9.49E-07**
	0.19	-0.06	-0.11	0.16	-0.25	-0.46	-0.42	-0.96
intergovgrants	**0.13** ***	**0.08** ***	**0.08** ***	**0.13** ***	**0.13** ***	**0.150** ***	**0.149** ***	**0.135** ***
	4.21	3.12	3.13	4.25	4.55	4.83	4.91	4.88
population	**-1.92E-09**	**-2.15E-09**	**-2.47E-09**	**-2.25E-09**	**-1.03E-09**	**1.00E-09**	**7.94E-10**	**4.59E-10**
		-0.91	-1.01	-0.96	-0.42	0.49	0.39	0.23
msapop	**1.94E-09**	**2.24E-09**	**2.65E-09**	**2.37E-09**	**1.31E-09**	**-9.68E-10**	**-7.63E-10**	**-3.96E-10**
	0.77	0.86	0.97	0.9	0.47	-0.43	-0.34	-0.18
income	**-5.13E-07**	**-5.36E-07** *	**-6.49E-07** *	**-6.31E-07** *	**-3.51E-07**	**-7.23E-07**	**-7.28E-07**	**-5.48E-07**
	-1.61	-1.65	-1.73	-1.73	-0.86	-1.36	-1.36	-1.09
unemployment			**-0.07**	**-0.07**	**-0.07**	**-0.104**	**-0.106**	**0.146**
			-0.69	-0.72	-0.73	-1.13	-1.16	1.07
home rule			**-0.0004**	**-0.0005**	**-0.0003**	**-0.0004**	**-0.0004**	**-0.0006**
			-0.36	-0.39	-0.23	-0.29	-0.31	0.56
democratvote					**-0.04** *	**-0.060** ***	**-0.059** ***	**-0.073** ***
					-1.76	-2.63	-2.63	-3.31
lawyers per capita						**5.346**	**5.015**	**5.053**
						1.38	1.41	1.47
incomevariance						**-8.23E-07**		**-1.14E-06**
						-0.37		-0.51
TEL								**-0.001** **
								-2.41
_cons	-1.763 ***	-1.802 ***	-1.739 ***	-1.697 ***	-1.582 ***	-1.517 ***	-1.512 ***	-1.670
	-20.82	-20.68	-14.54	-14.33	-11.78	-10.94	-11	-11.77
R-square	0.152	0.124	0.129	0.158	0.190	0.221	0.221	0.232

*,**,*** coefficient significant at 10%, 5%, 1% respectively
(mfx) marginal effects in bold
z-values under marginal effects, calculated using Huber-White robust standard errors

Table 6. Leviathan model logit estimates with *Tax share* dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Tax share	**mfx**	**mfx**	**mfx**	**mfx**	**mfx**	**mfx**	**mfx**	**mfx**
year2000								**0.00**
								0.07
E-decentralization	**-0.06** ***			**-0.063** ***	**-0.055** ***	**-0.085** ***	**-0.068** ***	**-0.064** ***
	-3.23			-3.35	-2.63	-3.86	-3.86	-3.55
osrdecentralization		**-3.24E-02** **	**-0.032** **					
		-2.33	-2.44					
fragmentation	**1.46E-06** **	**1.19E-06** *	**1.42E-06** **	**1.68E-06** **	**1.84E-06** **	**1.92E-05** **	**1.67E-06** **	**9.37E-07**
	2.21	1.84	2.03	2.37	2.3	1.96	2.11	1.06
intergovgrants	**0.08** ***	**3.28E-02**	**0.030**	**0.079** ***	**0.076** ***	**0.122** ***	**0.093** ***	**0.100** ***
	3.2	1.54	1.31	3.09	2.79	3.4	3.33	3.67
population	**-3.07E-09** *	**-3.32E-09** *	**-3.48E-09** *	**-3.25E-09** *	**-3.79E-09** **	**-1.13E-09**	**-1.61E-09**	**-1.06E-09**
	-1.68	-1.79	-1.85	-1.75	-1.96	-0.64	-1.07	-0.72
msapop	**3.34E-09**	**3.64E-09** *	**3.76E-09** *	**3.48E-09**	**3.94E-09** *	**9.43E-10**	**1.45E-09**	**1.04E-09**
	1.57	1.71	1.73	1.6	1.78	0.48	0.88	0.63
income	**2.01E-07**	**1.79E-07**	**3.09E-07**	**3.28E-07**	**2.03E-07**	**-2.96E-07**	**-2.50E-07**	**-2.79E-07**
	0.86	0.76	1.21	1.31	0.65	-0.58	-0.61	-0.67
unemployment			**0.070**	**0.068**	**0.068**	**0.038**	**0.022**	**0.067**
			0.95	0.93	0.93	0.4	0.29	0.56
home rule			**-0.001**	**-0.001**	**-0.001**	**-0.002**	**-0.002**	**-0.002**
			-1.09	-1.13	-1.19	-1.24	-1.31	-0.84
democratvote					**0.019**	**-0.005**	**-0.004**	**-0.010**
					0.81	-0.2	-0.16	-0.44
lawyers per capita						**8.953** **	**6.026** **	**7.393** ***
						2.42	2.16	2.68
incomevariance						**-3.493E-06**		**-2.96E-06**
						-1.61		-1.51
TEL								**-0.014** **
								-2.51
_cons	-2.133 ***	-2.186 ***	-2.218 ***	-2.160 ***	-2.229 ***	-2.137 ***	-2.114 ***	-2.13 ***
	-23.91	-24.27	-16.2	-15.58	-15.49	-14.06	-14.35	-13.28
R-square	0.136	0.098	0.116	0.154	0.164	0.238	0.226	0.234

*,**,*** coefficient significant at 10%, 5%, 1% respectively
(mfx) marginal effects in bold
z-values under marginal effects, calculated using Huber-White robust standard errors

Table 7. *OSR share* dependent variable logit estimates: home rule dummy

	Model 1	Model 2	Model 3	Model 4	Model 5
OSR share	**mfx**	**mfx**	**mfx**	**mfx**	**mfx**
year2000	**0.002**	**0.004**	**0.004**	**0.004**	**0.006** *
	0.55	1.17	0.99	0.97	1.8
E-decentralization	**-0.06** ***	**-0.07** ***	**-0.084** ***	**-0.084** ***	**-0.076** ***
	-2.59	-3.11	-4.07	-4.09	-3.45
fragmentation	**2.11E-07**	**-1.02E-07**	**-3.13E-07**	**-2.68E-07**	**9.37E-07**
	0.22	-0.12	-0.35	-0.31	-0.89
intergovgrants	**0.12** ***	**0.13** ***	**0.143** ***	**0.142** ***	**0.143** ***
	4.07	4.3	4.64	4.71	4.81
population	**-2.41E-09**	**-1.23E-09**	**7.65E-10**	**5.26E-10**	**3.58E-10**
	-1.07	-0.52	0.39	0.27	0.17
msapop	**2.50E-09**	**1.43E-09**	**-7.91E-10**	**-5.52E-10**	**-2.86E-10**
	0.9	0.47	-0.43	-0.34	-0.18
income	**-5.88E-07** *	**-2.45E-07**	**-6.18E-07**	**-6.24E-07**	**-5.90E-07**
	-1.67	-0.6	-1.16	-1.16	-1.1
unemployment	**-0.01**	**0.07**	**0.008**	**0.003**	**0.147**
	-0.08	0.48	0.05	0.02	0.97
hr dummy	**-0.0013**	**-0.0001**	**-0.0007**	**-0.0006**	**-0.0007**
	-0.48	-0.03	-0.27	-0.25	0.25
democratvote		**-0.05** **	**-0.063** ***	**-0.063** ***	**-0.078** ***
		-1.97	-2.64	-2.66	-3.21
lawyers per capita			**5.346**	**5.015**	**5.053**
			1.37	1.37	1.44
incomevariance			**-1.06E-06**		**-1.06E-06**
			-0.47		-0.44
TEL					**-0.006** **
					-2.34
_cons	-1.749 ***	-1.679 ***	-1.602 ***	-1.596 ***	-1.652 ***
	-12.21	-11.96	-11.31	-11.32	-11.79
R-square	0.161	0.200	0.228	0.228	0.275

*,**,*** coefficient significant at 10%, 5%, 1% respectively
(mfx) marginal effects in bold
z-values under marginal effects, calculated using Huber-White robust standard errors

Table 8. *Tax share* dependent variable logit estimates: home rule dummy

	Model 4	Model 5	Model 6	Model 7	Model 8
Tax share	**mfx**	**mfx**	**mfx**	**mfx**	**mfx**
year2000	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	-0.2	-0.58	-0.86	-0.91	0.14
E-decentralization	**-0.063** ***	**-0.056** ***	**-0.070** ***	**-0.071** ***	**-0.060** ***
	-3.14	-2.65	-3.94	-3.94	-3.44
fragmentation	**1.53E-06** **	**1.65E-06** **	**1.30E-06** *	**1.44E-06** *	**7.97E-07**
	2.25	2.2	1.81	1.95	0.98
intergovgrants	**0.082** ***	**0.080** ***	**0.101** ***	**0.098** ***	**0.096** ***
	3.2	3.02	3.6	3.56	3.76
population	**-2.89E-09**	**-3.38E-09** *	**-4.72E-09**	**-1.16E-09**	**-8.57E-10**
	-1.59	-1.81	-0.35	-0.8	-0.62
msapop	**3.09E-09**	**3.54E-09** *	**3.61E-10**	**1.05E-09**	**8.31E-10**
	1.47	1.64	0.24	0.65	0.53
income	**3.19E-07**	**1.64E-07**	**-3.06E-07**	**-3.21E-06**	**-2.61E-07**
	1.25	0.5	-0.71	-0.74	-0.64
unemployment	**0.055**	**0.021**	**-0.043**	**-0.055**	**0.073**
	0.54	0.2	-0.37	-0.48	0.6
hr dummy	**-7.81E-04**	**-0.001**	**-0.002**	**-0.002**	**-0.002**
	-0.34	-0.53	-0.92	-0.85	-0.47
democratvote		**0.021**	**-0.001**	**0.000**	**-0.010**
		0.84	-0.03	0	-0.45
lawyers per capita			**7.287** **	**6.058** **	**7.149** ***
			2.47	2.2	2.73
incomevariance			**-3.026E-06**		**-3.04E-06**
			-1.7		-1.6
TEL					**-0.006** **
					-2.62
_cons	-2.185 ***	-2.226 ***	-2.107 ***	-2.082 ***	-2.13 ***
	-14.25	-14.08	-13.11	-13.23	-13.28
R-square	0.145	0.156	0.235	0.221	0.287

*,**,*** coefficient significant at 10%, 5%, 1% respectively
(mfx) marginal effects in bold
z-values under marginal effects, calculated using Huber-White robust standard errors

Chapter 5

Home Rule in the State and Local Selection Model

This chapter addresses the endogeneity of home rule status and resultant effects on the estimates of government size across home rule and Dillon's Rule states. The Wu-Hausman test for exogeneity suggests that home rule is endogenous in the leviathan model. This chapter presents and discusses results from two approaches that control for the existence of an endogenous regressor. The results of both approaches, traditional instrumental variables estimation and Heckman's self-selection method, indicate that home rule has a positive effect on government size. The instrumental variables approach is standard in the literature; therefore, this chapter primarily discusses the self-selection method. The two approaches use the same set of instruments to identify the estimating equations. Later discussion in the chapter provides the intuition and justification for the instruments chosen. Census data from the periods of 1990 and 2000 comprise the sample under observation.

Home Rule and Self-selection

States that view granting greater home rule power as the relaxing of a constraint on the size of state and local government conceptually conceive of a payoff reflected in the positive government size differential resulting from the choice of home rule over Dillon's Rule.[27] The present approach models this nature of endogeneity in the form of a self-selection problem. At the constitutional stage, states select home rule to give more

[27] Recall that Chapter 3 of this dissertation discusses factors associated with a gain in government size from greater home rule powers. Refer to pages 48-50 for a review. Recall at the constitutional stage that state and local government agents and citizens collectively decide on home rule.

autonomy to local governments, and greater budget-maximizing power under the local leviathan hypothesis, or alternatively select Dillon's Rule to retain greater control and constrain the growth of the total state and local government sector. A standard approach for correcting for a self-selection problem is Heckman's two-step method (Heckman, 1974; Lee, 1978; Duncan & Leigh, 1980). Under the circumstances described above this method is intuitively more appealing than the traditional endogenous instrumental variables method because it allows the modeler to determine the precise nature of endogeneity. Conceptually, modeling home rule status as a choice of state governments at the constitutional stage is a reasonable assumption, and using Heckman's two-step method this study accounts for underlying demand factors that affect this choice while addressing endogeneity.

The Self-Selection Model

Maddala (1983) reviews numerous applications of the selection model. The two-stage, three-equation model forms the basis for each application. One variety of this model applies to the current problem and consists of two regression equations that describe the behavior of the agents and a criterion function that determines which of these two equations in particular applies. Lee (1978) applies this variation to the union-nonunion wage problem. He observes wages in the union and nonunion sectors and analyzes factors consistent with an individual's decision to join a union or not to join. Controlling for self-selection, the precise nature of endogeneity of union choice, he finds that non-union wages are more responsive than union wages to factors typically associated with wage levels – experience, education, marital status, etc. In a separate

problem, Sirmans, Sirmans, and Turnbull (1999) use the same application and examine returns on real estate investment for property owners who decide to self-manage a rental property and for property owners who decide to acquire the management services of a third-party professional management company. A means-comparison shows that owner-managed properties receive a higher return than third-party-managed properties, but controlling for the decision to self-manage or contract indicates that owner-managed properties would generate above-average returns regardless of whether or not they are owner-managed or third-party-managed. In this case, the two-stage selection method removes the upward bias in the portion of the return attributed to owner-management of investment properties.

Instrumental Variables for Home Rule: Traditional IV and Self-Selection Models

This study employs the self-selection method to control for the underlying endogenous process associated with choosing home rule or Dillon's Rule, and analyzes differences in determinants of government size for the two groups. Recall the following government size equation from the empirical leviathan model

$$Y_i = b_o + b_1 X_i + b_2 H_i + u_i, \qquad (4)$$

which denotes home rule as a regressor apart from the vector of all other regressors, X_i. Substitute for H_i the vector, Z_i, which comprises the instruments for home rule in the self-selection model and in the traditional IV approach. The instruments are s*tateaid, populationvariance,* and *historical population change.* See Tables 8 and 9 for definitions and summary statistics of these and other variables included in both endogenous

correction approaches. We get the following government size equation with Z_i as the instrument for home rule

$$Y_i = b_o + b_1 X_i + \gamma_3 Z_i + u_i. \quad (5)$$

By assumption the Cov (Z,u) = 0, in order that Z meets the first of the two necessary conditions for a good instrument. Previous theoretical and empirical studies of government size provide some indication that the instruments chosen are not correlated with the error. The variable *stateaid* measures the share of local revenue comprising grants from state government. The vector, X_i, includes a measure for the share of state expenditures spent in the form of grants to local governments in the state, *intergovgrants*. After controlling for *intergovgrants,* the instrument *stateaid* has no independent effect on government size. The remaining instruments, *populationvariance* and *historical population change,* also do not have any expected effect on government size. To ensure the second condition is met, the F-test indicates that Cov (Z,hr) $\neq$ 0.

Traditional IV Results

See Tables 11 and 12 for results of the traditional IV estimation of government size controlling for endogenous home rule. The coefficient on the predicted home rule variable is significant and has the expected positive sign in the traditional IV models for the two dependent variable measures, *Tax share* and *OSR share*. The coefficients of the remaining exogenous control variables are consistent with the results presented in Chapter 4. The significant positive coefficient on *home rule* is evidence that home rule power relaxes a constraint on the size of the state and local government sector. The next

section discusses the empirical model and results of estimation that corrects for self-selection bias.

Empirical Self-Selection Model for Home Rule

First stage procedure and results

This section presents the self-selection method and uses the vector of instruments, Z_i, from equation (5) to control for the specific source of endogenous home rule, self-selection.

Let H_i be an unobservable home rule status variable such that if $H_i > 0$, state *i* selects home rule status; otherwise it does not.

Structural Probit Equation (home rule choice):

$$H_i = a_0 + a_2 X_i' + a_2 Z_i + a_3(Y_{Hi} - Y_{Di}) + \varepsilon_i \qquad (6)$$

where Z_i is a vector of instruments for home rule, *stateaid, populationvariance,* and *historical population change,* that meets the necessary restrictions. The vector, X_i', contains only the government size determinants from the Leviathan model, discussed in Chapter 4 and restated in equation (4), that also affect home rule choice: *E-decentralization, democratvote,* and *unemployment*. Equation (6) says that state socio-economic trends and conditions and attitudes concerning the state-local intergovernment relationship and the role of the government sector affect the degree of home rule observed across localities in a state. The variable $(Y_{Hi} - Y_{Di})$ captures the government size differential between home rule and Dillon's Rule. Its coefficient, a_3, measures the effect this difference has on the probability of choosing home rule. The sign of this coefficient under the leviathan hypothesis depends upon whether home rule or Dillon's

Rule leads to a larger public sector. If home rule leads to a larger public sector then a positive sign for a_3 indicates that states are more likely to choose home rule rather than Dillon's Rule in order to increase the size of the government sector. A negative sign for a_3 indicates that states are more likely to choose Dillon's Rule to restrain the size of the public sector. Finally, the specification of the structural home rule equation includes a year dummy variable, *year2000,* to control for time fixed effects. Other model specifications were tested, including a specification with a measure for tax and expenditure limitations; there were no significant differences in the results.

Equations (7) and (8) are government size equations for home rule and Dillon's Rule states separately.

Home rule regime:

$$Y_{Hi} = b_{Ho} + b_{H1} X_{Hi} + \varepsilon_{Hi} \qquad (7)$$

Dillon's Rule regime:

$$Y_{Di} = b_{Do} + b_{D1} X_{Di} + \varepsilon_{Di} \,. \qquad (8)$$

The vectors X_{Hi} and X_{Di} include the government size determinants discussed in the Leviathan model of Chapter 4, but here the sample is partitioned for home rule and Dillon's Rule states respectively.

We do not observe the true values ($Y_{Hi} - Y_{Di}$); therefore, we must obtain predicted values of ($Y_{Hi} - Y_{Di}$). First, estimate the reduced-form of equation (6), which includes all exogenous variables from the system of equations (6) – (8). Obtain the predicted probit values from this reduced form estimation, and calculate the inverse mills ratios for the home rule and Dillon's Rule subsamples. The inverse mills ratios take the following forms: $\varphi(\gamma' Z_i)/\Phi(\gamma' Z_i)$ and $\varphi(\gamma' Z_i)/[1-\Phi(\gamma' Z_i)]$ for the home rule and Dillon's

Rule samples respectively, where $\varphi(\ )$ denotes the standard normal distribution and $\Phi(\ )$ denotes the cumulative normal distribution function. Substituting the appropriate inverse mills ratios into equations (7) and (8) provides the following first stage estimating equations:

$$Y_{Hi} = b_{Ho} + b_{H1} X_{Hi} - \sigma_{Hu} W_{Hi} + \xi_{Hi} \text{ for } H_i = 1 \qquad (7')$$

$$Y_{Di} = b_{Do} + b_{D1} X_{Di} + \sigma_{Du} W_{Di} + \xi_{Di} \text{ for } H_i = 0 \qquad (8')$$

where W_{Hi} and W_{Di} represent the inverse mills ratios for home rule and Dillon's Rule respectively. Look at the coefficients of the inverse mills ratios to determine the existence and effect of endogeneity bias from self-selection. Suppose estimation yields a positive, significant mills ratio coefficient, σ_{Du}, in equation (5'). This indicates a positive selectivity bias in the government size distribution for the Dillon's Rule states. Consider a sample of home rule and Dillon's Rule states that could choose Dillon's Rule.[28] A positive, significant coefficient, σ_{Du}, indicates that the states actually choosing Dillon's Rule have a larger government sector than the average state, whether home rule or Dillon's Rule, under Dillon's Rule. In other words under the above scenario, had home rule states instead chosen Dillon's Rule, they would have smaller government sectors than Dillon's Rule states.

The first stage estimates allow us to compare differences in exogenous effects across home rule and Dillon's Rule states. Looking at the empirical results in Tables 13 and 14, see that the coefficient on the mills ratio in the Dillon's Rule equation is positive and significant. This result is evidence of the scenario described above. If home rule

[28] See Maddala (1983) based on the intuition of the hunter-fisherman earnings model of Roy (1951). See Sirmans et al (1999) for more on the estimation and intuition applied in a model of owner-managed and third-party managed real estate assets and Duncan and Leigh (1980) for an application to wage determination for union and nonunion sectors.

states had chosen Dillon's Rule, they would have smaller government sectors than Dillon's Rule states. At this point, one cannot conclude that home rule states would be smaller under Dillon's Rule than they actually are under home rule because the coefficient on σ_{Hu} is not significant.

The effect of *E-decentralization* is negative and significant in the home rule sample in the *OSR share* model and *Tax share* model. It is not significant in the Dillon's Rule sample in the *OSR share* model, but it is marginally significant in the *Tax share* model. The effect of *intergovgrants* is positive and significant in both models for both samples. The coefficient on *fragmentation* is positive in the Dillon's Rule samples in both models, but it is not significant in the home rule samples. The combined results for *E-decentralization* and *fragmentation* in the Dillon's Rule samples suggests that fiscal structure differs between Dillon's Rule and home rule states. Decentralization does not have an impact in Dillon's Rule states, and this result is evidence that local governments in Dillon's Rule states have relatively little power to govern themselves. In this case, decentralization is not effective, further evidence that traditional measures of fiscal decentralization do not explain differences in governing roles across centralized and decentralized government sectors. This important result supports a primary motivation for this study. Analyzing home rule power across states heightens our understanding of the role of institutions in the performance of the public sector.

The effect of urban density, *MSApop,* is negative and significant only in the *OSR share* model for the Dillon's Rule sample. The effect of *population* is positive and significant, also only in the *OSR share* model for the Dillon's Rule sample. This is weak evidence that government services exhibit decreasing average costs.

The effect of *incomevariance* is positive and significant in the Dillon's Rule sample for both models, but it is negative in the home rule samples and only significant in the *Tax share* model. This suggests that home rule power allows governments to meet the demands of a diverse electorate with greater efficiency.

The coefficient on *unemployment* is positive and significant in both Dillon's Rule models. There is a direct relationship between government spending and unemployment in Dillon's Rule states. The direction of causality can not be determined in this study. There is a growing literature that examines the effect of government size on unemployment. This dissertation does not address this issue. See Feldman (2006) for a review of this literature and the latest empirical evidence.

Lawyers per capita has little effect in either the home rule or Dillon's Rule sample estimates. Its coefficient is marginally significant, z-value (1.88), and positive in the home rule sample for *Tax share.* The results in Chapter 4 revealed that *lawyers per capita* has a positive effect on the size of the public sector in the model with the *Tax share* dependent variable.

The measure for ideology, *democratvote,* is negative and significant in the Dillon's Rule sample estimates for both models. The leviathan estimates of Chapter 4 also revealed a negative effect on government size. As discussed in Chapter 4, this result appears to be evidence against the general belief that democrats favor bigger government than republicans. On the other hand, it may be evidence that largely democrat, Dillon's Rule states are more successful in securing federal funds that partially offset state and local own source revenues.

Second stage procedure and results

This section discusses the procedure and results of the second stage of the self-selection correction method. For the second stage, generate full-sample predicted estimates of government size under home rule and Dillon's Rule. Do not include the inverse mills ratios in this step because sample selection is not an issue when utilizing the full sample (Maddala, 1983, p. 237). The selectivity-corrected estimation results in Table 15. reveal a significant, positive difference between home rule and Dillon's Rule compared to no significant difference without this correction.

The full sample predicted estimates allow us to estimate the structural probit equation for home rule choice, equation (6). Substitute these predicted values of (Y_{Hi} – Y_{Di}) into equation (6) to obtain coefficient estimates of the estimated impact of the difference in government size between home rule and Dillon's Rule, the second stage of the procedure. This step is necessary for obtaining an estimable form of the structural probit equation, since we do not observe the true values of the difference in government size between home rule and Dillon's Rule. The structural probit estimation results are reported in Table 16. The coefficient on the predicted (Y_{Hi} – Y_{Di}) is positive and significant at 5% in the difference in tax share equation, indicating that the gain in tax share under home rule relative to Dillon's Rule is positively correlated with the increasing probability of a state choosing home rule at the constitutional stage. The sign is marginally significant in the model using the difference in own source revenue share.

Of the remaining explanatory variables in the structural equation, the positive coefficient on *population variance* is the only effect significant at the 5% level. It suggests that states with diverse population sizes across counties are more likely to

choose home rule. In the *OSR size difference* model, the coefficients on *E-decentralization* and *unemployment* are marginally significant and negative. We expect decentralization and home rule to be positively correlated. One reason for the inverse relationship may be that *E-decentralization* does not distinguish between categorical and block grants. If categorical grants outweigh block grants in this measure of decentralization, then the result is not surprising. The negative coefficient on *unemployment* is consistent with the first stage findings, which suggest high unemployment is a significant factor in the size of Dillon's Rule states.

Taken as a whole, the first and second stage results suggest that Dillon's Rule appears to have a constraining effect on government size. The first stage results reveal significant differences in the determinants of government size across home rule and Dillon's Rule states. The second stage results demonstrate that the probability of choosing home rule is positively affected by the gain in government size attributed to home rule power. Together these results emphasize the importance of home rule as an institutional factor that affects the performance of the public sector. Furthermore, the fiscal reforms that accompany greater home rule power do not come without costs. The empirical evidence suggests that home rule powers allow governments to circumvent voters' restrictions on government size; therefore, appropriate consideration of the costs and benefits of more or less home rule power should accompany any decision affecting home rule.

Conclusion

This chapter explored the effect of endogenous home rule self-selection in models explaining government size. The leviathan hypothesis implies that states choose home rule status for local governments. Citizens of the state, the electorate, and bureaucrats collectively determine the extent of home rule power available to localities. The outcome of this constitutional stage collective decision becomes part of the framework under which political agents subsequently interact to determine in-period fiscal outcomes (Buchanan & Tullock, 1962). Home rule or Dillon's Rule becomes one of many binding rules that determine how political agents will conduct policy decisions in-period, after the rules of governing have been set.

This choice of home rule or Dillon's Rule depends on several factors that affect a state's willingness to grant more or less local government control. Behind a veil of ignorance concerning the future, states must weigh the expected costs and benefits associated with this choice. Greater freedom to make decisions and meet the demands of a diverse electorate comes at a cost. The differences in home rule power across the U.S. states suggests that states differ in their appetites for local discretion and, for example, in their desires to increase or decrease equity across local jurisdictions. Using census data that controls for factors expected to influence the home rule decision, this chapter presented the first self-selection corrected estimates of home rule's effect on government size.

The traditional IV estimates and the self-selection corrected estimates reinforce the leviathan model results presented in Chapter 4; fiscal decentralization reduces government size and institutional factors matter. The results from both methods of

endogeneity correction indicate that home rule has a positive effect on government size. On average, home rule localities use their greater fiscal, structural, and functional freedoms to expand the government sector. The forces of interjurisdiction competition are not sufficiently strong to overshadow this effect. Furthermore, the self-selection corrected estimates show that inherent differences in home rule and Dillon's Rule states alter the effects of government structure and institutional factors. Furthermore, the findings in this chapter suggest that future attempts to model institutional factors' effects on government size will benefit from proper identification of underlying endogenous processes.

Table 9. Self-selection model variable definitions and sources

Variable Name	Variable Definition	Source
Dependent Variables		
Taxshare	state and local tax revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
OSRshare	state and local own source revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
Leviathan Variables		
Home rule	Degree of home rule power for localities; 1=Dillon's Rule, 2=Weak Dillon's Rule, 3=Weak home rule, 4=Strong home rule	Variable compiled by author with reference to Turnbull & Geon (2006), Krane, Rigos, Hill (2001)
E-decentralization	share of local expenditures in total state and local spending	Computed from *Census of Governments*
OSR decentralization	share of local own source revenue in total state and local own source revenue	Computed from *Census of Governments*
Fragmentation	total number of all local government units in a state	*Census of Governments: Vol.1, No. 2, Individual State Descriptions*
Intergovgrants	dollar value of grants to local governments as a share of state expenditures	Computed from *Census of Governments*
Population	state population	*Census of Population*
MSApop	share of population in MSA	*Census* Tiger Database
Medhhincome	median household income (1989 $'s)	*Census* SF3
Incomevariance	variance in *Medhhincome* across counties divided by state population	Calculated by author
Unemployment	state rate of unemployment	BLS: Local Area Unemployment Statistics
Democratvote	% of state popular vote for democrat presidential candidate (1992 and 2000)	1994 City and County Data Book and http://www.cnn.com (Date: 01/06/01)
Lawyers per capita	# of lawyers (primary occupation) in state divided by state population	Equal Employment Opportunity Files of *Census 1990* and *2000*
Year2000	dummy variable for year 2000 = 1, base year is 1990	compiled by author
Self-Selection Identification Variables		
Hrdummy	Home rule dummy = 1 if weak, strong HR	Variable compiled by author with reference to Turnbull & Geon (2006), Krane, Rigos, Hill (2001)
Taxsize difference	Difference in predicted tax size for Dillon's Rule and home rule	Estimated by author
OSRsize difference	Difference in predicted own source revenue size for Dillon's Rule and home rule	Estimated by author
Stateaid	share of state grants to localities in local revenues	Computed from *Census of Governments*
Populationvariance	variance in average population across counties in state divided by state population	Computed by author from *Census of Population*
Historical population change	state population change from 1970 through 2000	Historical *Census of Population*

Table 10. Self-selection model summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variables					
Taxshare	94	0.101	0.011	0.067	0.141
OSRshare	94	0.130	0.012	0.101	0.166
Leviathan Variables					
Home rule	94	2.681	1.018	1	4
OSR decentralization	94	0.412	0.076	0.2	0.545
E-decentralization	94	0.514	0.082	0.323	0.654
Fragmentation	94	1,829	1,500	119	6,835
Intergovgrants	94	0.246	0.060	0.089	0.411
Population	94	5,448,832	5,921,957	453,588	33,900,000
MSApop	94	4,388,063	5,469,860	134,368	29,300,000
Medhhincome	94	$29,465	$4,939	$20,136	$41,721
Incomevariance	94	1033	582	293	2808
Unemp	94	0.050	0.016	0.024	0.096
Democratvote	94	0.434	0.075	0.250	0.610
Lawyers per capita	94	0.003	0.001	0.001	0.005
TEL	94	0.404	0.493	0	1
Year2000	94	0.500	0.503	0	1
Self-Selection Identification Variables					
Home rule dummy	94	0.574	0.497	0.000	1.000
Taxsize difference	94	0.019	0.010	-0.005	0.050
OSRsizedifference	94	0.022	0.012	0.003	0.065
Stateaid	94	0.352	0.072	0.125	0.554
Populationvariance	94	348887	512065	2	3127632
Historical population change	94	47.5	54.1	4.0	309.0

Table 11. *OSR share* dependent variable IV estimates

	Model 4	Model 5	Model 6	Model 7	Model 8
OSR share	mfx	mfx	mfx	mfx	mfx
year2000	0.003	0.004	0.005	0.005	0.006 *
	0.55	1.35	1.24	1.24	1.75
E-decentralization	-0.08 ***	-0.10 ***	-0.108 ***	-0.108 ***	-0.092 ***
	-3.53	-5.11	-5.25	-5.27	-4.57
fragmentation	-1.57E-06	-2.56E-06 **	-2.41E-06 **	-2.41E-06 **	-2.28E-06 **
	-1.21	-2.28	-2.17	-2.17	-2.14
intergovgrants	0.21 ***	0.24 ***	0.234 ***	0.234 ***	0.203 ***
	4.04	5.64	5.65	5.65	5.38
population	-3.95E-09	-3.02E-09	-1.89E-09	-1.92E-09	-1.63E-09
	-1.5	-1.19	-0.79	-0.82	-0.72
msapop	3.95E-09	3.18E-09	1.95E-09	1.98E-09	1.76E-09
	1.37	1.13	0.75	0.78	0.7
income	-8.50E-07 **	-4.60E-07	-6.27E-07	-6.28E-07	-5.84E-07
	-2.02	-1.06	-1.2	-1.19	-1.18
unemployment	-0.03	0.04	0.015	0.014	0.093
	-0.26	0.31	0.12	0.11	0.71
hr_hat	2.55E-02 **	0.0340 ***	3.07E-02 ***	3.08E-02 ***	2.34E-02 **
	2.09	3.33	3.27	3.31	2.6
democratvote		-0.06 ***	-0.071 ***	-0.070 ***	-0.073 ***
		-2.93	-3.23	-3.22	-3.56
lawyers per capita			2.481	2.429	2.954
			0.69	0.75	0.86
incomevariance			-1.19E-07		-3.37E-07
			-0.05		-0.15
TEL					-0.004 *
					-1.74
_cons	-2.25 **	-2.31 **	-2.2 **	-2.20 **	-2.10 **
	-8.43	-9.66	-10.51	-10.53	-9.95
R-square	0.205	0.275	0.282	0.282	0.304

*,**,*** coefficient significant at 10%, 5%, 1% respectively
marginal effects calculated using [b * g(xb)] except for dummy variables
z-values under marginal effects, calculated using Huber-White robust standard errors

Table 12. *Tax share* dependent variable IV estimates

	Model 4	Model 5	Model 6	Model 7	Model 8
Tax share	mfx	mfx	mfx	mfx	mfx
year2000	0.00	0.00	0.00	0.00	0.00
	-0.34	-0.37	-0.52	-0.56	0.21
E-decentralization	-0.092 ***	-0.092 ***	-0.094 ***	-0.096 ***	-0.081 ***
	-4.57	-4.6	-4.81	-4.84	-4.1
fragmentation	-7.83E-07	-7.59E-07	-4.74E-07	-4.68E-07	-4.29E-07
	-0.81	-0.78	-0.51	-0.5	-0.45
intergovgrants	0.195 ***	0.194 ***	0.186 ***	0.188 ***	0.162 ***
	4.76	4.91	4.76	4.83	4.35
population	-5.08E-09 **	-5.10E-09 **	-2.62E-09	-3.25E-09 *	-2.43E-09
	-2.55	-2.5	-1.59	-1.89	-1.5
msapop	5.20E-09 **	5.21E-09 **	2.54E-09	3.17E-09 *	2.42E-09
	2.35	2.31	1.43	1.71	1.37
income	-3.47E-08	-4.39E-08	-3.01E-07	-3.17E-07	-2.76E-07
	-0.11	-0.13	-0.7	-0.74	-0.68
unemployment	0.014	0.012	-0.018	-0.029	0.069
	0.14	0.12	-0.16	-0.27	0.6
hr_hat	3.36E-02 ***	3.34E-02 ***	2.63E-02 ***	2.76E-02 ***	1.96E-02 ***
	3.42	3.71	3.44	3.61	2.66
democratvote		0.002	-0.010	-0.010	-0.015
		0.07	-0.48	-0.46	-0.72
lawyers per capita			5.018 *	4.029	5.624 **
			1.79	1.54	2.09
incomevariance			-2.227E-06		-2.52E-06
			-1.17		-1.23
TEL					-0.005 **
					-2.12
_cons	-3.01 ***	-3.01 ***	-2.77 ***	-2.79 ***	-2.64 ***
	-10.84	-11.13	-12.06	-12.38	-11.65
R-square	0.245	0.245	0.277	0.271	0.310

*,**,*** coefficient significant at 10%, 5%, 1% respectively
marginal effects calculated using [b * g(xb)] except for dummy variables
z-values under marginal effects, calculated using Huber-White robust standard errors

Table 13. Self-selection-corrected Leviathan model sub-samples

OSR share is dependent variable
n=40 Dillon's Rule, n=54 home rule

Dillon's Rule sample			home rule sample		
OSR share	**mfx**		*OSR share*	**mfx**	
mills0	**0.034**	***	*mills1*	**-0.006**	
	5.43			-0.9	
year2000	**0.003**	***	*year2000*	**0.006**	
	4.20			0.17	
E-decentralization	**0.004**		*E-decentralization*	**-0.094**	***
	0.15			-2.66	
intergovgrants	**0.079**	***	*intergovgrants*	**0.147**	***
	2.78			2.94	
fragmentation	**2.27E-06**	*	*fragmentation*	**-1.16E-06**	
	1.86			-1.01	
MSApop	**-9.18E-09**		*MSApop*	**-2.41E-09**	
	-2.5			-0.73	
population	**6.33E-09**	*	*population*	**-2.69E-09**	
	1.93			0.88	
medhhincome	**5.65E-07**		*medhhincome*	**-5.49E-07**	
	0.9			-0.73	
incomevariance	**4.74E-06**	*	*incomevariance*	**-2.49E-06**	
	1.9			-0.68	
unemployment	**0.824**	***	*unemployment*	**-0.019**	
	3.33			-0.09	
lawyers per capita	**-0.874**		*lawyers per capita*	**5.813**	
	0.16			1.11	
democratvote	**-0.115**	***	*democratvote*	**-0.054**	
	-4.93			-1.41	
constant	**-3.000**	***	*constant*	**-0.213**	***
	-10.52			-8.59	
R-square	0.574			0.229	

*,**,*** coefficient significant at 10%, 5%, 1% respectively
(mfx) marginal effects in bold
z-values under marginal effects, calculated with Huber-White robust standard errors

Table 14. Self-selection-corrected Leviathan model sub-samples

Tax share is dependent variable
n=40 Dillon's Rule, n=54 home rule

Dillon's Rule sample			home rule sample		
Tax share	**mfx**		*Tax share*	**mfx**	
mills0	**0.024**	***	*mills1*	**0.003**	
	2.89			0.48	
year2000	**0.010**	*	*year2000*	**-0.020**	
	1.67			-0.14	
E-decentralization	**-0.047**	*	*E-decentralization*	**-0.055**	**
	-1.72			-2.35	
intergovgrants	**0.059**	**	*intergovgrants*	**0.111**	***
	2.25			2.83	
fragmentation	**3.41E-06**	***	*fragmentation*	**5.23E-07**	
	2.58			0.51	
MSApop	**-3.18E-09**		*MSApop*	**-2.22E-09**	
	-0.96			-1.06	
population	**1.41E-09**		*population*	**1.96E-09**	
	0.47			0.98	
medhhincome	**9.37E-07**	*	*medhhincome*	**-7.42E-08**	
	1.87			-0.14	
incomevariance	**5.00E-06**	**	*incomevariance*	**-5.23E-06**	**
	2.02			-2.17	
unemployment	**0.457**	*	*unemployment*	**0.083**	
	1.97			0.51	
lawyers per capita	**-2.521**		*lawyers per capita*	**6.874**	*
	-0.44			1.88	
democratvote	**-0.074**	***	*democratvote*	**0.007**	
	-3.39			0.21	
constant	**-0.024**	***	*constant*	**-0.024**	***
	-9.15			-12.64	
R-square	0.474			0.300	

*,**,*** coefficient significant at 10%, 5%, 1% respectively
(mfx) marginal effects in bold
z-values under marginal effects, calculated with Huber-White robust standard errors

Table 15. Testing selectivity-corrected government sizes under HR & DR

Mean predicted *Taxshare* if home rule state	Mean predicted *Taxshare* if Dillon's Rule state
0.102	0.083
Difference in means is 22.80%	
T-test	24.172

Mean predicted *OSRshare* if home rule state	Mean predicted *OSRshare* if Dillon's Rule state
0.127	0.105
Difference in means is 21.28%	
T-test	17.8

Table 16. Home rule structural pobit estimation

hrdummy	Coefficients Robust s.e.'s	Coefficients Robust s.e.'s
OSR size difference	**29.060** * 1.93	
Tax size difference		**48.477** ** 2.1
democratvote	**1.033** 0.38	**-1.389** -0.41
population variance	**8.52E-07** ** 1.96	**8.74E-07** ** 1.96
Historical population change	**-0.003** -1.13	**-0.003** -1.11
incomevariance	**2.16E-05** 0.08	**1.96E-04** 0.68
stateaid	**-1.970** -0.96	**-2.061** -1.01
E-decentralization	**-2.207** -1.08	**-4.308** * -1.86
unemployment	**-21.785** -1.35	**-29.246** * -1.94
year2000	**-0.562** -1.06	**-0.725** -1.47
_cons	**2.166** 1.19	**4.332** ** 2.04
pseudo R2	0.145	0.151

*, ** significant at 10%, 5% respectively.
Huber-White robust standard errors.

Chapter 6

Analyses of Separate Local and State Government Sectors

Home rule power directly affects local government decisions. The aggregate analysis in Chapters 4 and 5 examined home rule's impact on the size of the combined state and local government sector. The results demonstrated that greater home rule powers for local governments contribute to a larger government sector, a result consistent with the leviathan hypothesis.

This chapter addresses home rule power's effect on state government size and total local government size separately. One perspective suggests that the size of the local government sector increases with greater home rule power, while the effect on the size of the state government sector remains ambiguous. This prediction maintains that interjurisdiction competition is not strong enough to limit home rule power's partial equilibrium effect on local government sector size. The size of the state government sector may increase or decrease if local governments have greater home rule power because states do not necessarily lose powers as localities gain home rule powers. The analysis in the previous chapters finds that greater home rule power increases the size of the combined state and local government sector, suggesting that greater home rule power increases local government sector size and that this effect dominates any negative effect on state government sector size.

The models in this chapter examine home rule's impact at the state level and local level with and without home rule self-selection correction. The local level and state level leviathan and self-selection models are similar to the models discussed in chapters four

and five; the level of observation, state or local, distinguishes the models. The matrices of exogenous regressors are identical in the local level and state level leviathan models. Likewise, the independent variables in the self-selection models are identical for the local level and state level analyses. See Tables 17 and 18 for definitions of variables and summary statistics for the leviathan models and Tables 23 and 24 for the self-selection models.

Local Level and State Level Leviathan Models

This section discusses home rule's impact on local government size and state government size using two alternative measures for both levels of analysis. *Local tax size* measures the size of the local government sector as total local tax revenue divided by personal income in the state. *Local OSR size* measures local government size as total local own source revenue as a share of personal income and defines own source revenue as tax revenue plus current charges, and omits interest income, special assessments, and the revenues raised from sales of government owned property. *State tax size* measures the size of the state government sector as state tax revenue divided by personal income in the state. *State OSR size* measures state government size as the share of state own source revenue divided by personal income. The aggregate analysis of the local sector is a limitation of the study; however, it provides a benchmark for later studies examining home rule and local government size with municipal or county level data.

The general fractional logit model describing local government size is as follows:

$$s_i = f\,(\,\mathbf{i}_{ij}, \mathbf{w}_{ik}, \mathbf{x}_{il}\,) + u_i \qquad (9)$$

where $0 < s(\cdot) < 1$ = *local tax size* or *local osr size* as defined above. The right hand side of equation (9) is identical to the right hand side of equation (3) in chapter 4.

The following general fractional logit model describes state government size:

$$S_i = f(\mathbf{i}_{ij}, \mathbf{w}_{ik}, \mathbf{x}_{il}) + u_i \qquad (10)$$

where $0 < S(\cdot) < 1$ = *state tax size* or *state osr size* as defined above. The capital letter, S, denotes the state sector in equation (10). The right hand side of equation (10) is identical to the right hand side of equation (3) in chapter 4 and equation (9) above.

In each of equations (3), (9), and (10), the vector **i** consists of institutional variables: *home rule, TEL*- measuring a composite of state tax and expenditure limitations and *lawyers per capita*. The vector **w** includes fiscal variables: *E decentralization*- decentralization measured as the share of local expenditures in total state and local spending, *fragmentation*- fragmentation as measured by the total number of local governments in a state, and *intergovgrants*- a measure of grants to local governments as a share of state expenditures. The vector **x** comprises socio-economic and political variables: *income*- median household income, *population*, *msapop*- Metropolitan Statistical Area population, *unemployment*- unemployment rate for state, *incomevariance*- the variance of median household incomes across counties in a state, and *democratvote*- the percent of state population voting for democrat president in1992 and 2000 elections, and u is a random error $\sim N(0, \sigma^2)$.

Table 19 reports the logit estimates for *local OSR size*, and Table 20 reports the estimates for *local tax size.* Tables 21 and 22 report the logit estimates for *state OSR size* and *state tax size* respectively. See Table 23 for a comparison of general results across the six models: local, state, and state and local combined, each for own source revenue

and tax revenue separately. The year dummy variable, *year2000,* has a positive coefficient in the local own source revenue model and in the state and local own source revenue model. The sign is negative on *year2000* in both state level models. These results in combination with the negative effect of *intergovgrants* in the local models and positive effect in the state and combined models suggest that local governments have increased their reliance on alternative revenue sources, such as fees, from 1990 to 2000. The key variable, *E-decentralization,* carries the expected sign in the local and state models. Greater decentralization from the state to the local sector increases the size of the local sector, decreases the size of the state sector but has a negative effect on the total sector. The effect of the variable *fragmentation* is sensitive to model specification, consistent with the combined state and local results. It has no impact in the state models but is significant in the local tax model; however, when controlling for tax and expenditure limitations, specification (10) in all models, *fragmentation* has no impact.

The socio-economic variables are generally insignificant in the separate local and state models. This is consistent with the combined state and local model results and with the results of other studies (Oates, 1985; Nelson, 1987; Zax, 1989). In the local tax revenue model *population* generally has a negative effect and *msapop* has a positive effect. All other things equal, tax revenue as a share of personal income decreases in rural areas compared to urban areas. One possible explanation for this result suggests that rural areas rely more heavily on other sources of income, such as intergovernmental grants funded by higher state tax revenue-generating urban counterparts.

The institutional variables have mixed results. *Democratvote* is significant and negative in the local own source revenue model and in the combined state and local own

source revenue model. This suggests that states having a dominant democrat ideology tend to rely less on fees and other alternative income sources, and because there is no impact in the tax revenue models, largely democrat states may receive a greater share of intergovernmental revenues from the federal government. This outcome is consistent with the established flypaper effect of intergovernmental grants. The sign on *lawcap* is positive and significant in the local own source revenue model, the state tax model, and the state and local tax model. This is weak evidence that special interests use the legal system in a state to increase government regulation that imposes greater costs on local and state governments. The positive sign in the local own source revenue model suggests that additional local fees result from special interest activity, such as development impact fees. The positive sign in the state and combined state and local tax models suggests that special interest groups also encourage legislation that increases tax revenues for state and local governments.

The negative effect of *TEL* in the local models is consistent with the results of the combined state and local models. *TEL* has no significant impact in the state level models. Tax limitations tend to target local revenues, such as property taxes, more on the average than they target state revenues, possibly driving this result. Finally, the coefficient on *home rule* is positive and significant in the local tax model and negative and significant in the state tax model. Separately, these results suggest that local governments use greater home rule power to increase tax revenues relative to other own sources of revenue and that states reduce their tax revenues as local governments acquire greater taxing power.

Local Level and State Level Self-Selection Models

This analysis controls for home rule endogeneity and examines home rule's impact on the size of separate state and local government sectors. Similar to the previous section, we use two alternative measures of government size for both levels of analysis, *local tax size* and *local OSR size* for the local level, and *state tax size* and *state OSR size* for the state level. The previous section defined all four measures. For ease of reference see Tables 22 and 23 for state level and local level variable definitions and summary statistics respectively. The model presentation takes the approach from Chapter 5, adapted for separate state and local level analyses. The local tax size model follows below. Replacing the local level dependent variable with the state level dependent variable gives the state level model.[29]

The local government size equation from the empirical leviathan model is

$$s_i = b_o + b_1 X_i + b_2 H_i + u_i, \qquad (11)$$

which denotes home rule, H_i, as a regressor apart from the vector of all other regressors, X_i. Lower case s_i denotes the size of the local government sector following the notation in the previous section. Substitute for H_i the vector, Z_i, which comprises the instruments for home rule in the self-selection model. Identical to the model in Chapter 5, the instruments are s*tateaid, populationvariance,* and *historical population change.* The local level model employs the same data set for the regressors used in the combined state and local sector analysis; the dependent variable is unique to each level. The government size equation with Z_i as the instrument for home rule is

$$s_i = b_o + b_1 X_i + \gamma_3 Z_i + u_i. \qquad (12)$$

[29] Similarly, replacing the local tax size dependent variable with the local own source revenue measure yields the local osr model for self-selection.

By assumption the Cov (Z,u) = 0, in order that Z meets the first of the two necessary conditions for a good instrument. Previous theoretical and empirical studies of government size provide some indication that the instruments chosen are not correlated with the error. The variable *stateaid* measures the share of local revenue comprised of grants from state government. The vector, X_i, includes a measure for the share of state expenditures spent in the form of grants to local governments in the state, *intergovgrants*. After controlling for *intergovgrants,* the instrument *stateaid* has no independent effect on government size. The remaining instruments, *populationvariance* and *historical population change,* also do not have any expected effect on government size. To ensure the second condition is met, the F-test indicates that Cov (Z,X) $\neq$ 0.

Let H_i be an unobservable home rule status variable such that if $H_i > 0$, state *i* selects home rule status; otherwise it does not.

Structural Probit Equation (home rule choice):

$$H_i = a_0 + a_2 X_i + a_2 Z_i + a_3(s_{Hi} - s_{Di}) - \varepsilon_i \qquad (13)$$

where Z_i is a vector of instruments for home rule, *stateaid, populationvariance,* and *historical population change,* that meets the necessary restrictions. The vector, X_i, contains only the government size determinants from the Leviathan model, discussed in Chapter 4 and the previous section and restated in equation (11), that also affect home rule choice, *E-decentralization, democratvote,* and *unemployment*. The variable ($s_{Hi} - s_{Di}$) captures the local government size differential between home rule and Dillon's Rule. Its coefficient, a_3, measures the effect this difference has on the probability of the state choosing home rule. Under the leviathan hypothesis, we expect greater local government size under home rule and expect a positive sign on a_3, indicating that states choose home

rule rather than Dillon's Rule in order to increase the size of the local government sector. Finally, the specification of the structural home rule equation includes a year dummy variable, *year2000*.

Equations (14) and (15) are local government size equations for home rule and Dillon's Rule states separately.

Home rule regime:

$$s_{Hi} = b_{Ho} + b_{H1} X_{Hi} + \varepsilon_{Hi} \qquad (14)$$

Dillon's Rule regime:

$$s_{Di} = b_{Do} + b_{D1} X_{Di} + \varepsilon_{Di} \ . \qquad (15)$$

The vectors X_{Hi} and X_{Di} include the government size determinants discussed in the Leviathan model of Chapter 4, but here the sample is partitioned for home rule and Dillon's Rule states respectively.

We do not observe the true values ($s_{Hi} - s_{Di}$); therefore, we must obtain predicted values of ($s_{Hi} - s_{Di}$). Follow the approach outlined in Chapter 5 estimating the reduced form of equation (13), and obtain the inverse mills ratios for the home rule and Dillon's Rule subsamples. The inverse mills ratios take the usual forms: $\varphi(\gamma' Z_i)/\Phi(\gamma' Z_i)$ and $\varphi(\gamma' Z_i)/[1-\Phi(\gamma' Z_i)]$ for the home rule and Dillon's Rule samples respectively, where $\varphi(\ )$ denotes the standard normal distribution and $\Phi(\ )$ denotes the cumulative normal distribution function. Substituting the appropriate inverse mills ratios into equations (14) and (15) provides the following first stage estimating equations:

$$s_{Hi} = b_{Ho} + b_{H1} X_{Hi} - \sigma_{Hu} W_{Hi} + \xi_{Hi} \text{ for } H_i = 1 \qquad (14')$$

$$s_{Di} = b_{Do} + b_{D1} X_{Di} + \sigma_{Du} W_{Di} + \xi_{Di} \text{ for } H_i = 0 \qquad (15')$$

where W_{Hi} and W_{Di} represent the inverse mills ratios for home rule and Dillon's Rule respectively. Look at the coefficients of the inverse mills ratios to determine the existence and effect of endogeneity bias from self-selection.

Tables 26 – 29 display results for the self-selection-corrected estimates of *local tax size, local osr size, state tax size,* and *state osr size* respectively. Tables 30 and 31 show structural probit estimates and predicted means for the local size models. The mills ratio coefficients are not significant in the state level models; therefore, it is not meaningful to proceed with the second stage analysis for the state models. One possible explanation for this is home rule has no effect on the size of the state government sector. Alternatively, home rule may impact the size of the state government sector indirectly, in which case the self-selection model for the state sector does not capture the specific relationship between home rule and state government sector size. For ease of reference, Tables 32 – 34 show comparisons of the local level and combined state and local sector results.

The local level self-selection-correction yields estimates consistent with the results from the state and local level combined analyses. The mills ratio coefficients are positive and significant in the Dillon's Rule equations for the tax and own source revenue models as found in the combined sector analyses. The local sector in Dillon's Rule states is inherently larger than in home rule states. States actually choosing Dillon's Rule have a larger local government sector than the average state, whether home rule or Dillon's Rule, under Dillon's Rule. The second stage results incorporate this information and yield predicted local government tax size estimates in home rule states of 4.5% of aggregate personal income and in Dillon's Rule states 2.0% of aggregate personal

income. The local own source revenue predicted size results show home rule states at 5.2% of aggregate personal income and Dillon's Rule states at 3.2% of aggregate personal income.

The coefficient on *year2000* is positive and significant in the local and combined state and local first stage estimates for Dillon's Rule states. This result differs from the leviathan model results, which show that only own source revenue reliance increased over the decade. It is not clear what specific events or policy changes over the period 1990 to 2000 may have contributed to the increase in all own source revenues for Dillon's Rule states.

The estimates show that decentralization has a similar effect on home rule and Dillon's Rule states. The local sector expands as responsibilities are pushed from the state to the local sector. Intergovernmental grants partially supplant own source revenues in home rule and Dillon's Rule states. The fragmentation estimates are sensitive to specification. These results are consistent with the previous analysis in this dissertation and with the findings of other studies of government size.

The estimation yields few significant estimates of the socio-economic variable coefficients. This is also consistent with other studies. The *unemployment* coefficients are positive in the Dillon's Rule states for the local and combined state and local analyses. It is not clear why unemployment only has a positive impact on the size of the local sector in Dillon's Rule states.[30]

The self-selection-corrected estimates show that lawyers per capita and the percentage of democrat votes for president are consistent with decreasing government

[30] See Feldman (2006) for a list of studies that treat unemployment as an endogenous variable that increases with government size. This dissertation did not consider unemployment as an endogenous variable. Removing the unemployment variable from the models did not significantly change any of the results.

size in Dillon's Rule states. The *lawcap* result is not consistent with the combined state and local self-selection model results. The *democratvote* result is consistent with the combined level results.

The structural probit estimates in the local level analysis do not provide much additional insight into the underlying differences between home rule and Dillon's Rule states. The coefficient on the primary variable of interest, ($s_{Hi} - s_{Di}$), is not significant in either local model. However, the coefficient on *unemployment* is negative and significant in both models, and the coefficient on *populationvariance* is positive and significant. The probability that states allow greater home rule power to localities increases as the state has greater variance across counties in terms of population size. This is what we would expect, and it is consistent with the argument that greater home rule power allows localities to better meet the demands of a more diverse group of constituents. Greater unemployment reduces the probability that states allow greater home rule powers. This result suggests that states with greater unemployment have a stronger preference for equalizing services across the state.

Conclusion

This chapter analyzed the size of the local and state components of the government sector separately, with and without controlling for home rule endogeneity. The results reinforce the findings presented in Chapters 4 and 5. Local government size increases as states grant greater discretionary authority. Contrary to the effect of greater decentralization, greater home rule power does not translate into a smaller combined state and local government sector. This important result highlights a key difference between

home rule and decentralization. States that grant greater discretionary power to local governments do not necessarily reduce their own state-level governing powers.

The three-level analysis of government sector size provides greater understanding of decentralization's effects on government size. Zax (1989) demonstrated that decentralization at the local level, between county and municipal levels, reduces the size of the local government sector. The analysis in this chapter shows that the local sector size increases with greater state-to-local decentralization, even though the total sector size decreases. The analysis in Chapter 8 provides a closer examination of county-municipal decentralization and home rule power and the effect on the size of the combined state and local government sector. The next chapter examines additional institutional constraints in the form of eminent domain power and state budget stabilization funds and their effects on government size.

Table 17. State and local Leviathan models variable definitions and sources

Variable Name	Variable Definition	Source
Dependent Variables		
Local OSR Size	local own source revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
State OSR Size	state own source revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
Local Tax Size	local tax revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
State Tax Size	state tax revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
Independent Variables		
Home rule	Degree of home rule power for localities; 1=Dillon's Rule, 2=Weak Dillon's Rule, 3=Weak home rule, 4=Strong home rule	Variable compiled by author with reference to Turnbull & Geon (2004), Krane, Rigos, Hill (2001)
E-decentralization	share of local expenditures in total state and local spending	Computed from *Census of Governments*
OSR decentralization	share of local own source revenue in total state and local own source revenue	Computed from *Census of Governments*
Fragmentation	total number of all local government units in a state	*Census of Governments: Vol.1, No. 2, Individual State Descriptions*
Intergovgrants	dollar value of grants to local governments as a share of state expenditures	Computed from *Census of Governments*
Population	state population	*Census of Population*
MSApop	share of population in MSA	*Census* Tiger Database
Medhhincome	median household income (1989 $'s)	*Census* SF3
Incomevariance	variance in *Medhhincome* across counties divided by state population	Calculated by author
Unemployment	state rate of unemployment	BLS: Local Area Unemployment Statistics
Democratvote	% of state popular vote for democrat presidential candidate (1992 and 2000)	1994 City and County Data Book and http://www.cnn.com (Date: 01/06/01)
Lawyers per capita	# of lawyers (primary occupation) in state divided by state population	Equal Employment Opportunity Files of *Census 1990* and *2000*
TEL	dummy variable for whether state has any type of tax or expenditure limitation on the state	variable used in Skidmore (1999)
Year2000	dummy variable for year 2000 = 1, base year is 1990	compiled by author

Table 18. Local and State Leviathan Models Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variables					
Local OSR Size	94	0.054	0.011	0.028	0.093
State OSR Size	94	0.077	0.013	0.052	0.108
Local Tax Size	94	0.039	0.012	0.018	0.096
State Tax Size	94	0.064	0.010	0.04	0.086
Independent Variables					
Home rule	94	2.681	1.018	1	4
OSR decentralization	94	0.412	0.076	0.2	0.545
E-decentralization	94	0.514	0.082	0.323	0.654
Fragmentation	94	1,829	1,500	119	6,835
Intergovgrants	94	0.246	0.060	0.089	0.411
Population	94	5,448,832	5,921,957	453,588	33,900,000
MSApop	94	4,388,063	5,469,860	134,368	29,300,000
Medhhincome	94	$29,465	$4,939	$20,136	$41,721
Incomevariance	94	1033	582	293	2808
Unemp	94	0.050	0.016	0.024	0.096
Democratvote	94	0.434	0.075	0.250	0.610
Lawyers per capita	94	0.003	0.001	0.001	0.005
TEL	94	0.404	0.493	0	1
Year2000	94	0.500	0.503	0	1

Table 19. Leviathan model logit estimates with *Local OSR Size* dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Local OSR Size	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
year2000	0.075 **	0.031	0.055 *	0.166 ***	0.191 ***	0.183 ***	0.189 ***	0.251 ***
	2.05	1.2	1.7	3.44	3.64	3.67	3.85	5.08
E-decentralization	2.503 ***			2.741 ***	2.635 ***	2.481 ***	2.507 ***	2.715 ***
	7.4			7.74	7.43	7.23	7.33	8.41
osrdecentralization		2.650 ***	2.670 ***					
		14.77	15.31					
fragmentation	-5.720E-06	-4.040E-06	-1.670E-06	-9.170E-07	-3.650E-06	-6.400E-06	-9.140E-06	-1.940E-05 **
	-0.6	-0.56	-0.22	-0.09	-0.42	-0.79	-1.11	-1.97
intergovgrants	-1.582 ***	0.154	0.139	-1.752 ***	-1.727 ***	-1.535 ***	-1.494 ***	-1.592 ***
	-3.33	0.64	0.59	-3.7	-3.84	-3.05	-2.95	-3.73
population	0.000	-2.81E-08	-3.08E-08	-4.15E-08	-3.18E-08	-6.96E-09	7.55E-09	4.00E-09
	-1.3	-1.37	-1.41	-1.42	-1.12	-0.31	0.33	0.18
msapop	4.53E-08	2.90E-08	3.10E-08	4.59E-08	3.74E-08	9.42E-09	-5.33E-09	-4.63E-10
	1.45	1.3	1.32	1.46	1.2	0.39	-0.22	-0.02
income	-2.37E-06	-3.02E-06	-2.02E-06	1.08E-06	4.22E-06	-8.38E-07	-1.57E-07	1.15E-06
	-0.64	-1.11	-0.73	0.3	0.96	-0.14	-0.03	0.22
unemployment			1.104	3.984 **	4.647 ***	3.919 **	4.202 **	6.547 ***
			1.1	2.56	2.9	2.33	2.47	3.71
home rule			-0.007	0.001	0.004	0.001	0.004	0.017
			-0.51	0.05	0.25	0.08	0.23	1.16
democratvote					-0.425	-0.664 *	-0.693 **	-0.860 ***
					-1.26	-1.92	-2.06	-2.65
lawyers per capita						65.902 *	87.925 **	83.902 **
						1.68	2.09	2.41
incomevariance							-0.0000545 **	-5.72E-05 **
							-2.05	-2.13
TEL								-0.116 ***
								-3.52
_cons	-3.728 ***	-3.906 ***	-3.987 ***	-4.146 ***	-4.069 ***	-3.919 ***	-3.985 ***	-4.142 ***
	-27.9	-39.58	-27.29	-17.2	-16.48	-14.84	-14.63	-16.44
R-square	0.458	0.711	0.716	0.482	0.493	0.524	0.534	0.594

*,**,*** coefficient significant at 10%, 5%, 1% respectively
Logit coefficients
z-values under logit coefficients, calculated using Huber-White robust standard errors

Table 20. Leviathan model logit estimates with *Local Tax Size* dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Local Tax Size	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
year2000	-0.012	-0.046	-0.065	0.011	0.023	0.015	0.019	0.095
	-0.24	-1.15	-0.94	0.11	0.24	0.16	0.2	1.06
E-decentralization	2.007 ***			2.105 ***	2.055 ***	1.873 **	1.898 **	2.150 ***
	3.32			2.93	2.68	2.5	2.51	2.98
osrdecentralization		2.433 ***	2.416 ***					
		7.1	6.4					
fragmentation	0.000057 *	0.0000568 **	0.000052 **	0.0000545 **	0.0000534 **	0.000051 **	0.0000489 **	0.0000353
	1.92	2.04	2.14	2.11	2.18	2.09	1.96	1.45
intergovgrants	-2.588 ***	-1.203 ***	-1.100 ***	-2.541 ***	-2.529 ***	-2.334 ***	-2.298 ***	-2.409 ***
	-4.15	-3.62	-3.42	-3.6	-3.58	-3.08	-3.03	-3.55
population	-1.43E-07 **	-1.43E-07 **	-1.32E-07 **	-1.33E-07 **	-1.28E-07 **	-1.04E-07 *	-9.31E-08	-9.71E-08 *
	-2.18	-2.18	-2.22	-2.26	-2.31	-1.88	-1.61	-1.7
msapop	1.56E-07 **	1.51E-07 **	1.38E-07 **	1.44E-07 **	1.40E-07 **	1.13E-07 *	1.02E-07	1.08E-07 *
	2.24	2.18	2.18	2.25	2.27	1.86	1.61	1.72
income	2.92E-06	1.49E-06	9.15E-07	3.54E-06	4.94E-06	-3.73E-07	1.36E-07	1.31E-06
	0.36	0.19	0.1	0.36	0.54	-0.03	0.01	0.13
unemployment			-0.878	1.003	1.287	0.551	0.741	3.602
			-0.42	0.32	0.43	0.18	0.23	1.2
home rule			0.038 *	0.043 *	0.044 *	0.041	0.043 *	0.060 **
			1.67	1.73	1.74	1.59	1.67	2.31
democratvote					-0.189	-0.451	-0.475	-0.670
					-0.43	-1.04	-1.11	-1.52
lawyers per capita						66.970	83.850	80.087
						1.25	1.39	1.57
incomevariance							-4.32E-05	-4.69E-05
							-1.19	-1.31
TEL								-0.142 ***
								-2.86
_cons	-3.719 ***	-3.949 ***	-4.001 ***	-3.975 ***	-3.939 ***	-3.761 ***	-3.811 ***	-3.997 ***
	-8.72	-10.38	-8.31	-6.09	-5.75	-5.47	-5.4	-5.97
R-square	0.305	0.447	0.458	0.323	0.323	0.339	0.342	0.386

*,**,*** coefficient significant at 10%, 5%, 1% respectively
Logit coefficients
z-values under logit coefficients, calculated using Huber-White robust standard errors

Table 21. Leviathan model logit estimates with *State OSR Size* dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
State OSR Size	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
year2000	-0.030	0.018	0.023	-0.092	-0.075 *	-0.076 *	-0.078 *	-0.078 *
	-1.21	0.92	0.82	-2.4	-1.71	-1.72	-1.77	-1.72
E-decentralization	-2.540 ***			-2.685 ***	-2.795 ***	-2.817 ***	-2.817 ***	-2.817 ***
	-8.65			-10.6	-11.15	-11.48	-11.56	-11.18
osrdecentralization		-2.132043 ***	-2.129598 ***					
		-19.4	-19.73					
fragmentation	7.81E-06	5.66E-06	6.16E-06	4.00E-06	1.54E-06	1.26E-06	2.02E-06	2.00E-06
	0.73	0.65	0.7	0.41	0.16	0.13	0.21	0.2
intergovgrants	2.745 ***	0.853 ***	0.852 ***	2.842 ***	2.877 ***	2.907 ***	2.881 ***	2.881
	8.15	4.98	5.07	9.1	8.96	8.95	8.77	8.7
population	5.85E-09	-7.33E-09	-7.57E-09	7.31E-09	1.62E-08	1.97E-08	1.58E-08	1.57E-08
	0.28	-0.42	-0.45	0.38	0.84	1.01	0.78	0.76
msapop	-1.22E-08	6.63E-09	6.66E-09	-1.09E-08	-1.90E-08	-2.29E-08	-1.89E-08	-1.89E-08
	-0.57	0.35	0.36	-0.52	-0.91	-1.09	-0.87	-0.85
income	-4.18E-06	-5.67E-06	-5.39E-06 *	-7.02E-06 *	-4.51E-06	-5.26E-06	-5.34E-06	-5.34E-06
	-1.29	-2.25	-1.77	-1.82	-1.03	-1	-1.02	-1.02
unemployment			0.226	-2.700	-2.218	-2.336	-2.436 *	-2.433 *
			0.23	-2	-1.55	-1.61	-1.67	-1.71
home rule			-0.001	-0.003	-0.001	-0.001	-0.002	-0.002
			-0.07	-0.26	-0.07	-0.08	-0.13	-0.12
democratvote					-0.333	-0.363	-0.358	-0.358
					-1.3	-1.45	-1.48	-1.49
lawyers per capita						9.537	2.736	2.739
						0.39	0.1	0.1
incomevariance							0.0000172	0.0000172
							0.75	0.75
TEL								-0.000149
								-0.01
_cons	-1.723	-1.675	-1.696	-1.422	-1.351	-1.331	-1.315	-1.315
	-16.51	-18.36	-11.63	-7.63	-7.65	-7.29	-7.09	-7.2
R-square	0.628	0.762	0.762	0.644	0.654	0.655	0.658	0.658

*,**,*** coefficient significant at 10%, 5%, 1% respectively
Logit coefficients
z-values under logit coefficients, calculated using Huber-White robust standard errors

Table 22. Leviathan model logit estimates with *State Tax Size* dependent variable

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
State Tax Size	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
year2000	-0.057 ***	-0.010	0.006	-0.105 ***	-0.102 ***	-0.108 ***	-0.108 ***	-0.106 ***
	-2.65	-0.55	0.24	-3.05	-2.81	-2.94	-2.9	-2.76
E-decentralization	-2.438 ***			-2.552 ***	-2.568 ***	-2.659 ***	-2.659 ***	-2.655 ***
	-9.25			-11.56	-11.43	-12.16	-12.12	-11.92
osrdecentralization		-1.967 ***	-1.968 ***					
		-17.16	-18.37					
fragmentation	4.15E-07	-2.20E-06	1.43E-06	2.11E-09	-3.61E-07	-1.48E-06	-1.84E-06	-2.08E-06
	0.05	-0.36	0.22	0	-0.05	-0.19	-0.23	-0.25
intergovgrants	3.050 ***	1.228 ***	1.169 ***	3.059 ***	3.064 ***	3.186 ***	3.199 ***	3.197 ***
	9.8	6.93	6.57	10.41	10.42	11.32	11.15	11.04
population	9.32E-09	-4.04E-09	-9.86E-09	4.95E-09	6.28E-09	2.01E-08	2.20E-08	2.19E-08
	0.53	-0.27	-0.68	0.3	0.36	1.21	1.35	1.33
msapop	-1.39E-08	4.62E-09	1.03E-08	-6.78E-09	-7.99E-09	-2.36E-08	-2.55E-08	-2.53E-08
	-0.74	0.28	0.64	-0.38	-0.43	-1.33	-1.46	-1.43
income	-1.26E-06	-2.80E-06	-1.58E-06	-3.19E-06	-2.81E-06	-5.83E-06	-5.79E-06	-5.77E-06
	-0.41	-1.11	-0.58	-0.88	-0.71	-1.23	-1.22	-1.22
unemployment			0.772	-2.081 *	-2.006	-2.469 *	-2.420 *	-2.373 *
			0.92	-1.7	-1.57	-1.92	-1.84	-1.82
home rule			-0.020 **	-0.022 *	-0.022 *	-0.023 *	-0.022 *	-0.022 *
			-2.33	-1.94	-1.88	-1.95	-1.93	-1.9
democratvote					-0.051	-0.175	-0.178	-0.182
					-0.29	-0.98	-0.99	-1.02
lawyers per capita						38.119	41.440 *	41.464 *
						1.64	1.7	1.7
incomevariance							-8.25E-06	-8.31E-06
							-0.42	-0.42
TEL								-0.003
								-0.12
_cons	-2.118 ***	-2.096 ***	-2.111 ***	-1.824 ***	-1.813 ***	-1.731 ***	-1.739 ***	-1.742 ***
	-20.28	-22.01	-15.64	-10.49	-10.4	-9.46	-9.28	-9.37
R-square	0.641	0.750	0.660	0.660	0.670	0.670	0.670	0.670

*,**,*** coefficient significant at 10%, 5%, 1% respectively
Logit coefficients
z-values under logit coefficients, calculated using Huber-White robust standard errors

Table 23. Comparison of Local, State, and State and Local Leviathan Model Results*

	Local OSR	*Local Tax*	*State OSR*	*State Tax*	*S&L OSR*	*S&L Tax*
year2000	+		--	--	+	
E-decentralization	+	+	--	--	--	--
osrdecentralization	+	+	--	--	--	--
fragmentation	-- [a]	+ [b]				+ [f]
intergovgrants	--	--	+	+	+	+
population		--				
msapop		+				
income						
unemployment	+		-- [c]	-- [d]		
home rule		+		--		
democratvote	--				--	
lawyers per capita	+			+ [e]		+
incomevariance	--					
TEL	--	--			--	--

* General direction of coefficient effect across model specifications.
Left blank if variable generally insignificant across model specifications.
a. Only significant in Model 8
b. Not significant in Model 8
c. Weakly significant
d. Weakly significant
e. Weakly significant
f. Not significant in Model 8

Table 24. State and local self-selection models variable definitions and sources

Variable Name	Variable Definition	Source
Dependent Variables		
Local Tax Size	local tax revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
Local OSR Size	local own source revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
State Tax Size	state tax revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
State OSR Size	state own source revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
Leviathan Variables		
Home rule	Degree of home rule power for localities; 1=Dillon's Rule, 2=Weak Dillon's Rule, 3=Weak home rule, 4=Strong home rule	Variable compiled by author with reference to Turnbull & Geon (2004), Krane, Rigos, Hill (2001)
E-decentralization	share of local expenditures in total state and local spending	Computed from *Census of Governments*
OSR decentralization	share of local own source revenue in total state and local own source revenue	Computed from *Census of Governments*
Fragmentation	total number of all local government units in a state	*Census of Governments: Vol.1, No. 2, Individual State Descriptions*
Intergovgrants	dollar value of grants to local governments as a share of state expenditures	Computed from *Census of Governments*
Population	state population	*Census of Population*
MSApop	share of population in MSA	*Census* Tiger Database
Medhhincome	median household income (1989 $'s)	*Census* SF3
Incomevariance	variance in *Medhhincome* across counties divided by state population	Calculated by author
Unemployment	state rate of unemployment	BLS: Local Area Unemployment Statistics
Democratvote	% of state popular vote for democrat presidential candidate (1992 and 2000)	1994 City and County Data Book and http://www.cnn.com (Date: 01/06/01)
Lawyers per capita	# of lawyers (primary occupation) in state divided by state population	Equal Employment Opportunity Files of *Census 1990* and *2000*
Year2000	dummy variable for year 2000 = 1, base year is 1990	compiled by author
Self-Selection Identification Variables		
Hrdummy	Home rule dummy = 1 if weak, strong HR	Variable compiled by author with reference to Turnbull & Geon (2004), Krane, Rigos, Hill (2001)
Local Tax Size difference	Difference in predicted local tax size for Dillon's Rule and home rule	Estimated by author
Local OSR Size difference	Difference in predicted local own source revenue size for Dillon's Rule and home rule	Estimated by author
State Tax Size difference	Difference in predicted state tax size for Dillon's Rule and home rule	Estimated by author
State OSR Size difference	Difference in predicted state own source revenue size for Dillon's Rule and home rule	Estimated by author

Table 25. State and local self-selection models summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variables					
Taxshare	94	0.101	0.011	0.067	0.141
OSRshare	94	0.130	0.012	0.101	0.166
Leviathan Variables					
Home rule	94	2.681	1.018	1	4
OSR decentralization	94	0.412	0.076	0.2	0.545
E-decentralization	94	0.514	0.082	0.323	0.654
Fragmentation	94	1,829	1,500	119	6,835
Intergovgrants	94	0.246	0.060	0.089	0.411
Population	94	5,448,832	5,921,957	453,588	33,900,000
MSApop	94	4,388,063	5,469,860	134,368	29,300,000
Medhhincome	94	$29,465	$4,939	$20,136	$41,721
Incomevariance	94	1033	582	293	2808
Unemp	94	0.050	0.016	0.024	0.096
Democratvote	94	0.434	0.075	0.250	0.610
Lawyers per capita	94	0.003	0.001	0.001	0.005
TEL	94	0.404	0.493	0	1
Year2000	94	0.500	0.503	0	1
Self-Selection Identification Variables					
Home rule dummy	94	0.574	0.497	0.000	1.000
Local Tax Size difference	94	0.025	0.007	0.006	0.044
Local OSR Size difference	94	0.020	0.011	-0.009	0.057
Stateaid	94	0.352	0.072	0.125	0.554
Populationvariance	94	348887	512065	2	3127632
Historical popution change	94	47.5	54.1	4.0	309.0

Table 26. Local tax size

Self-selection-corrected Leviathan model sub-samples

n=40 Dillon's Rule, n=54 home rule

Dillon's Rule sample			home rule sample		
Local Tax Size	Coefficient		*Local Tax Size*	Coefficient	
mills0	0.664	***	*mills1*	0.200	
	3.08			1.27	
year2000	0.459	***	*year2000*	0.070	
	3.51			0.69	
E-decentralization	2.200	***	*E-decentralization*	1.570	
	4.72			1.04	
intergovgrants	-2.450	***	*intergovgrants*	-1.730	
	-5.36			-1.19	
fragmentation	0.0000325		*fragmentation*	4.60E-05	
	1.34			1.35	
MSApop	3.71E-10		*MSApop*	-2.60E-08	
	0			0.44	
population	-6.10E-09		*population*	-2.60E-08	
	-0.09			-0.45	
medhhincome	0.0000539	***	*medhhincome*	-0.0000123	
	5			-0.88	
incomevariance	0.0000994		*incomevariance*	4.34E-06	
	1.35			0.05	
unemployment	16.570	***	*unemployment*	3.440	
	3.24			0.99	
lawyers per capita	-243.500	**	*lawyers per capita*	104.200	
	-2.39			1.46	
democratvote	-2.240	***	*democratvote*	-0.988	
	-3.76			-1.13	
constant	-5.592	***	*constant*	-3.196	***
	-8.44			-2.81	
R-square	0.732			0.306	

*,**,*** coefficient significant at 10%, 5%, 1% respectively

z-values under coefficients, calculated with Huber-White robust standard errors

Table 27. Local OSR size

Self-selection-corrected Leviathan model sub-samples

n=40 Dillon's Rule, n=54 home rule

Dillon's Rule sample			home rule sample		
Local OSR Size	Coefficient		*Local OSR Size*	Coefficient	
mills0	0.617	***	*mills1*	-0.058	
	3.96			0.85	
year2000	0.586	***	*year2000*	0.109	*
	5.45			1.82	
E-decentralization	2.650	***	*E-decentralization*	3.280	***
	6.98			7.21	
intergovgrants	-1.180	**	*intergovgrants*	-2.786	***
	-2.56			-3.9	
fragmentation	-1.42E-05		*fragmentation*	-0.0000108	
	-0.73			-0.93	
MSApop	-1.01E-07	*	*MSApop*	-4.37E-08	
	-1.77			-1.52	
population	8.25E-08	*	*population*	5.03E-08	*
	1.67			1.84	
medhhincome	3.88E-05	***	*medhhincome*	-9.52E-06	
	3.7			-1.41	
incomevariance	3.17E-05		*incomevariance*	-0.0000595	*
	0.58			-1.81	
unemployment	19.250	***	*unemployment*	1.806	
	4.54			0.84	
lawyers per capita	-137.800	*	*lawyers per capita*	86.890	*
	-1.69			1.87	
democratvote	-2.480	***	*democratvote*	-0.102	
	-5			-0.3	
constant	-5.490	***	*constant*	-3.970	***
	-10.7			-15.12	
R-square	0.72			0.698	

*,**,*** coefficient significant at 10%, 5%, 1% respectively

z-values under coefficients, calculated with Huber-White robust standard errors

Table 28. State tax size

Self-selection-corrected Leviathan model sub-samples

n=40 Dillon's Rule, n=54 home rule

Dillon's Rule sample			home rule sample		
State Tax Size	Coefficient		*State Tax Size*	Coefficient	
mills0	0.017		*mills1*	0.006	
	0.18			0.13	
year2000	-0.114		*year2000*	-0.079	*
	-1.35			-1.77	
E-decentralization	-2.060	***	*E-decentralization*	-2.747	***
	-5.66			-12.1	
intergovgrants	2.580	***	*intergovgrants*	3.562	***
	7.52			12.14	
fragmentation	3.25E-05	**	*fragmentation*	-0.0000139	
	2			-1.46	
MSApop	-4.50E-08		*MSApop*	-2.94E-08	
	-0.93			-1.44	
population	2.26E-08		*population*	2.67E-08	
	0.54			1.37	
medhhincome	-1.89E-05	**	*medhhincome*	3.93E-06	
	-2.29			0.83	
incomevariance	-2.06E-06		*incomevariance*	-0.0000452	*
	-0.06			-1.81	
unemployment	19.250		*unemployment*	-0.621	
	-1.01			-0.4	
lawyers per capita	-137.800		*lawyers per capita*	32.990	
	1.59			1.12	
democratvote	-2.480		*democratvote*	-0.326	
	0.62			-1.34	
constant	-5.490	***	*constant*	-2.120	***
	-4.04			-9.87	
R-square	0.746			0.723	

*,**,*** coefficient significant at 10%, 5%, 1% respectively

z-values under coefficients, calculated with Huber-White robust standard errors

Table 29. State OSR size

Self-selection-corrected Leviathan model sub-samples

n=40 Dillon's Rule, n=54 home rule

Dillon's Rule sample			home rule sample		
State OSR Size	Coefficient		*State OSR Size*	Coefficient	
mills0	0.019		*mills1*	-0.028	
	0.22			-0.47	
year2000	-0.086		*year2000*	-0.043	
	-1.07			-0.72	
E-decentralization	-1.844	***	*E-decentralization*	-3.318	***
	-5.63			-12.21	
intergovgrants	1.972	***	*intergovgrants*	3.627	***
	6.68			9.32	
fragmentation	0.0000388	***	*fragmentation*	-9.00E-06	
	3.14			-0.71	
MSApop	-6.15E-08		*MSApop*	-1.38E-08	
	-1.36			-0.47	
population	3.50E-08		*population*	1.17E-08	
	0.88			0.43	
medhhincome	-1.89E-05	**	*medhhincome*	1.82E-06	
	-2.64			0.31	
incomevariance	0.0000204		*incomevariance*	-2.25E-06	
	0.6			-0.07	
unemployment	-3.163		*unemployment*	-0.666	
	-0.96			-0.35	
lawyers per capita	87.182	*	*lawyers per capita*	9.032	
	1.83			0.22	
democratvote	0.258		*democratvote*	-0.702	**
	1.01			-2.13	
constant	-1.640	***	*constant*	-1.408	***
	-3.97			-6.29	
R-square	0.794			0.718	

*,**,*** coefficient significant at 10%, 5%, 1% respectively

z-values under coefficients, calculated with Huber-White robust standard errors

Table 30. Home rule structural pobit estimation: local size

hrdummy	Coefficients Robust s.e.'s	Coefficients Robust s.e.'s
Local Tax size difference	29.502 1.15	
Local OSR size difference		17.301 0.81
democratvote	3.471 1.48	2.257 0.8
population variance	9.16E-07 * 1.9	9.18E-07 * 1.89
Historical population change	-0.001 -0.39	-0.002 -0.58
incomevariance	0.0000139 0.05	3.03E-05 0.12
stateaid	-1.042 -0.52	-0.604 -0.26
E-decentralization	-3.299 -1.48	-3.455 -1.48
unemployment	-34.103 ** -2.37	-29.956 ** -1.97
year2000	-0.914 ** -1.96	-0.873 * -1.75
_cons	1.952 0.96	2.555 1.34
pseudo R2	0.134	0.128

*, ** significant at 10%, 5% respectively.
Huber-White robust standard errors.

Table 31. Self-selection-corrected predicted mean shares

Mean predicted *Local Tax size* if home rule state	Mean predicted *Local Tax size* if Dillon's Rule state
0.045	0.02
Difference in means is 121.9%	
T-test 44.399	
Mean predicted *Local OSR size* if home rule state	Mean predicted Local OSR size if Dillon's Rule state
0.052	0.032
Difference in means is 63.89%	
T-test 23.009	

Table 32. Comparison of local and state & local self-selection

Self-selection-corrected Leviathan model sub-samples
n=40 Dillon's Rule, n=54 home rule

	Local				*State & Local*			
	Tax Size		*OSR Size*		*Tax Size*		*OSR Size*	
	DR	HR	DR	HR	DR	HR	DR	HR
mills	0.664 ***	0.200	0.617 ***	-0.058	0.247 ***	0.025	0.304 ***	-0.026
	3.08	1.27	3.96	0.85	2.89	0.48	3.78	-0.48
year2000	0.459 ***	0.070	0.586 ***	0.109 *	0.110 *	-0.006	0.225 ***	0.043
	3.51	0.69	5.45	1.82	1.67	-0.14	3.35	0.8
E-decentralization	2.200 ***	1.570	2.650 ***	3.280 ***	-0.494 *	-0.555 **	-0.124	-0.826 ***
	4.72	1.04	6.98	7.21	-1.72	-2.35	-0.44	-2.67
intergovgrants	-2.450 ***	-1.730	-1.180 **	-2.786 ***	0.612 **	1.112 ***	0.931 ***	1.109 ***
	-5.36	-1.19	-2.56	-3.9	2.25	2.83	2.97	2.84
fragmentation	0.0000325	4.60E-05	-1.42E-05	-1.08E-05	0.000 ***	5.23E-06	0.0000293 **	-8.23E-06
	1.34	1.35	-0.73	-0.93	2.58	0.51	2.1	-1
MSApop	3.71E-10	-2.60E-08	-1.01E-07 *	-4.37E-08	-3.32E-08	-2.22E-08	-2.33E-08	8.49E-09
	0	0.44	-1.77	-1.52	-0.96	-1.06	-0.56	0.32
population	-6.10E-09	-2.60E-08	8.25E-08 *	5.03E-08 *	1.47E-08	1.96E-08	5.26E-10	-5.17E-09
	-0.09	-0.45	1.67	1.84	0.47	0.98	0.01	-0.21
medhhincome	0.0000539 ***	-1.23E-05	3.88E-05 ***	-9.52E-06	9.77E-06 *	-7.42E-07	2.36E-06	-6.91E-06
	5	-0.88	3.7	-1.41	1.87	-0.14	0.37	-1.2
incomevariance	0.0000994	4.34E-06	3.17E-05	-5.95E-05 *	0.0000521 **	-5.23E-05 **	0.0001107 ***	-8.30E-06
	1.35	0.05	0.58	-1.81	2.02	-2.17	3.45	-0.26
unemployment	16.570 ***	3.440	19.250 ***	1.806	4.764 *	0.828	6.990 ***	0.786
	3.24	0.99	4.54	0.84	1.97	0.51	2.62	0.47
lawyers per capita	-243.500 **	104.200	-137.800 *	86.890 *	-26.295	68.755 *	-47.703	38.603
	-2.39	1.46	-1.69	1.87	-0.44	1.88	-0.79	0.98
democratvote	-2.240 ***	-0.988	-2.480 ***	-0.102	-0.776 ***	0.075	-1.176 ***	-0.519 *
	-3.76	-1.13	-5	-0.3	-3.39	0.21	-3.89	-1.68
constant	-5.592 ***	-3.196 ***	-5.490 ***	-3.970 ***	-2.532 ***	-2.361 ***	-2.141 ***	-1.313 ***
	-8.44	-2.81	-10.7	-15.12	-9.15	-12.64	-6.36	-6.98
R-square	0.732	0.306	0.72	0.698	0.474	0.300	0.586	0.238

*,**,*** coefficient significant at 10%, 5%, 1% respectively
z-values under coefficients, calculated with Huber-White robust standard errors

Table 33. Home rule structural pobit estimation: local and s&l comparison

	Local		*State and Local*	
hrdummy	Coefficients Robust s.e.'s	Coefficients Robust s.e.'s	Coefficients Robust s.e.'s	Coefficients Robust s.e.'s
Local Tax size difference	29.502 1.15		29.060 * 1.93	
Local OSR size difference		17.301 0.81		48.477 ** 2.1
democratvote	3.471 1.48	2.257 0.8	1.033 0.38	-1.389 -0.41
population variance	9.16E-07 * 1.9	9.18E-07 * 1.89	8.52E-07 ** 1.96	8.74E-07 ** 1.96
Historical population change	-0.001 -0.39	-0.002 -0.58	-0.003 -1.13	-0.003 -1.11
incomevariance	1.39E-05 0.05	3.03E-05 0.12	2.16E-05 0.08	1.96E-04 0.68
stateaid	-1.042 -0.52	-0.604 -0.26	-1.970 -0.96	-2.061 -1.01
E-decentralization	-3.299 -1.48	-3.455 -1.48	-2.207 -1.08	-4.308 * -1.86
unemployment	-34.103 ** -2.37	-29.956 ** -1.97	-21.785 * -1.35	-29.246 * -1.94
year2000	-0.914 ** -1.96	-0.873 * -1.75	-0.562 -1.06	-0.725 -1.47
_cons	1.952 0.96	2.555 1.34	2.166 1.19	4.332 ** 2.04
pseudo R2	0.134	0.128	0.145	0.151

*, ** significant at 10%, 5% respectively.
Huber-White robust standard errors.

Table 34. Comparison of local and s&l self-selection-corrected predicted mean shares

Local	
Mean predicted *Local Tax size* if home rule state	Mean predicted *Local Tax size* if Dillon's Rule state
0.045	0.02
Difference in means is 121.9%	
T-test 44.399	
Mean predicted *Local OSR size* if home rule state	Mean predicted Local OSR size if Dillon's Rule state
0.052	0.032
Difference in means is 63.89%	
T-test 23.009	

State & Local	
Mean predicted *Tax size* if home rule state	Mean predicted *Tax size* if Dillon's Rule state
0.102	0.083
Difference in means is 22.80%	
T-test 24.172	
Mean predicted *OSR size* if home rule state	Mean predicted *OSR size* if Dillon's Rule state
0.127	0.105
Difference in means is 21.28%	
T-test 17.8	

Chapter 7

State Budget Stabilization Funds and Eminent Domain

This chapter presents empirical analysis of two additional types of constitutional limitations on government powers, state budget stabilization funds and eminent domain practices. The section on state budget stabilization funds extends the recent Wagner and Sobel (2006) study that finds weakly defined statutory state budget stabilization funds are positively correlated with tax and expenditure limitations. Their study does not directly examine the effect of state budget stabilization funds on the size of the public sector. However, weakly defined statutory funds allow states greater flexibility to bypass revenue and spending constraints imposed by tax and expenditure limitations. Under the leviathan hypothesis, states choose weakly defined funds in order to circumvent these limits and stronger constitutional funds to constrain leviathan power. The empirical evidence in this chapter supports the leviathan hypothesis. Constitutional state budget stabilization funds constrain the size of the public sector.

The eminent domain section examines the impact of the U.S. Supreme Court's decision in *Kelo v. New London* (2005) to uphold government use of eminent domain to acquire land for transfer to private parties when it serves a broadly defined public purpose like economic development. The empirical results are consistent with the Leviathan model; ceteris paribus, states that explicitly empower their local governments to use eminent domain for private economic development have larger government sectors than those that do not.

State Budget Stabilization Funds

Forty-four states currently utilize budget stabilization funds. Only 10 of these states had budget stabilization funds in place before 1980. Twenty states adopted their funds between 1981 and 1986. Gold (1983) and Douglas and Gaddie (2001) advocate the conventional view that the recession of 1980-1982, and resulting fiscal crises for many states, lead to the increase in the adoption of budget stabilization funds in the early 1980's. Wagner and Sobel (2006) present an alternative argument for the increase in fund adoption. They note that tax and expenditure limitation laws are another fiscal phenomenon arising in the period from 1980 to 1982. Since many of these laws have clauses requiring states to return some or all of a general fund surplus to citizens, state budget stabilization funds provide a way for states to retain their surpluses.

Every state except Vermont has some form of balanced budget rule; however in almost all cases these rules are written in stock rather than flow terms (Wagner & Sobel, 2006). If only the stock of funds must balance, states can run annual deficits financed by drawing down general fund surpluses from previous periods. Following this logic, only a budget stabilization fund with stricter deposit and withdrawal rules than provided for in the general fund surplus would better prepare a state for upcoming fiscal downturns. This reasoning implies that strict constraints should govern state budget stabilization funds; however, Wagner and Sobel (2006) find that 38 of 44 funds are statutory funds (which they show are generally less constrained than constitutional funds) and the majority of these funds are no more constraining than requirements for deposit and withdrawal of general fund surpluses. State legislators have more flexibility in designing statutory funds (they impose these on themselves) than they would in designing

constitutional funds, which citizens typically impose on legislatures through a successful voter referendum or citizen initiative.

Wagner and Sobel (2006) empirically test the hypothesis that some states created budget stabilization funds, or "rainy day" funds, to circumvent tax and expenditure limitation laws rather than to safeguard states from future fiscal crises similar to those experienced during the 1980-1982 recession. They use a discrete dependent variable with three possible values that represent whether a state has a constitutional budget stabilization fund, a statutory fund, or no fund. They expect to find tax and expenditure limitation variables, or TEL's, significantly correlated with the adoption of statutory funds but not correlated with the adoption of constitutional funds. They find that each of four indicator variables representing the existence of a TEL is positively correlated with the probability of adopting a statutory fund but not significantly correlated with the probability of adopting a constitutional fund. Furthermore, their results indicate that the presence of a TEL that restricts the usage of general fund surpluses strongly influences statutory fund adoption.

Empirical Budget Stabilization Fund Model

The leviathan models of Chapters 4 and 6, adjusted to include controls for constitutional or statutory state budget stabilization funds, provide a simple test of the hypothesis that constitutional funds constrain government size and statutory funds will not. Two variables capture the effect of the funds. The variable, *constitutional fund,* is a binary variable equal to one if a state has a constitutional fund. The states of Colorado, Delaware, Maryland, Oklahoma, and South Carolina have constitutional funds. The

variable, *weaker fund,* is equal to one if a state has a constitutional fund or a strictly defined statutory fund.[31] This variable includes Arizona, Indiana, and Michigan in addition to the above states. Define a strict statutory fund as one with strict deposit and withdrawal requirements. Using the 1-4 scale from Wagner and Sobel (2006), this includes statutory funds categorized with a ranking of 4 for withdrawal and deposit requirements. The analysis examines the effect of the funds on the state and local combined sector and on the local sector only. The matrices of exogenous regressors are identical in the local level and state and local level leviathan models. See Tables 35 and 36 for definitions of variables and summary statistics for the models.

Consider the same general fractional logit model describing government size discussed in Chapters 4 and 6. The present models estimate the effect of the funds on the size of the state and local sector and the local sector separately. The dependent variables are *s&l tax size, s&l osr size, local tax size,* and *local osr size* in separate specifications.

$$s_i = f(\mathbf{r}_{ij}, \mathbf{i}_{ij}, \mathbf{w}_{ik}, \mathbf{x}_{il}) + u_i \qquad (16)$$

where $0 < s(\cdot) < 1$ equals *s&l tax size, s&l osr size, local tax size,* or *local osr size* as defined above.

As in Chapter 4, equation (3), the vector **i** consists of institutional variables: *home rule, TEL*- measuring a composite of state tax and expenditure limitations, and *lawyers per capita*. The vector **w** includes fiscal variables: *E decentralization*- decentralization measured as the share of local expenditures in total state and local spending, *fragmentation*- fragmentation as measured by the total number of local governments in a state, and *intergovgrants*- a measure of grants to local governments as a share of state

[31] A strictly defined statutory fund is one that has strict deposit and withdrawal rules as defined in Wagner and Sobel (2006).

expenditures. The vector **x** comprises socio-economic and political variables: *income*- median household income, *population*, *msapop*- Metropolitan Statistical Area population, *unemployment*- unemployment rate for state, *incomevariance*- the variance of median household incomes across counties in a state, and *democratvote*- the percent of state population voting for democrat president in1992 and 2000 elections. The vector **r** is new in the models of this section and contains the observations for either *constitutional fund* or *weaker fund,* and u is a random error ~ N (0, σ^2).

Table 37 reports the logit estimates for *s&l tax size, s&l osr size, local tax size,* and *local osr size*. The results of Chapters 4 and 6 are robust to the addition of either measure of constitutional or weaker state budget stabilization funds. The coefficient on *constitutional fund* is negative and significant in the *s&l tax size* and *local tax size* models. The coefficient on *weaker fund* is not significant. This suggests that constitutional stabilization funds have a constraining effect on the size of the government sector, but the weaker strict statutory funds have no effect on government size. Only the models using tax revenue to measure government size capture the negative effect of constitutional funds. The funds have no effect in the own source revenue models. Additionally, there is no effect on the size of the state government sector.[32] These results are consistent with intuition. Tax and expenditure limit laws are generally associated with local sources of tax revenue, such as the property tax, and the argument set forth in Wagner and Sobel (2006) suggests that citizens approve constitutional funds to constrain the use of tax revenue surpluses. The results here provide additional evidence for this argument and for the leviathan hypothesis in general.

[32] The state level model results are not presented.

Eminent Domain for Private Economic Development

Eminent domain practices vary across states. The Fifth Amendment of the U.S. Constitution grants, among other things, eminent domain power in but a few general words: "nor shall private property be taken for public use, without just compensation." The recent U.S. Supreme Court decision *Kelo v. City of New London* (2005) upholds government use of eminent domain to acquire land for transfer to private parties when it serves a broadly defined public purpose like increasing the tax base or creating jobs.

The use of eminent domain for private economic development, upheld under the public purpose doctrine, raises questions about whether the practice actually serves the interests of the public in a broad sense. One question concerns the appropriate size and scope of the public sector. According to the broad public purpose doctrine expressed in *Kelo*, it is appropriate to use eminent domain in order to increase the local tax base. Local governments often point to the anticipated increase in tax revenues when trying to sell controversial eminent domain plans to the public. The question then becomes, what do state and local governments do with the proceeds from this larger tax base? Do they reduce the taxes on other residents or do the proceeds stay in the public sector? The question is whether the Supreme Court's current public purpose doctrine expressed in *Kelo* simply gives state and local governments a tool to pursue efficient economic development or if it just opens another channel through which state and local leviathans can expand their command over resources in the economy.

This section examines the empirical relationship between the eminent domain for private development allowed by the public purpose doctrine and the leviathan hypothesis of Brennan and Buchanan (1980). The question is whether the current expansive public

purpose doctrine articulated in the *Kelo* decision eliminates an effective constitutional constraint on government size. Or, are the combined effects of fiscal decentralization and horizontal competition able to hold the state and local leviathans in check regardless of whether or not they enjoy the broad eminent domain powers affirmed in *Kelo*?

The empirical results show that states that expressly grant broad eminent domain powers to local governments for private development purposes also tend to have larger public sectors than those that do not. Regardless of the net benefits from public support of private economic development, governments appear to exploit their eminent domain powers to promote greater public sector expansion, whether measured by the size of the combined state and local sector, individual state governments, or local governments.

Tables 38-40indicate the empirical specifications for each of the models. The dependent variables follow the forms discussed in Chapters 4, 6, and 7. These variables are constructed for state and local governments combined as well as state and local governments separately. The variable of main interest, *Eminent Domain,* is a dummy variable indicating a state whose constitution or legislation explicitly empowers local governments to use eminent domain for private development projects. We surveyed state approaches to *Kelo*-type eminent domain in 2000 to construct this variable. The *Eminent Domain* variable takes a value of one for Connecticut, Kansas, Maryland, Michigan, Minnesota, North Dakota, and New York and zero for all other states in the sample.

A positive coefficient on the *Eminent Domain* variable indicates that granting such power opens another channel for local leviathans to exploit expanded tax bases to grow the relative size of government. A negative coefficient contradicts the leviathan model. We suspect that our estimates of this coefficient might be biased toward zero

because many local governments are free to use *Kelo*-type eminent domain in some states that have not adopted a constitutional or legislative stance on the question. This suggests that the empirical test is biased against the leviathan hypothesis.

We do not include an indicator for states explicitly prohibiting expansive eminent domain powers for local governments in the models reported here. These states adopted their current legal stances toward eminent domain between the years 1957 and 1985, with the later adoptions possibly too recent to affect the public sector size in the sample period. Still, one might argue that a state that recently adopted a narrower view of eminent domain might have been really harboring the narrow view even during earlier decades, possibly placing informal constraints of some sort on local governments inclined to follow the more expansive doctrine (although we are not sure what form such constraints might take). In our preliminary empirical analysis we included a variable for those states that expressly forbid *Kelo*-type eminent domain to see if this was the case. The variable coefficient was always insignificant. A later version of this model controls for endogeneity of eminent domain using instrumental variables. The results do not change significantly.

Combined state and local size effects

Table 38 reports the logit estimates for models using relative size measures that aggregate each state and its local governments. Two versions of each model are reported, one using the own source revenue and the other the expenditure based measure of decentralization. The first two models in Table 38 measure government size in terms of tax revenues. The last two measure government size in terms of own source revenues.

The results of the independent variable included in the models of the previous chapters are robust to the addition of the eminent domain variable. The *Eminent Domain* coefficient estimates are significantly positive in models (1) and (2) revealing that states that expressly allow eminent domain for private development also tend to enjoy greater tax revenues. The estimates are also positive in models (3) and (4), although the significance is lower in model (4) using the expenditures-based measure of government decentralization. Still, the results indicate that states that have explicitly embraced the broad public purpose doctrine tend to have larger state and local public sectors than their counterparts that have not. These *Eminent Domain* results are consistent with the evidence of leviathans seen in the decentralization estimates. The broad public purpose doctrine appears to open another channel through which state and local leviathans can draw more resources into the public sphere.

Separate state and local size effects

It is also possible that eminent domain effects on government size may differ for state and local sectors. For example, state governments rely more on income and sales taxes than they do on the property tax. If the private development creates employment and income growth, state income tax revenues will increase. If it generates increased retail trade, sales tax revenue will increase. For local governments, on the other hand, sales and property taxes are the dominant sources of revenue. If new private development expands these tax bases, local revenue will increase. If local governments also award significant tax breaks to lure the new private development, however, local tax revenues may not increase significantly.

Table 39 reports the logit estimates for the separate state and local government size measures in terms of tax revenues while Table 40 reports the estimates for government size measures based on own source revenues. Most of the parameter estimates resemble what we would expect in light of the pooled state and local results in Table 38. Focusing on the *Eminent Domain* variable, the effect on state government size is similar to the pooled effect. The estimated effect on the size of local governments is sensitive to specification. At face value the estimates suggest that eminent domain powers at the local level appear to shift tax revenues from one locale to another (although recall that the eminent domain coefficient estimates are biased towards zero). Coupled with the significant expansionary eminent domain effect at the state level, these results are consistent with the notion that the type of private development supported by the exercise of eminent domain shifts property from residential or agricultural uses into categories that raise state government revenues. For example, removing modest residential or agricultural land from the tax base and substituting industrial, office, or retail property, shifts the land into uses that generate greater sales and income tax revenues, most of which accrue to states, not local governments. At the same time, though, we are not able to determine whether the estimates for local governments reflect the inability of local leviathans to fully exploit the advantages of using eminent domain to expand their reach or whether it reflects the offsetting effects of attendant local tax abatements or other fiscal inducements sometimes offered to private developers.

This section examined whether allowing eminent domain for private economic development purposes has any effect on the size of state and local governments. The recent U.S. Supreme Court decision in *Kelo v. New London* solidifies an expansive public

purpose doctrine that has gradually replaced narrower interpretations of the public use clause in the Fifth Amendment. The decision eliminates the federal constitution as a constraint on government eminent domain powers, instead relying on individual states to adopt their own explicit prohibitions if they are so inclined. The Leviathan model predicts that states that allow their local governments broad eminent domain powers will have larger public sectors than those that do not.

We identified the states whose constitutions or legislation expressly empower local governments to exercise eminent domain for private development purposes. These states generally have larger public sectors, results that are consistent with Brennan and Buchanan's (1980) leviathan hypothesis. The effect of broad eminent domain powers on state governments resembles that for combined state and local governments. The effect on the size of the local public sector varies across model specifications, ranging from no effect to effects resembling the state and combined state and local results. Taking these results together, it appears that--regardless of their usefulness in economic development programs--broad eminent domain powers also open an additional channel through which state and local leviathans can increase their command over resources in the economy. The empirical results indicate that, in terms of *Kelo v. Leviathan*, the U.S. Supreme Court's decision was decidedly in favor of Leviathan.

Conclusion

This chapter presented empirical results from two studies of institutional factors and their effects on government size. States have great latitude in choosing among varying degrees of constraint within budget stabilization funds, and states likewise are

free to determine how they interpret constitutional law regarding eminent domain power. These two studies test the hypothesis that these particular institutional choices have consequences for the size of the public sector.

The first study in this chapter extended research on state budget stabilization funds presented in Wagner and Sobel (2006). Their original hypothesis proposes that some states created budget stabilization funds, or "rainy day" funds, to circumvent tax and expenditure limitation laws rather than to safeguard states from fiscal uncertainty. The findings from their empirical investigation support this hypothesis; the use of weakly defined statutory budget stabilization funds, rather than strict statutory funds or constitutional funds, is strongly correlated with tax and expenditure limit laws. In particular, the presence of a TEL that restricts the usage of general fund surpluses strongly influences statutory fund adoption. This chapter tests the hypothesis that strict constitutional funds effectively constrain government size. The empirical results support this hypothesis; states that have constitutional budget stabilization funds tends to have smaller government sectors.

The second part of this chapter examines the *Kelo* (2005) decision, which upholds government use of eminent domain to acquire land for transfer to private parties when it serves a broadly defined public purpose like economic development. This empirical study tests the hypothesis that the broad public purpose doctrine in *Kelo* effectively removes one potential constitutional constraint on state and local governments. The empirical results are consistent with this hypothesis. States that explicitly empower their local governments to use eminent domain for private economic development have larger public sectors than those that do not.

Table 35. State budget stabilization funds and eminent domain

Variable Name	Variable Definition	Source
Dependent Variables		
Local OSR Size	local own source revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
State OSR Size	state own source revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
S&L OSR Size	state and local own source revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
Local Tax Size	local tax revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
State Tax Size	state tax revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
S&L Tax Size	state and local own source revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
Independent Variables		
Constitutional fund	denotes state has constitutional state budget stabilization fund	Variable obtained from Wagner and Sobel (2006)
Weaker fund	denotes state has either constitutional state budget stabilization fund or a strict statutory fund	variable obtained from Wagner and Sobel (2006)
Eminent Domain	state expressly allows eminent domain for private economic development	Compiled by author
E-decentralization	share of local expenditures in total state and local spending	Computed from *Census of Governments*
Fragmentation	total number of all local government units in a state	*Census of Governments: Vol.1, No. 2, Individual State Descriptions*
Intergovgrants	dollar value of grants to local governments as a share of state expenditures	Computed from *Census of Governments*
Population	state population	*Census of Population*
MSApop	share of population in MSA	*Census* Tiger Database
Medhhincome	median household income (1989 $'s)	*Census* SF3
Incomevariance	variance in *Medhhincome* across counties divided by state population	Calculated by author
Unemployment	state rate of unemployment	BLS: Local Area Unemployment Statistics
Democratvote	% of state popular vote for democrat presidential candidate (1992 and 2000)	1994 City and County Data Book and http://www.cnn.com (Date: 01/06/01)
Lawyers per capita	# of lawyers (primary occupation) in state divided by state population	Equal Employment Opportunity Files of *Census 1990* and *2000*
Home rule	Degree of home rule power for localities; 1=Dillon's Rule, 2=Weak Dillon's Rule, 3=Weak home rule, 4=Strong home rule	Variable compiled by author with reference to Turnbull & Geon (2004), Krane, Rigos, Hill (2001)
TEL	dummy variable for whether state has any type of tax or expenditure limitation on the state	Variable used in Skidmore (1999)
Year2000	dummy variable for year 2000 = 1, base year is 1990	Compiled by author

Table 36. State budget stabilization funds and eminent domain

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variables					
Local OSR Size	94	0.054	0.011	0.028	0.093
State OSR Size	94	0.077	0.013	0.052	0.108
S&L OSR Size	94	0.130	0.012	0.067	0.141
Local Tax Size	94	0.039	0.012	0.018	0.096
State Tax Size	94	0.064	0.010	0.04	0.086
S&LTax Size	94	0.130	0.012	0.101	0.166
Independent Variables					
Constitutional Fund	94	0.106	0.310	0	1
Weaker Fund	94	0.170	0.378	0	1
Eminent Domain	94	0.149	0.358	0	1
E-decentralization	94	0.514	0.082	0.323	0.654
Fragmentation	94	1,829	1,500	119	6,835
Intergovgrants	94	0.246	0.060	0.089	0.411
Population	94	5,448,832	5,921,957	453,588	33,900,000
MSApop	94	4,388,063	5,469,860	134,368	29,300,000
Medhhincome	94	$29,465	$4,939	$20,136	$41,721
Incomevariance	94	1033	582	293	2808
Unemp	94	0.050	0.016	0.024	0.096
Democratvote	94	0.434	0.075	0.250	0.610
Lawyers per capita	94	0.003	0.001	0.001	0.005
Home rule	94	2.681	1.018	1	4
TEL	94	0.404	0.493	0	1
Year2000	94	0.500	0.503	0	1

Table 37. State budget stabilization fund coefficient estimates

Dependent Variable	S&L Tax Size	S&L Tax Size	Local Tax Size	S&L OSR Size	S&L OSR Size	Local OSR Size
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Constitutional Fund	-0.065 **	-2.130 ***	-0.223 ***	0.005		-0.019
	-2.09	-13.05	-2.69	0.17		-0.29
Weaker Fund		-0.008			0.007	
		-0.31			0.29	
E-decentralization	-0.682 ***	-0.622 ***	1.951 ***	-0.539 ***	-0.542 ***	2.699 ***
	-3.93	-3.54	2.74	-3.34	-3.35	8.39
fragmentation	0.000	0.000	0.000	0.000	0.000	0.000
	0.86	1.04	1.31	-0.94	-0.95	-2.04
intergovgrants	0.957 ***	0.968 ***	-2.414 ***	1.052 ***	1.048 ***	-1.593 ***
	3.71	3.68	-3.64	4.88	4.84	-3.73
population	-6.59E-09	-9.99E-09	-8.73E-08	3.27E-09	3.36E-09	4.80E-09
	-0.49	-0.7	-1.61	0.21	0.22	0.21
msapop	5.88E-09	9.68E-09	9.59E-08	-2.75E-09	-2.79E-09	-1.44E-09
	0.39	0.61	1.62	-0.16	-0.16	-0.06
income	-3.09E-06	-2.63E-06	-4.87E-07	-4.23E-06	-4.32E-06	9.81E-07
	-0.78	-0.64	-0.05	-1.08	-1.1	0.18
unemployment	-0.090	0.561	1.084	1.198	1.208	6.332 ***
	-0.07	0.45	0.35	1.04	1.06	3.48
home rule	-0.009	-0.009	0.062 **	0.005	0.005	0.017
	-0.79	-0.85	2.4	0.55	0.56	1.17
democratvote	-0.116	-0.092	-0.717	-0.568 ***	-0.571 ***	-0.865 ***
	-0.54	-0.43	-1.64	-3.29	-3.3	-2.65
lawyers per capita	76.359 ***	71.127 **	95.918 *	38.903	39.603	85.495 **
	2.91	2.64	1.88	1.44	1.48	2.33
incomevariance	-1.44E-05	-2.68E-05	1.03E-05	-9.98E-06	-1.03E-05	-5.26E-05 *
	-0.78	-1.37	0.25	-0.56	-0.58	-1.8
TEL	-0.049 **	-0.057 **	-0.110 **	-0.054 **	-0.055 **	-0.113 ***
	-2.07	-2.31	-2.25	-2.39	-2.38	-3.35
year2000	-0.015	0.000	0.038	0.062 *	0.062 *	0.246 ***
	-0.45	0	0.42	1.85	1.85	4.8
_cons	-2.057 ***		-3.755 ***	-1.676 ***	-1.673 ***	-4.121 ***
	-12.32		-5.5	-11.36	-11.74	-16.18
R-square	0.310	0.291	0.410	0.276	0.276	0.594

*,**,*** coefficient significant at 10%, 5%, 1% respectively
z-values under marginal effects, calculated using Huber-White robust standard errors

Table 38
Logit estimates for state and local sector dependent variables S&L *Tax Size* and S&L *OSR Size*

Model	**(1)**	**(2)**	**(3)**	**(4)**
DEPENDENT VARIABLE	***S&L Tax Size***	***S&L Tax Size***	***S&L OSR Size***	***S&L OSR Size***
Independent Variables				
Eminent Domain	0.08**	0.08**	0.07**	0.07*
	(2.20)	(2.03)	(1.97)	(1.80)
OSR Decentralization	-0.27*	_	-0.34***	_
	-(1.87)		-(2.58)	
Exp Decentralization	_	-0.53***	_	-0.61***
		-(2.62)		-(3.48)
Fragmentation	1.10E-05	1.27E-05*	-0.00000874	-0.00000686
	(1.49)	(1.72)	-(1.29)	-(1.03)
Grants	0.29578	0.71**	0.52***	0.99***
	(1.33)	(2.47)	(2.76)	(4.17)
Home Rule	-0.01817	-0.01794	-0.00558	-0.00539
	-(1.47)	-(1.46)	-(0.59)	-(0.57)
Urban	4.29E-08	3.89E-08*	1.37E-08	9.44E-09
	(2.10)	(1.93)	(0.69)	(0.49)
Population	-3.99E-08**	-3.6E-08**	-1.01E-08	-6.27E-09
	-(2.20)	-(2.06)	-(0.57)	-(0.37)
Med Income	-5.77E-07	0.000000106	-0.00000497	-0.00000428
	-(0.17)	(0.03)	-(1.46)	-(1.26)
Unemployment	0.57504	0.56297	-0.60408	-0.60970
	(0.85)	(0.83)	-(0.93)	-(0.94)
Democrat	0.23808	0.17229	-0.26218	-0.33**
	(1.08)	(0.81)	-(1.63)	-(1.97)
constant	-2.22***	-2.15***	-1.58***	-1.52***
	-(16.11)	-(15.20)	-(13.16)	-(12.15)
R^2	0.189	0.214	0.196	0.231
n	94	94	94	94

*** significant at 1%, ** significant at 5%, *significant at 10%
z-statistics in parenthese, computed using Huber-White robust standard errors

Table 39
Logit estimates for state or local dependent variables *State Tax Size* and *Local Tax Size*

Model	**(5)**	**(6)**	**(7)**	**(8)**
DEPENDENT VARIABLE	***State Tax Size***	***State Tax Size***	***Local Tax Size***	***Local Tax Size***
Independent Variables				
Eminent Domain	0.08***	0.06*	0.18*	0.20*
	(2.79)	(1.85)	(1.67)	(1.83)
OSR Decentralization	-2.03*	_	2.40*	_
	-(18.94)		(6.47)	
Exp Decentralization	_	-2.39*	_	2.05*
		-(9.29)		(3.51)
Fragmentation	-6.76E-06	-2.67E-06	4.23E-05***	3.92E-05***
	-(1.21)	-(0.35)	(2.52)	(2.27)
Grants	1.11***	2.89***	-1.19***	-2.63***
	(6.45)	(9.00)	-(3.15)	-(4.02)
Home Rule	-0.02***	-0.02*	0.02803	0.03071
	-(2.80)	-(1.63)	(1.34)	(1.27)
Urban	6.99E-09	-6.54E-09	1.38E-07**	1.38E-07**
	(0.43)	-(0.36)	(2.49)	(2.39)
Population	-4.3E-09	3.93E-09	-1.29E-07***	-1.23E-07**
	-(0.29)	(0.23)	-(2.55)	-(2.36)
Med Income	-2.78E-06	-1.79E-06	-2.12E-06	-5.28E-07
	-(0.97)	-(0.48)	-(0.24)	-(0.05)
Unemployment	0.47314	0.64883	0.63137	0.42957
	(0.86)	(0.88)	(0.55)	(0.30)
Democrat	-0.15228	-0.19068	-0.12013	-0.19307
	-(1.28)	-(1.23)	-(0.36)	-(0.46)
constant	-1.96***	-2.02***	-3.94***	-3.69***
	-(15.93)	-(13.84)	-(7.98)	-(6.72)
R^2	0.772	0.641	0.509	0.391
n	94	94	94	94

*** significant at 1%, ** significant at 5%, *significant at 10%
z-statistics in parenthese computed using Huber-White robust standard errors

Table 40
Logit estimates for state or local dependent variables *State OSR Size* and *Local OSR Size*

Model	**(9)**	**(10)**	**(11)**	**(12)**
DEPENDENT VARIABLE	***State OSR Size***	***State OSR Size***	***Local OSR Size***	***Local OSR Size***
Independent Variables				
Eminent Domain	0.09***	0.06*	0.042	0.063
	(3.06)	(1.84)	(1.06)	(1.18)
OSR Decentralization	-2.26***	_	2.61***	_
	-(20.65)		(14.86)	
Exp Decentralization	_	-2.66***	_	2.30***
		-(9.20)		(6.24)
Fragmentation	-6.10E-06	-1.64E-06	-8.08E-06	-1.22E-05
	-(0.91)	-(0.18)	-(1.08)	-(1.23)
Grants	0.75***	2.74***	0.09217	-1.49***
	(4.51)	(7.88)	(0.41)	-(3.06)
Home Rule	-0.004	0.000	-0.010	-0.006
	-(0.45)	-(0.02)	-(0.75)	-(0.35)
Urban	-3.71E-09	-1.82E-08	2.53E-08	3.17E-08
	-(0.22)	-(0.90)	(1.08)	(0.95)
Population	6.58E-09	1.51E-08	-2.30E-08	-2.21E-08
	(0.42)	(0.79)	-(1.07)	-(0.74)
Med Income	-5.40E-06*	-4.12E-06	-2.98E-06	-1.17E-06
	-(1.71)	-(1.02)	-(0.82)	-(0.23)
Unemployment	-0.505	-0.287	-0.435	-0.635
	-(0.84)	-(0.36)	-(0.55)	-(0.53)
Democrat	-0.39***	-0.43**	-0.110	-0.193
	-(2.55)	-(1.96)	-(0.59)	-(0.62)
constant	-1.41***	-1.49***	-3.78***	-3.53***
	-(11.54)	-(10.03)	-(26.16)	-(14.59)
R^2	0.869	0.773	0.903	0.811
n	94	94	94	94

*** significant at 1%, ** significant at 5%, *significant at 10%
z-statistics in parenthese computed using Huber-White robust standard errors

Chapter 8

Home Rule and Overlapping Jurisdictions

The analysis in the previous chapters has not considered the effect of overlapping jurisdictions among the separate vertical tiers of state and local government. This chapter applies the overlapping jurisdictions model of Turnbull and Djoundourian (1993) to examine home rule's influence concerning the effect of county centralization on the size of the public sector. We model the demand relationship between county and municipal general expenditures as complementary, drawing upon the empirical findings from Turnbull and Djoundourian (1993) and Campbell (2004). Controlling for the share of county general expenditures in total local sector spending, the analysis implies that pushing service provision to the lowest level possible, municipalities, will have no effect on the size of government in home rule states; however, it will reduce the size of the public sector in Dillon's Rule states. This suggests that county governments have greater leviathan power than municipal governments in Dillon's Rule states.

Overlapping Jurisdictions

Turnbull and Djoundourian (1993) present a model of the demand relationship of overlapping jurisdictions at the local level in which county governments and municipal governments provide similar or identical services. Police and fire protection, parks and recreation, health services, and road construction and maintenance are some examples of the services that county, municipal, and sometimes even state governments each provide. If county and municipal expenditures are complementary, expansion of the county public sector will induce an increase in municipal expenditures, increasing the overall size of the

local public sector. If on the other hand there is a substitute relationship between county and municipal expenditures, additional spending at the county level will be met with less spending at the municipal level.

The overlapping jurisdictions hypothesis suggests that the demand relationship between county and municipal expenditures has consequences for the leviathan hypothesis, which maintains that greater competition for local residents constrains government's monopoly power and that there is an inverse relationship between the number of competing jurisdictions and the size of the public sector. Furthermore, the leviathan hypothesis implies that counties have greater leviathan power than municipalities, since counties face relatively few local competing jurisdictions, other counties. Empirical tests of leviathan prior to Turnbull and Djoundourian's (1993) study have overlooked this vertical dimension of jurisdictions in the state and local government sector. Turnbull and Djoundourian (1993) provide empirical evidence of a complementary relationship between county and municipal general expenditures. This complementary relationship suggests that greater spending at the county level induces greater spending at the municipal level contributing to a larger local public sector.

Campbell (2004) empirically tests the leviathan hypothesis at the local level and controls for the effects of overlapping jurisdictions and fiscal illusion. The approach follows that of Turnbull and Djoundourian (1993) based on the median voter model. Campbell (2004) uses 1980 data on police, park and recreation, and highway expenditures in an effort to minimize the effect of intergovernmental revenues. Empirical results of this study suggest that failure to account for the vertical relationship of local tiers overstates decentralization's negative effect on government size. The study

also finds empirical evidence in support of a complementary demand relationship between county and municipal per capita expenditures and evidence of leviathan at the county layer but not the municipal layer. Fragmentation at the county layer decreases county expenditures; however, it has no effect on municipal expenditures.

Geon (2005) uses county and municipal cross-sectional data to examine home rule's effect on overlapping jurisdictions. The study ranks home rule power separately for counties and municipalities and submits that greater home rule power for counties will constrain counties' leviathan behavior, since home rule counties will have greater freedom to provide services that compete with municipalities resulting in greater interjurisdiction competition for counties and municipalities. The empirical findings support the hypothesis that greater home rule power for counties allows counties to compete with municipalities, reducing the leviathan power of counties.

The county reaction function estimates of the pooled sample of home rule and Dillon's Rule governments yield a significant and positive coefficient on the variable measuring city expenditures. This is evidence that county and municipal services are symmetric complements. Splitting the sample and estimating the county reaction function for home rule counties and Dillon's Rule counties separately yields different results. In the home rule sample there is no evidence that counties and municipalities have a complementary demand relationship, evidence supporting the hypothesis that greater home rule power increases injurisdiciton competition between counties and municipalities. The Dillon's Rule sample estimates again reveal a complementary relationship between counties and municipalities, further evidence supporting the above hypothesis. These results suggest that greater home rule power for county governments

allows counties to better compete with municipalities for local residents, restraining the leviathan power of county and municipal governments.

Overlapping Jurisdictions Model

The empirical model in this chapter of the dissertation uses aggregate local level data to test the hypothesis that local government decentralization and home rule power for counties reduces the size of the local government sector. The model is loosely based on the median voter model for overlapping jurisdictions first presented by Turnbull and Djoundourian (1993) and later extended by Campbell (2004) and Geon (2005).

Consider the strategic interaction of representative municipal and county median voters in the choice for the optimal level of municipal and county public services. The analysis assumes that the median municipal voter is not the median county voter, so that municipal and county demands for public services are determined interdependently rather than jointly. From Turnbull and Djoundourian (1993), the municipal median voter's utility function takes the following general form:[33]

$$U = U(X, E_m, E_c) \quad (17)$$

where X represents the municipal median voter's spending on the private good, E_m is spending on municipal public services, and E_c is spending on county public services.

$$E_m = \text{Expenditures}_m / N_m^{\alpha} \quad (18)$$

$$E_c = \text{Expenditures}_c / N_c^{\beta} \quad (19)$$

where N represents municipal or county population according to its subscript and α and β are congestion parameters ranging from 0 to 1 for municipal and county public goods

[33] Bergstrom and Goodman (1973) and Borcherding and Deacon (1972) demonstrate deriving the private demand function for public goods.

respectively such that the parameter takes a value of zero in the case of a pure public good and a value of one for a pure congestible public good. The municipal government chooses E_m to maximize the median voter's utility, equation (17), subject to the median voter's budget constraint:

$$I = X + T_m + T_c \tag{20}$$

where T_m = the municipal voter's share of municipal taxes, T_c = the municipal voter's share of county taxes, and the price of one unit of the private good, X, is one dollar. The consumer's tax bill or share of taxes takes into account intergovernmental aid so that

$$T_m = s_m [N_m^{\alpha} E_m - A_m] \tag{21}$$

is the municipal tax bill which simply states that the voter's municipal tax bill is his or her share of municipal expenditures less the municipality's aid from other governments, and s_m is the municipal voter's marginal tax price or share of total municipal taxes, $N_m^{\alpha} E_m$ equals municipal spending, Expenditures_m, and A_m represents total intergovernmental aid received by the municipality. The general form for the county tax bill is

$$T_c = T_c (s_c, N_c, E_c, A_c) \tag{22}$$

Assume that $\delta T_c / \delta s_c > 0$, $\delta T_c / \delta E_c > 0$, and $\delta T_c / \delta A_c < 0$, and substitute (21) and (22) into the municipal voter's budget constraint, equation (20) to get

$$I + s_m A_m - T_c = X + s_m N_m^{\alpha} E_m \tag{23}$$

The earlier assumption that the municipal median voter is not the county median voter assures that X^* and E_m^* are those values which maximize (17) subject to (23). Solve (23) for X and substitute into (17) to get

$$U = U[(I + s_m A_m - T_c - s_m N_m^{\alpha} E_m), E_m, E_c] \tag{24}$$

Take the derivative of (24) with respect to E_m to get the first order condition

$$F = dU/dE_m = U_2 - s_m N_m^{\alpha} U_1 = 0 \qquad (25)$$

The second derivative of (25) less than zero satisfies the second order condition for a maximum

$$J = d^2U / dE_m^2 = U_{22} - 2s_m N_m^{\alpha} U_{12} + (s_m N_m^{\alpha})^2 U_{11} < 0 \qquad (26)$$

which holds for a strict quasi-concave utility function and is the Jacobian determinant for use in the implicit function theorem. From (25) we have the median voter's relative tax price equals the marginal rate of substitution between the private good, X, and municipal services, E_m

$$MRS_{Em.x} = U_2 / U_1 = s_m N_m^{\alpha} \qquad (27)$$

Solve (23) implicitly to obtain the municipal public demand function

$$E_m^* = \varphi (s_m, I, A_m, T_c, E_c,) \qquad (28)$$

Implicit differentiation of (25) yields the income effect on municipal expenditures

$$dE_m^* / dI = - [(\delta F / \delta I) / (\delta F / \delta E_m)]$$

$$= - [(U_{21} - s_m N_m^{\alpha} U_{11}) / J] > 0 \qquad (29)$$

which is positive under normality.

Turnbull and Djoundourian (1993), Campbell (2004), and Geon (2005) find a complementary demand relationship between municipal and county expenditures. Theoretically we view this result as a special case of the effect of county expenditures on municipal expenditures. Recall from equations (22) and (28) that county expenditures affect municipal expenditures through two associations: directly through the utility function and indirectly through the county tax term. Turnbull and Djoundourian (1993)

refer to these two effects as a *pure taste effect* and an *income effect*. After implicit differentiation of the first order condition (25), we have

$$dE_m^* / dE_c = - \{(\delta F / \delta E_c) / (\delta F / \delta E_m)\}$$

$$= - \{U_{23} - (\delta T_c / \delta E_c)U_{21} - s_m N_m^{\alpha} U_1[U_3 - (\delta T_c / \delta E_c)U_1]\} / J$$

$$= (s_m N_m^{\alpha} U_{13} - U_{23}) / J - (\delta T_c / \delta E_c)(s_m N_m^{\alpha} U_{11} - U_{21}) / J$$

Note that $dE_m^* / dI = (s_m N_m^{\alpha} U_{11} - U_{21}) / J$ from equation (29), and substitution yields

$$dE_m^* / dE_c = (s_m N_m^{\alpha} U_{13} - U_{23}) / J - (dE_m^* / dI)(\delta T_c / \delta E_c) \qquad (30)$$

The first right hand side term in (28) is the *pure taste effect* and the second right hand side term is the *income effect.* The *income effect* is negative under the normality assumption, including the negative sign. The sign of the *pure taste effect* depends on the effect of county services on the marginal rate of substitution between municipal services and the private good. A positive *pure taste effect* that is strong enough to offset the countervailing negative *income effect* results when municipal services and county services are symmetric complements. The empirical findings from Turnbull and Djoundourian (1993) and Campbell (2004) support the case of symmetric complements. Geon (2005) finds evidence to support a complementary relationship in a pooled sample of home rule and Dillon's Rule counties and in a separate analysis of only Dillon's Rule counties. Geon (2005) finds no relationship between county and municipal expenditures in home rule counties. This is evidence that greater home rule power for counties yields greater competition between counties and between counties and municipalities. The remainder of this chapter considers the case of symmetric complements.

The demand equation (28) for municipal services is also the median municipal voter's reaction function for the case in which the median municipal voter resides in the

same municipality as the county median voter. The two reaction functions for municipal spending and county spending respectively are

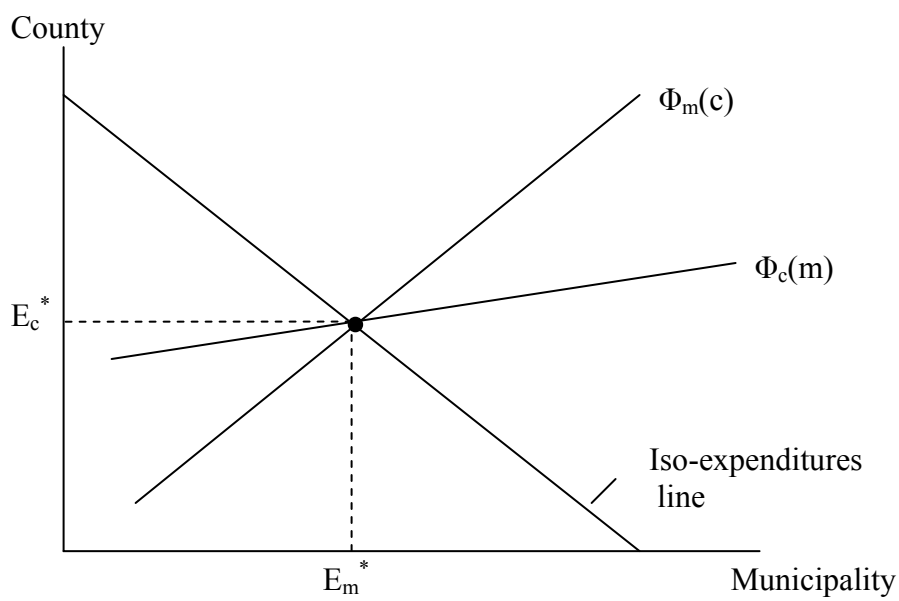
$$\varphi_m^* = \varphi\ (s_m, I^1, A^1_m, T_c, E_c,) \quad (31)$$

$$\varphi_c^* = \varphi\ (s_c, I^2, A^2_c, T_m, E_m,) \quad (32)$$

Figure 6 demonstrates the Nash equilibrium for county and municipal services in the case of symmetric complements.

Figure 6

Strong Complement Nash Equilibrium



County Centralization with Overlapping Jurisdictions

Home rule theory and empirical evidence presented in previous chapters of this dissertation and in Geon (2005) suggest that county level centralization of local public expenditures has different effects in home rule and Dillon's Rule states. Empirical evidence suggests that home rule power reduces leviathan power of county governments, increasing interjurisdiction competition between counties and municipalities as counties take on more services that municipalities also provide.

Figures 7 and 8 demonstrate the comparative statics of greater county centralization in home rule and Dillon's Rule states respectively. To simplify the comparison, we model the interaction of the municipal and county reaction functions, equations (31) and (32) respectively, as that in a complementary demand relationship. Empirical evidence from Turnbull and Djoundourian (1993), Campbell (2004), and Geon (2005) suggests this is a reasonable simplification.

Consider a $1 transfer of public expenditures from the municipal level to the county level. Total local public sector spending either remains constant or decreases as the result of this transfer depending upon whether counties have the same leviathan power as municipalities or less leviathan power. On the other hand, if counties have more leviathan power than municipalities, the same $1 transfer results in an increase in total local sector public spending. Figure 7 demonstrates the case for equal leviathan power for municipalities and counties in home rule states. The dotted line between $\Phi^0_c(m)$ and $\Phi^1_c(m)$ refers to the location of the county reaction function for in the case

that counties have less leviathan power than municipalities. Note that the iso-expenditures line remains the same after the transfer in the case that counties have the same leviathan power as municipalities.

Figure 7

Effect of Transfer in Home Rule State

"Counties and Municipalities Have Same Leviathan Power"

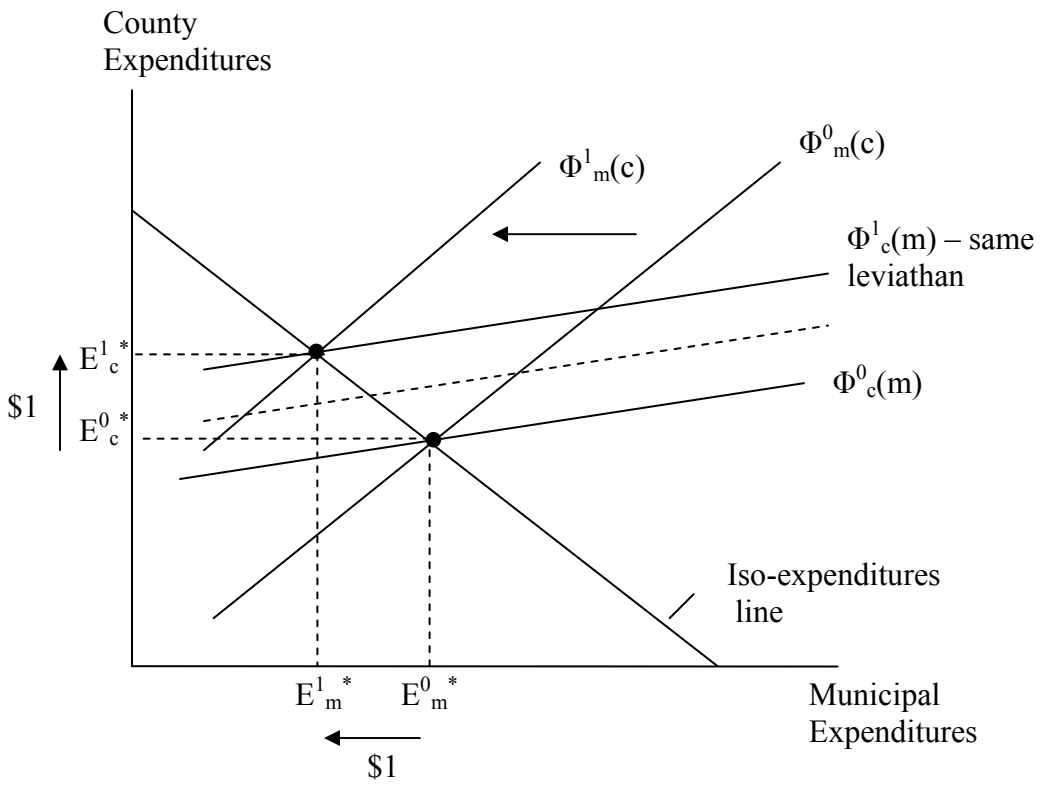


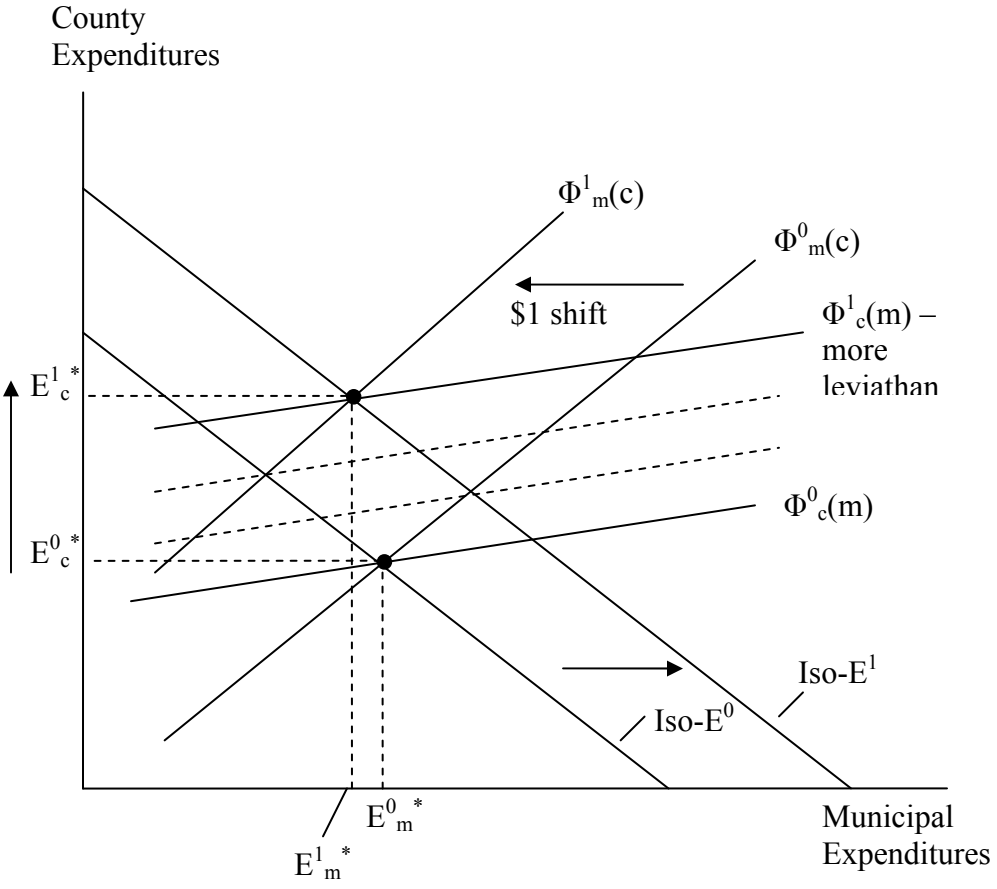
Figure 8 depicts the scenario in Dillon's Rule states. It shows an outward shift in the iso-expenditures line after the same $1 transfer. This outward shifts results if

counties have greater leviathan power than municipalities in Dillon's Rule states. The dotted lines in Figure 8, moving from bottom to top in the graph, represent county reaction functions under less leviathan power and same leviathan power respectively for counties. Note that municipal expenditures almost return to their initial level due to the complementarity of the demand relationship.

Figure 8

Effect of Transfer in Dillon's Rule State

"Counties Have Greater Leviathan Power than Municipalities"



Empirical Analysis

The empirical analysis of the overlapping jurisdictions model considers the effect of greater county level centralization of expenditures on the size of the total local public sector. Using data on the aggregate local public sector, this study compares the effect of greater county centralization across home rule and Dillon's Rule states. The empirical analysis examines pooled census data for 41 states over the 1990 and 2000 census periods and excludes the six New England states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont because their county governments do not perform complete roles comparable to the remaining U.S. states. Virginia is also omitted in this data set as in the data sets used for the empirical models in the previous chapters. Counties in Virginia take on functions traditionally reserved for municipalities; therefore counties and municipalities do not overlap in Virginia (Turnbull & Tasto, in press).

The empirical model is based on the self-selection model presented in Chapters 5 and 6 of this dissertation. Two dependent variable constructions are tested, *local tax size* and *local osr size.* The variables in the model follow those used in the previous chapters. The addition of a measure of centralization of expenditures at the county level relative to the municipal level allows us to compare the strength of county leviathan power across home rule and Dillon's Rule subsamples. See Tables 41 and 42 for definitions and summary statistics of the variables used in the two models. Tables 43 and 44 display the empirical results for the local own source revenue model and local tax model respectively.

Consistent with the empirical results of the previous self-selection models in the dissertation, the mills ratio coefficient in the Dillon's Rule subsample is positive and significant in both models, and it reminds us of the different effects the exogenous factors have on the measures of government size under home rule and Dillon's Rule regimes.

There are few changes in the coefficients under the new specification. *E-decentralization* has a significant positive impact on local government size in Dillon's Rule states as observed in the previous local sector empirical results. The coefficient on *intergovgrants* is also negative in the Dillon's Rule and home rule subsamples. The effects of *unemployment, lawyers per capita, and democratvote* are also consistent across specifications that control for county centralization and the previous models that do not control for county centralization.

Finally, we see that the coefficient on *county centralization* is positive and significant in the Dillon's Rule subsample in both models. It is not significant in the home rule subsample in either model. This supports the hypothesis that county leviathan power is stronger under Dillon's Rule. As expenditures are shifted to the county level of the local public sector, the size of the total local public sector expands in Dillon's Rule states. This effect is offset in home rule states. The greater home rule power increases interjurisdiction competition for counties, constraining leviathan. The empirical findings in this study confirm that vertical structure plays an important role in the performance of the public sector and in particular demonstrate that home rule power alters the nature of the interaction between counties and municipalities within this vertical structure.

Conclusion

This chapter extended the overlapping jurisdictions model of Turnbull and Djoundourian (1993) and examined the effect of county expenditure centralization on the size of the local public sector across home rule and Dillon's Rule regimes. Previous empirical studies of overlapping jurisdictions find that county and municipal expenditures exhibit a complementary demand relationship. This complementary relationship yields an increase in the size of the local public that is greater than the increase in either county or municipal expenditures alone.

The empirical findings in previous chapters of this dissertation and findings from Geon (2005) suggest that home rule power affects the vertical interaction of counties and municipalities. The hypothesis is that home rule power allows counties to offer services that compete with municipal services, increasing interjurisdiction competition and constraining leviathan at the county level. This chapter presented findings from empirical tests of this hypothesis, incorporating a measure of county expenditure centralization and examining its effect on local government sector size across home rule and Dillon's Rule regimes.

The empirical results support the hypothesis that home rule power constrains county level leviathan power. Centralization of expenditures at the county level has a positive effect on the size of the local public sector, but home rule power effectively constrains this tendency. These results reinforce the findings in the previous chapters that demonstrate the importance of home rule as an institutional factor that affects public sector performance. Furthermore, it reminds us that decentralization is more or less effective as lower tier governments have more or less ability to make decisions to meet

the demands of local constituents. Future empirical studies of decentralization will have more meaning if they incorporate differences in constitutional rules across localities, states, or countries that affect the ability of decentralization to actually push decisions governing public service provision and revenue acquisition down to the lowest tier possible.

Table 41. Overlapping jurisdictions model variable definitions and sources

Variable Name	Variable Definition	Source
Dependent Variables		
Local tax size	local tax revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
Local osr size	local own source revenues as share of personal income	Computed from *Census of Governments* and *Census of Population*
Leviathan Variables		
Home rule	Degree of home rule power for localities; 1=Dillon's Rule, 2=Weak Dillon's Rule, 3=Weak home rule, 4=Strong home rule	Variable compiled by author with reference to Turnbull & Geon (2006), Krane, Rigos, Hill (2001)
County centralization	share of county expenditures in total local sector spending	Computed from *Census of Governments*
E-decentralization	share of local expenditures in total state and local spending	Computed from *Census of Governments*
OSR decentralization	share of local own source revenue in total state and local own source revenue	Computed from *Census of Governments*
Fragmentation	total number of all local government units in a state	*Census of Governments: Vol.1, No. 2, Individual State Descriptions*
Intergovgrants	dollar value of grants to local governments as a share of state expenditures	Computed from *Census of Governments*
Population	state population	*Census of Population*
MSApop	share of population in MSA	*Census* Tiger Database
Medhhincome	median household income (1989 $'s)	*Census* SF3
Incomevariance	variance in *Medhhincome* across counties divided by state population	Calculated by author
Unemployment	state rate of unemployment	BLS: *Local Area Unemployment Statistics*
Democratvote	% of state popular vote for democrat presidential candidate (1992 and 2000)	1994 City and County Data Book and http://www.cnn.com (Date: 01/06/01)
Lawyers per capita	# of lawyers (primary occupation) in state divided by state population	Equal Employment Opportunity Files of *Census 1990* and *2000*
Year2000	dummy variable for year 2000 = 1, base year is 1990	compiled by author
Self-Selection Identification Variables		
Hrdummy	Home rule dummy = 1 if weak, strong HR	Variable compiled by author with reference to Turnbull & Geon (2006), Krane, Rigos, Hill (2001)
Local tax size difference	Difference in predicted local tax size for Dillon's Rule and home rule	Estimated by author
Local osr size difference	Difference in predicted local own source revenue size for Dillon's Rule and home rule	Estimated by author
Stateaid	share of state grants to localities in local revenues	Computed from *Census of Governments*
Populationvariance	variance in average population across counties in state divided by state population	Computed by author from *Census of Population*
Historical population change	state population change from 1970 through 2000	Historical *Census of Population*

Table 42. Overlapping jurisdictions model summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variables					
Local tax size	82	0.038	0.012	0.018	0.096
Local osr size	82	0.054	0.011	0.028	0.093
Leviathan Variables					
home rule	82	2.659	1.057	1	4
County centralization	82	0.251	0.147	0.110	0.810
E-decentralization	82	0.528	0.077	0.334	0.654
Fragmentation	82	2,009	1,523	205	6,835
Intergovgrants	82	0.257	0.054	0.151	0.411
Population	82	5,915,375	6,161,807	453,588	33,900,000
MSApop	82	4,735,609	5,722,619	134,368	29,300,000
Medhhincome	82	$28,801	$4,630	$20,136	$40,927
Incomevariance	82	1,092	597	341	2,808
Unemp	82	0.050	0.016	0.026	0.096
Democratvote	82	0.426	0.073	0.250	0.600
Lawyers per capita	82	0.0025	0.0008	0.0015	0.0055
Year2000	82	0.5	0.503	0	1
Self-Selection Identification Variables					
Home rule dummy	82	0.561	0.499	0	1
Local tax size difference	82	0.017	0.006	0.004	0.027
Local osr size difference	82	0.012	0.008	-0.007	0.034
Stateaid	82	0.357	0.067	0.232	0.519
Populationvariance	82	373,591	542,158	2	3,127,632
Historical population change	82	50.41	56.86	4	309

Table 43. Self-selection-corrected Leviathan model sub-samples

Local osr size is dependent variable
n=36 Dillon's Rule, n=46 home rule

Dillon's Rule sample		home rule sample	
Local osr size	Coefficient	*Local osr size*	Coefficient
mills0	0.319 ***	*mills1*	0.026
	5.64		0.36
County decentralization	0.356 **	*County decentralization*	-0.015
	2.48		-0.08
E-decentralization	2.190 ***	*E-decentralization*	3.183 ***
	7.90		5.83
intergovgrants	-0.170	*intergovgrants*	-2.330 ***
	-0.35		-2.73
fragmentation	1.54E-05	*fragmentation*	-1.36E-05
	0.72		-0.8
MSApop	-2.61E-08	*MSApop*	-5.94E-08 *
	-0.59		-1.74
population	1.52E-08	*population*	6.30E-08 *
	0.4		1.88
medhhincome	1.87E-06	*medhhincome*	-7.77E-06
	0.21		-0.86
incomevariance	-1.27E-05	*incomevariance*	-7.70E-05
	-0.34		-1.34
unemployment	9.300 ***	*unemployment*	1.390
	3.52		0.51
lawyers per capita	103.660 *	*lawyers per capita*	112.870 **
	1.8		2.12
democratvote	-1.983 ***	*democratvote*	-0.324
	-5.01		-0.84
year2000	0.366 ***	*year2000*	0.116 *
	4.69		1.66
constant	-4.460 ***	*constant*	-3.990 ***
	-12.3		-11.09
R-square	0.79		0.713

*,**,*** coefficient significant at 10%, 5%, 1% respectively
z-values under coefficients, calculated with Huber-White robust standard errors

Table 44. Self-selection-corrected Leviathan model sub-samples

Local tax share is dependent variable
n=36 Dillon's Rule, n=46 home rule

Dillon's Rule sample			home rule sample		
Local tax size	Coefficient		*Local tax size*	Coefficient	
mills0	0.254	***	*mills1*	-0.208	
	3.98			-1.18	
County centralization	0.472	**	*County centralization*	0.238	
	2.2			0.64	
E-decentralization	1.98	***	*E-decentralization*	1.128	
	6.29			0.64	
intergovgrants	-1.020	**	*intergovgrants*	-0.117	
	-2.05			-0.06	
fragmentation	7.45E-05	**	*fragmentation*	7.34E-05	
	2.21			1.58	
MSApop	1.05E-07	*	*MSApop*	3.45E-08	
	1.85			0.47	
population	-1.01E-07	**	*population*	-3.95E-08	
	-1.97			-0.54	
medhhincome	7.65E-06		*medhhincome*	-2.86E-05	
	0.81			-1.28	
incomevariance	9.16E-05	**	*incomevariance*	7.61E-05	
	2.5			0.61	
unemployment	6.664	**	*unemployment*	2.699	
	1.99			0.57	
lawyers per capita	72.198		*lawyers per capita*	143.649	
	1.09			1.59	
democratvote	-1.887	***	*democratvote*	-1.498	
	-4.24			-1.51	
year2000	0.250	***	*year2000*	0.103	
	2.71			0.94	
constant	-4.661	***	*constant*	-2.928	**
	-11.29			-2.31	
R-square	0.82			0.349	

*,**,*** coefficient significant at 10%, 5%, 1% respectively
z-values under coefficients, calculated with Huber-White robust standard errors

Chapter 9

Conclusion

Public sector decentralization is a popular theme in public policy debate. Policy reformers prescribe greater decentralization as a means to curb corruption in developing countries, reduce government waste, and increase the quality and efficiency of public service provision. Yet, at the same time there is a movement to centralize education and environmental standards, nationalize the sales tax, and to regionalize economic development policy. Strong, informed opinions influence both sides of all of these debates, and there are winners and losers in any policy decision.

Local discretionary authority, or home rule power, is one aspect of decentralization that considers institutional rules and restraints facing local governments. Any debate concerning more or less home rule power for local governments must consider the economic impact of these rules and restraints on the performance of the state and local government sector. Recent policy decisions have redefined institutional rules governing local government authority in the United States. In one example, the Supreme Court decision in *Kelo v. City of New London* (2005) grants states the freedom to extend greater eminent domain powers to local governments, effectively removing one constraint on local government authority. There are great economic consequences to this decision, and legislatures in many states have rushed to assembly to determine how their state will interpret this decision.

This dissertation answers many questions that arise concerning policy decisions' effects on public sector performance. Institutional rules governing local government

authority vary across states and across localities in many states, and the effects of decentralization are not invariant to changes in these institutional rules. Locational factors affect decentralization's impact on government size. The relative strength of interjurisdiction competition varies across urban and rural locales; this affects decentralization's impact on government size. These answers point to an important factor to consider when implementing decentralization policies. Institutions matter, and they affect policy outcomes.

This dissertation presents new empirical tests of home rule power and other institutional factors with respect to their effects on the size of the local, state, and combined local and state government sectors. The findings reinforce a growing literature concerned with the role of institutions in the public sector, finding that institutions have real, measurable effects on public sector performance. Furthermore, by extending traditional measures of fiscal decentralization to include measures of discretionary authority this dissertation contributes to the broader public finance literature. The empirical results demonstrate the importance of considering interstate and interjurisdiction variation in constitutional rules and restraints, finding that greater home rule power has a positive effect on the size of the public sector.

A review of the decentralization and tax and expenditure limitation literatures demonstrates the complexity of predicting institutional factors' impacts on public sector performance. The leviathan hypothesis, for example, maintains that decentralization is an effective indirect constraint on government size. The results of this dissertation, however, suggest that horizontal and vertical relationships often combine to produce seemingly counterintuitive effects. Previous empirical studies have found that traditional

measures of fiscal decentralization, the proportion of local expenditures or revenues in the combined state and local public sector, are consistent with a smaller government sector. The home rule analysis presented in this dissertation suggests that qualitative measures of decentralization provide better insight into the static effects of greater decentralization.

Traditional quantitative measures of decentralization do not distinguish between block grants or categorical grants or between funded and unfunded mandates and they do not capture the variation in rules and discretion regarding revenue and spending authority across units of observation. These general measures explain very little about the effects of varying degrees or types of decentralization. The empirical findings in this dissertation suggest that with greater discretionary authority or home rule power local governments can potentially increase their revenue and spending capabilities if they can differentiate their service bundle from would-be competing jurisdictions and if there are enough citizens that do not pose an out-migration threat to the jurisdiction. Greater decentralization does not necessarily increase interjurisdiction competition and reduce government size.

Using 1990 and 2000 Census data this dissertation answered several questions regarding institutional factors' effects on public sector performance. The empirical tests of the leviathan hypothesis in Chapter 4 incorporate institutional factors previously unaddressed in the economic literature. The results are consistent with past studies of decentralization that find an inverse relationship between the traditional fiscal decentralization measures and government size (Oates, 1985; Nelson, 1987; Zax, 1989).

Additionally, the findings are consistent with past studies finding a positive correlation between tax and expenditure limitations and reduced government size.

The analysis in Chapter 5 demonstrates that greater local sector discretionary authority, home rule power, can open the possibility for the emergence of local government leviathans. This chapter addresses home rule endogeneity and examines self-selection bias in the choice of home rule and its impact on observing the estimated home rule effect. The traditional IV estimation results and the self-selection corrected estimation results indicate that home rule has a positive effect on government size. On average, home rule localities use their greater fiscal, structural, and functional freedoms to expand the government sector. The forces of interjurisdiction competition are not sufficiently strong to overshadow this effect. The findings in this chapter suggest that future attempts to model institutional factors' effects on government size will benefit from proper identification of underlying endogenous processes.

In Chapter 6, we analyze the government sector on three separate levels: the local public sector, the state public sector, and the combined state and local public sector. This three-level analysis of government sector size provides for a greater understanding of decentralization's effects on government size. The empirical findings indicate that government size increases as states grant greater discretionary authority or home rule power. Contrary to the effect of greater decentralization, greater home rule power does not translate into a smaller combined state and local government sector. Additionally, the empirical results indicate that local sector size increases with greater state-to-local decentralization, even though the total state and local sector size decreases. These results highlight a key difference between home rule and decentralization. States that grant

greater discretionary power to local governments do not necessarily reduce their own state-level governing powers as the empirical estimates of home rule's impact on the size of the state and local public sector confirm.

Chapter 7 presents the results of two empirical studies that examine other institutional factors and their effects on the size of the public sector. The first study acknowledges that states have great latitude in choosing among varying degrees of constraint within state budget stabilization funds (Wagner & Sobel, 2006). These funds vary from weakly defined statutory funds to strictly defined constitutional funds. State legislators have more flexibility in designing statutory funds (they impose these on themselves) than they would in designing constitutional funds, which citizens typically impose on legislatures through a successful voter referendum or citizen initiative. Wagner and Soble (2006) find that tax and expenditure limitation variables, or TEL's, are significantly correlated with the adoption of statutory funds but not correlated with the adoption of constitutional funds, evidence that some state's legislatures adopt statutory budget stabilization funds to circumvent tax and expenditure limitations. The empirical study in the first section of Chapter 7 tests the hypothesis that strict constitutional funds effectively constrain government size. The empirical results support this hypothesis; states that have constitutional budget stabilization funds tend to have smaller government sectors.

The second study in Chapter 7 empirically examines the *Kelo* (2005) decision, which upholds government use of eminent domain to acquire land for transfer to private parties when it serves a broadly defined public purpose like economic development. This empirical study tests the hypothesis that the broad public purpose doctrine in *Kelo*

effectively removes one potential constitutional constraint on state and local governments. The empirical results are consistent with this hypothesis. States that explicitly empower their local governments to use eminent domain for private economic development have larger public sectors than those that do not.

Finally, in Chapter 8 of this dissertation we consider how overlapping jurisdictions affect decentralization's impact on public sector size across different institutional regimes. We test the hypothesis that home rule power allows counties to offer services that compete with municipal services, increasing interjurisdiction competition and constraining leviathan at the county level. The empirical results support this hypothesis, finding that centralization of expenditures at the county level has a positive effect on the size of the local public sector in Dillon's Rule states, but greater home rule power effectively constrains this tendency.

The studies in this dissertation collectively suggest that institutions matter. There is no one-size-fits-all policy for decentralization. There is no "law of decentralization" linking decentralization and public sector size. Future empirical studies of decentralization will have more meaning if they incorporate differences in institutional rules across localities, states, or countries. These institutional rules help determine the extent to which decentralization effectively pushes decisions governing public service provision and revenue acquisition down to the lowest government tier possible.

The empirical findings in this dissertation suggest that future research should attempt to more precisely identify institutional factors that affect home rule choice across states as well as across counties and municipalities. The structural home rule equations in this dissertation do not adequately describe the demand for home rule across states.

Home rule power across the states has changed little over time, making this a difficult task; however, historical observations of the economic and social conditions at the time states set the tone for local discretionary power in their constitutions should provide at least a starting point for more rigorous static analysis.

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