INSTITUTIONS AND INSTABILITY?:

A NEO-INSTITUTIONAL ANALYSIS OF STATE ECONOMIC VOLATILITY

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The undersigned, appointed by the dean of the Graduate School, have examined the dissertation entitled

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Chapter 1

Political Economy, Volatility, and Neo-Institutionalism

Currently the United States is struggling to pull itself out of the worst financial crisis since the Great Depression. Officially beginning in 2007, a countrywide recession has hit every state in the nation. Citizens and governments continue to point fingers of blame creating a tangled web of accountability and dissatisfaction. States have seen unemployment levels at all time highs and revenue streams plummet as governments try to provide services to the the displaced citizens. Many are keen to ask how did this happen? Who is at fault? How did the system fail us? These are indeed important questions that are likely to take many years (if ever) to fully understand. However, when assessing the recession, it is important to remember one aspect seems to be left out of most of the mainstream discussion. This is the fact that some states have handled the nationwide recession much better than others. That is to stay the recession's impact on individual state economies is not uniform across all of the American states. Why is this? Why are some states fairing better than others?

My dissertation provides one explanation on why state economies vary despite nationwide influences. I assert that by looking at the fiscally constraining institutions that states have adopted over the last 220 years (balanced budget requirements, super-majority voting rules, tax and expenditure limitations) we can gain a better understanding of the decisions that policymakers make. Additionally, by understanding these decision making processes I argue we can better understand the impacts of those institutions on state economies. However, instead of focusing specifically on economic growth I feel that we need to focus more energy on the aspect of risk, or volatility, in state economies to complement the literature on growth. Volatility has been shown to have important consequences in both policy decisions and practical applications. Thus, to more fully understand the variation in state economies, this dissertation offers an in depth examination of state fiscal institutions and their impacts on economic performance, focusing specifically on the aspect of state revenue volatility.

Institutions are commonly referred to as the "rules of the game" (North 1990) because they structure and limit how government works. When looking at political and economic questions it is important to not only look at the actors involved but also the rules which they must follow. In order to clearly understand public policy it is paramount to understand the institutions which have been developed in the individual states. Where did they come from? Why did some states adopt them and others did not? Perhaps most importantly, what are their impacts on public policy and policymakers?

I approach this work from a neo-institutional perspective. Institutions in the American states have been conceptualized in a variety of ways by a variety of authors over the years. They are important because they control how governments and their actors interact with each other. I visualize institutions as a road map. When thinking about policy decisions, elected officials generally know that they want to get from point A to point B. However, the path they take is determined by the individual institutions--which create the roads--in each individual state. Policymakers are constrained in their decision making ability by how the roads are laid out, and each state in the US has a relatively unique road system. By examining these roads we can begin to understand how and why some states react to nationwide issues differently.

I suggest in this work that in order to understand state economic performance specific state institutions should be more closely examined. I specifically examine the economic impacts of three fiscal institutions that many, but not all, states have adopted over the years: balanced budget rules, tax and expenditure limitations, and super-majority voting requirements.

A series of questions guide this work. First, I believe that it is important to understand why states originally adopted the fiscal institutions which I examine. Knowing where these institutions came from, the politics behind them, and their original goals provide a basis for understanding how these institutions could theoretically affect future policy decisions and state economies. Second, I ask how these institutions affect economic volatility in the states. The current literature provides some important consequences of volatile economies, but very few works examine the possible factors that can lead to volatile state economies. I believe that an institutional analysis can provide us with some insight into this.

The neo-institutional approach I take re-evaluates the common approach in much of contemporary political science and can provide us with a deeper understanding of public policy. Examining volatility provides information on an important, yet heavily understudied, aspect of state economic performance. I believe that by examining how fiscal institutions impact legislative policy making decisions and the subsequent impact on state revenue volatility we can increase our understanding of not only why some states fair better than others but also the impacts of public policy decisions in general.

In the remainder of this introductory chapter I develop the theoretical story which I test throughout the rest of the work. First, I look at the importance and implications of combining political and economic ideas when examining public policy. Second, I provide a brief synopsis of the current state of the literature and the gaps that this work proposes to fill. Third, I explain my main hypothesis and the theoretical roots. Forth, I go into some detail on the concept of volatility. I first provide a definition and then go on to discuss the literature surrounding volatility. Next, I discuss how I measure state economic volatility and provide a series of explanations that attempt to explain where volatility comes from. I conclude this introduction with an outline of what is to come in the remainder of the work.

Politics and Economics

Over the years there has been an increased interest in bringing together economics and politics to understand public policy. However, much of this work has been heavy on theory but light on empirics (Besley & Case 2003). One possible reason for this, on the politics side, is the endogenous nature of political institutions, economic conditions, and their interactions with one another (Knight & Levinson 2000). Unfortunately, there is a paucity of literature that systematically attempts to disentangle these relationships. My work examines state political institutions, specifically fiscal institutions, in order to gain a greater understanding of how political institutions affect economic policy decisions and outcomes.

My work focuses exclusively on the American states. The states are unique in that they are controlled in some aspects by the national government while at the same time vary greatly in other aspects due to the unique brand of federalism found in the United States. Additionally, the American states offer a great deal of variation, especially when compared to studies based on the national government as a whole. Of course, examining state economic policy is not a novel concept in political science, and there are numerous studies that examine the link between economics and politics at the state level. Early studies show that when examining some state policy areas, neither wholly economic nor wholly political explanations are adequate (Chubb 1985, Plotnick& Winters 1985). In fact, it is generally agreed that a politico-economic approach is best because as the potential for budgetary expansion grows so does the demand for government action (Godwin & Shepard 1976, Hanson 1984, Plotnick & Winters 1985).

Much early research focused on the theoretical foundations for combining economics with politics. For example, Plotnick and Winters (1985) developed a politico-economic theory of income redistribution. Their theory combined conceptions of both economists and political scientists. From the stance of economists, voluntary preferences lead to income redistribution where the state is involved because of the public good nature of redistribution (see Rogers 1974). On the political science side, explanations focus primarily on the conditions that lead to a demand for the state to intervene in economic matters by forming institutions. They combine the economic view that voluntary preferences lead to redistribution where people rely on the state because of the public nature of goods (e.g. Dawson & Robbins 1963) with the political science perspective which focuses on the conditions that lead to a demand for the state to intervene in economic matters and form institutions (e.g. Robbins 1963). They conclude that in order to understand many aspects of public policy both economic and political approaches must be used in unison.

Much work has developed around the politico-economic theory established by Plotnick and Winters. For instance, Barrilleaux and Miller (1988) include the concepts of ideology, diversity of interests, and administrative professionalism in a supply and demand model of political economy. Their study uses a market based model to explain variations in states' welfare medicine policy decisions. Their empirical results support the characterization of public policy (at least in the realm of welfare) being an outcome of market influences. Their logic is based on the economic idea that public spending increases with wealth (Aronson & Hilley 1986), and the political science idea that political development and group conflict also grow with wealth (Olson 1982).

Closely related to my own work is that of Besley and Case (2003) in which they highlight the progress in empirical political economy as it relates to variations in state institutional rules. They argue that since institutional reforms are often on the political agenda we need a framework with which to judge them. They differentiate between electoral institutions—which structure the process of electing representatives—and policy institutions, which structure the ways in which policy is enacted. Their main focus is on how institutions affect political outcomes such as voter registration, legislative districting, and campaign-finance laws.

Additionally, Paul Brace (1991) examines an observed paradox where many scholars describe heightened economic activism in the states, but there is a little empirical evidence that such activity makes any difference. Looking at three distinct time periods he finds that the US states have become more autonomous economic domains, and as they have become so state political attributes have come to play an increasing role in shaping state economic growth. Berry and Berry (1992) expand on this by examining the political and economic conditions that influence state tax adoption. Using an event history analysis they conclude that political opportunity (time until next election, fiscal crisis, regional diffusion) is consistent with the adoption of state taxes and therefore add support to Brace's contention that states have adopted a greater hand in their economic policies dependent on time.

The politico-economic framework has been used to examine a variety of policy areas as well. For example Joskow and Schmalensee (1998) use the basic framework to provide a detailed account of the US acid rain program in environmental policy, and James Porterba (1997) employs the basic tenants when examining public education.

Recent studies have also looked at how the politco-economic relationship shapes state policy priorities (Jacoby & Schneider 2001). Their work stems from the realization that the exact package of policies a state offers varies greatly from one state to another (Gray 1999, Nathan 1996, Rivlin 1992) and that government priorities constitute a fundamental and critical aspect of the policy making process (Baumgartner & Jones 1993). Policy priorities are a clear manifestation of the institutional commitments of the state (Jacoby & Schneider 2001) that are shaped by legislative and public demands (Raimondo 1996), interest group pressure (Gray & Lowery 1988, 1996), bureaucratic procedures (Barrilleaux 1999, Elling 1999) and executive proposals (Beyle 1996).

What We Know and Don't Know

What these studies tend to miss is the link between how the formation of economic institutions can constrain the decision making process of elected officials and therefore have significant impacts on the economic policy outputs in the states. My work examines not only the political and economic foundations of these institutions but also how these institutions constrain political actors in their abilities to form policies that may impact state revenue volatility. For example, there is a somewhat sizable literature based around the tax revolt of the 1970s and 80s (Citrin 1979, Lowery & Sigelman 1981, Hansen 1983; see Hansen 1990) but these studies are based around policy change (or a shift in policy direction), not output (the tangible consequences of policy). Additionally, almost all studies that look at how political institutions affect state economies are focused on growth (see Garret & Wagner 2003, Crain 2003).

Unfortunately few studies have looked directly at economic volatility, and most of the ones that have are focused on a comparative, cross-national analysis. However, these studies do provide some very interesting conclusions and findings on the impacts of volatile economies.

First, empirical studies have found that economic growth and volatility go hand in hand. In a cross-national context Ramey and Ramey (1995) combine growth theory with business cycle theory and find that countries with higher volatility have lower growth. This complements an earlier work (Ramey and Ramey 1991) which finds that greater volatility of productivity shocks leads to a lower mean output at the national level.

Other cross-national studies suggest similar conclusions. For example Hnatkovska and Loayza (2003) find that volatility and long-term economic growth are negatively related. “This negative link is exasperated in countries that are poor, institutionally underdeveloped, undergoing immediate stages of financial development, or unable to conduct countercyclical fiscal policies” (p.7).

A second interesting finding is the impact volatility appears to have on individuals and labor markets. Crain (2003) finds a systematic, positive relationship between state volatility and state income. His work suggests that high-volatility states are more likely to reward workers with an increased pay. This comes from workers looking at states like stock options. High risk lowers a worker's enthusiasm to relocate to that state and thus drives up the state's income per worker. On the other side of the picture workers may be willing to give up a little extra income in order to live in a more stable state. “Economic volatility translates into fiscal volatility for the obvious reason that personal income, retail sales, and corporate profits largely determine the tax base that supports state revenues” (Crain 2003, p.48).

Crain's (2003) work is by far the most comprehensive work to date on state economic volatility in the United States. In his work he attempts to answer the question of “Why do the American state economies grow at such vastly different rates and manifest wide differences in living standards” (p.2)? It is his assertion that we can gain some understanding of this puzzle by looking at state volatility. For the majority of the work Crain takes a very economic approach. He begins by outlining the theory of income convergence-or the idea that with open mobility and information state incomes should eventually converge to about equal in their economic growth. For much of the 20th century this trend appeared to be the case, but in the 1960s and 70s it quickly came to a close. Much of this phenomenon Crain explains by looking at state tax systems, specifically the significant change that many states made replacing much of their tax base from the traditional sales tax to a greater share dominated by the income tax. As Crain notes, in 1969 sales tax accounted for 80 percent of the tax revenue for the median state. However, by 1998 the sales tax remained the largest source of state revenue, but its share of total state revenue had decreased to 53 percent. Crain then goes on to examine the volatility of both income and sales taxes and finds that in nearly 2 out of 3 states income taxes produce a more volatile stream than sales tax, contrary to the conventional wisdom.

Throughout the rest of the work Crain attempts to explain the variations in state revenue using state volatility as an explanatory variable. Crain also looks at specific state institutions that theoretically could influence state revenues. Specifically he looks at strict balanced budget requirements, item reduction veto power, super majority requirements, tax and expenditure limitations, and biennial state budget cycles. He finds at least some evidence that these institutional arrangements impact either revenues per capita or revenues as a share of income. Crain also examines in a subsequent chapter factors that may influence budget priorities such as citizen and government ideology.

More closely related to the current economic crisis is the work of Garret and Wagner (2003). In this work put out by the Federal Reserve the authors outline American state government finances from World War II up until the current economic fiasco. The authors note several consequences and predictions of having a volatile state revenue stream. First, “If revenue streams in one state decrease more during downturns than revenue streams in another state, then the state with the more volatile revenue stream would be expected to experience a much more severe fiscal crisis during any given recession than the state with more stable revenues” (p. 6). In short, the authors argue that state's with greater volatility in their revenue streams are likely to experience worse conditions when encountered with an economic downturn than those with more stable streams. The authors also note that states have shifted their tax portfolios from sources that are less cyclical than that of the economy at large towards sources that are more cyclical. This is in line with Crain's (2003) portrayal of states shifting their tax portfolios away from the sales tax and relying more on the income tax, which he finds to be more volatile in most cases. Finally, Garret and Wagner acknowledges that certain state institutions—specifically balanced budget rules and TELs--may impact state revenues under economic downturns because they often “require state policymakers to cut expenditures, increase taxes, or use some combination of both to offset the period of fiscal stress” (p. 12).

What these studies tend to ignore is why the economies are volatile in the first place. We know a little bit about the consequences of volatile economies but not the factors that influence states having greater volatility. My work attempts to shed some light on those shadows.

The existing literature fails to recognize that the driving force behind state adoption of fiscal institutions often comes from a complex web of citizen pressure, legislative preferences, and political incentives. The adoption of these institutions constrains the decision making processes of both current and future lawmakers by altering the road map which they must follow. These constraints ultimately change the nature of the game and therefore can lead to drastic changes and differences in policy outputs.

By moving away from the common behavioral approach in politico-economic analysis to one based on a neo-institutional perspective I believe we gain a greater understanding of the relationship between state politics, policy, and economic outcomes. Public policy is almost always an attempt to get people to do things they otherwise would not do. Schneider and Ingram (1990) outline behavioral assumptions of policy tools including authority, incentives, capacity, symbolic, and learning tools. However, their work is based on elected officials attempting to influence citizens in order to achieve policy purposes. Their work misses two important relationships. First, citizens can, and often do, have an active role in the policy-making process. Through the very nature of representation elected officials are supposed to work for the good of the people thus giving average citizens a nontrivial amount of power. Second, elected officials also attempt to craft policy that affects the ability of future lawmakers to influence policy.

Policy-making is not just a one way street leading from politicians to citizens. The relationships are much more interdependent than that. The creation of institutions affects all aspects of these relationships. For example, in regards to citizen's involvement with elected official one could look at electoral rules, legislative districting, campaign-finance laws, and the presence of direct democracy, just to name a few (Besley & Case

2003). When looking at the relationship among current and future lawmakers one could look at tax-setting powers or line-item vetoes in addition to the specific institutions I examine in this work (balanced budget rules, TELs, and supermajority voting requirements). Institutions are formed by both citizens and elected officials and structure the interactions among the network players. I believe that ignoring important relationships in the policy-making process and discounting the rules that govern these relationships presents an incomplete, if not entirely incorrect, picture of state politics, policy, and economic outcomes.

State Institutions and Neo-Institutionalism

The main hypothesis that I propose in this work is that state institutions can help us understand why some states' revenue streams are more volatile than others. Even when we account for other important factors I believe that specific state institutions will have real and significant impacts on the volatility of state revenue streams. A neo-insitutionalist perspective suggest that institutions should have meaningful impacts on legislative decisions and therefore policy outputs. Given this I believe it is important to briefly discuss the theoretical reasoning on why institutions matter.

When examining state politico-economic institutions from a neo-institutional perspective it is important to be more concise on what I mean when I say this is a “neo-institutional” analysis, as the term has been used and conceptualized in a variety of ways by different authors. As Hall and Taylor (1996) point out there are at least three (sometimes four) different perspectives that political scientists employ that fall under the broad category of *neo-institutionalism*. Oddly, these differing perspectives all came about relatively contemporaneously of each other, however each perspective developed entirely independently of the others. The three approaches can broadly be classified as historical neo-institutionalism, sociological neo-institutionalism, and rational choice neo-institutionalism (very closely related to new economic institutionalism). I offer a brief summary of historical and sociological neo-institutionalism before a more in depth summary of rational choice neo-institutionalism, which serves as the basis for my approach in this work.

The roots of American political science lie in institutional theory. Old institutionalism tended to focus on issues of influence, coalitions, and competing values in collective action arrangements (Clark 1960, 1972; Selznick 1949, 1957). In these early studies the state was instrumental in formal analysis (see Wilson 1989, Woolsey 1893). Beginning in the mid-20th century, however, political scientists began to abandon institutional analysis in favor of behavioralism and rational choice. These schools of thought were individualist in nature and saw individual preferences and choices as *exogenous* to the political environment established by institutions. Political actors operated in a “stateless society” (Stillman 1991). The state was largely pushed aside in political science until Skocpol and others helped to bring it back into the picture (Evans, Rueschmeyer, & Skocpol 1985, Skowronek 1982).

Much of the current neo-institutional work stems from March and Olsen (1984, 1989, 1994, 1996). These authors argued that too much energy was being directed away from central political goals and collective choices, and this in turn was diminishing the original goals of the science. They argued that decisions made by policymakers are not exogenous to the decision making process but in fact incredibly *endogenous*. Much of the rationale behind neo-institutionalism revolves around the idea that individual preferences are shaped by a large extent by their involvement with institutions (Wildavsky 1987). As Lecours (2005) notes, "New institutionalism is a theoretical enterprise; its objective is not to describe institutions and how they work but rather explain political outcomes and make attempts towards generalization," (p. 14).

Historical neo-institutionalism derives from the structural-functionalism of group theory (Hall & Taylor 1996). At its base this theoretical approach focuses on the conflict among groups for scarce resources, and this conflict lies at the heart of politics. Under this view the state is no longer a neutral broker but rather a series of complex institutions that have the ability to shape the character and outcomes of group conflict.

Sociological neo-institutionalism, on the other hand, derives from the sub-field of organizational theory. This new institutionalism steps back a bit from a simple means-ends rationality and focuses more on an argument focused on culturally specific practices that may, or may not be, the most efficient for the task at hand. It employs a broader definition of institutions that includes symbol systems, cognitive scripts, and moral templates. Under the sociological view scholars look at the interaction between individuals and the institutions. Institutional change occurs not to increase efficiency, but rather to increase the cultural legitimacy of the institution.

Rational choice neo-institutionalism (especially in the economic sense) is based on the normative idea of reducing transaction costs and therefore making transactions more efficient. It stems from the “new economics of organization” which emphasizes property rights, rent seeking, and transaction costs when institutions are being developed. More or less this form of neo-institutionalism posits that formal (and informal) rules make things flow easier by helping solve the collective action problems that are often confronted. Originally, the development of new institutions can be explained as the result of an effort to reduce transaction costs when compared to undertaking the same activity without institutions (Williamson 1975; see also North & Thomas 1973). Rational choice neo-institutionalism has since been expanded based on the recognition that institutions are sometimes created to either constrain options available to current and future policymakers or to increase future transaction costs in order to maintain the status quo, rather than to just reduce transaction costs.

Institutional rational choice is premised in a an individual rational choice perspective which maintains a well known set of behavior assumptions, including: 1) Actors have fixed preferences, 2) they behave to maximize those preferences, and 3) they behave in a strategic manner to do so. In this individual perspective, the strategic interaction of actors determines political outcomes, and actors' behaviors are a result of how they think others will behave. Institutions become important because they structure such interactions and create the “rules of the game” (North 1990). The existence of institutions is a reflection of the value the actors (at least the original players) place on the this rule setting function. Hall and Taylor (1996) summarizes it quite nicely stating, “Thus, the process of institutional creation usually revolves around voluntary agreement by the relevant actors; and, if the institution is subject to a process of competitive selection, it survives primarily because it provides more benefits to the relevant actors than alternative institutional forms" (p.945).

This approach has generated a great deal of empirical work (for example see McCubbins & Sullivan *eds* 1987; Williamson 2000; Colomy 1998; Menard 2000) and has been used to examine the nature and functionality of a variety of institutions. The examination of legislatures and committees dominates this literature. Black's seminal work *The Theory of Committees and Elections* (1958), stand as the cornerstone of "old" institutional work on committees. Black (1979) however, provides an equally important piece of work on legislative and committee voting arguing for a neo-institutional approach where theorists should stop worrying about the analytic properties of unconstrained actors and focus more on the the factors that seem to constrain decision-makers who engage in collective action. More recent neo-institutional work on legislatures (see Diermeier & Myerson 1999, Groseclose & Snyder 1996) employ formal models in which the Nash equilibria depends on the institutional details in the overall legislative process. Additionally, neo-institutional analysis has been used to present solutions to McKelvey's intrasitivity theorem where institutions provide structure and order to collective choices and stabilize outcomes in legislatures (Shepsle 1976, 1979). Overall, early neo-institutional analysis has allowed scholars to draw important conclusions about policy outcomes in legislative settings (Weingast & Marshall 1988; Shepsle & Weingast 1987; Weingast, Shepsle, & Johnson 1981).

Directly related to the my present work, neo-institutionalism has also been used to explain politco-economic institutions. Early work acknowledges an emphasis on the political factors in economic life (Elliot 1978). Clark (1958) notes the cyclical nature of economics and politics where economic processes and interests "shape political issues and measures," while government policy, in turn, "increasingly shapes the course of economic affairs." He continues writing, "each discipline, and practice, enter inevitably into the field of the other."

From a practical standpoint, neo-institutionalism has been used to address a variety of politico-economic institutions such as central banks. Historically, rational choice institutionalism has dominated the central bank literature (see Cukierman 1992, Kirchner 1997). However, as mentioned previously, this old institutional approach views preferences as static and exogenous to the political environment. Bell (2002) finds that this type of structure is inconsistent with reality when looking at the formation of Australia's central bank, among others. He argues that using endogenous preference formulation provides a better, more realistic, account of the monetary policy and central banking changes over the last several decades.

Institutions have a "humanly devised" nature (North 1990). However, "although institutions are constructed socially and are thus internal to the domain, once established, they nonetheless become objectified and 'taken for granted' by the agents and govern their actions" (Menard 2000).

Fiscal Constraint in the States

There are nine fiscally constraining state institutions that scholars have looked at over the years. These are balanced budget requirements, gubernatorial line-item vetoes, constitutional debt restrictions, tax and expenditure limits, super-majority voting requirements, indexed income tax laws, fiscal note review procedures, program evaluation and sunset laws (ACIR 1987). While each of these institutions is theoretically interesting, I focus on three: balanced budget requirements, super-majority voting requirements, and tax and expenditure limitations for a variety of reasons.

Throughout the later part of this work I present a narrative that takes the reader through the course of American state fiscal and budgetary history as it moves from a budget state, to a welfare state, and into an economy state (see Figure 1.1). While this narrative is somewhat stylized, I present it as a way to think about and understand macro level trends. As the American states, and the nation as a whole, progressed so did the needs and desires of the citizens. These changing desires lead to an increased role of government which eventually resulted in various institutions being adopted in the states. Each of these institutions can be explored through a neo-institutionalist framework, and in the following chapters I provide an in-depth explanation relating these institutions to neo-institutional theory.

As discussed in more detail in the following chapters, balanced budgets were paramount after the industrial revolution and took on moral overtones in the early 1800s. Balanced budget requirements are the oldest and most widespread fiscally constraining institution in the states. Given this, I find it important to examine them in more detail because both the role of the individual states and budgeting ideas have shifted over the 220 year course of American history.

Up until the late 1930s governments, for the most part, did not interfere with economic matters. However, the Great Depression lead to a giant shift in the way people viewed government. People wanted the government to have a greater economic role and provide more goods and services to the citizens. The adoption of Keynesian economics allowed the government to justify its newly developed role and entered the United States into the welfare state of budgetary development (Hou 2006).

During the forty or so years in the welfare state budgeting mindset, state budgets became disjointed and unreliable. Around the 1970s a new state was entered in budgetary development. This new, and current, state was the economy state where state policymakers began to look at their budgetary responsibilities in a more macro as opposed to micro context. State budget officers started looking at fiscal health in a more long term perspective rather than dealing with issues ad hoc as they had in the past.

The Tax Revolt sparked the adoption of various fiscally constraining institutions beginning in 1978. The Tax Revolt was more of a social movement rather than a response to any specific tax policy. However, many tax and spending policies came out of the Tax Revolt. The two that have survived the longest and had the most impact on the states are super-majority voting requirements and tax and expenditure limitations. Being the two most prominent institutions coming from the Tax Revolt I include them in my analysis.

Expectations Under a Neo-Institutional Framework

The three institutions that I examine in this work I hypothesize will have a direct impact on state volatility. However, how and why I expect them to affect it varies based on the institution. Each institution I examine was adopted in order constrain current and future policy makers in varying regards. By constraining these individuals the institutions changed the "rules of the game" after their adoption. The goals which each institution was intended to achieve changes the decision making process of legislators and therefore can have meaningful impacts on policy output. In this section I briefly go over each of the three institutions I examine in the following chapters.

Balanced budget rules

Balanced budget rules were adopted in the states based on the idea that governments should be small and debt should be avoided. The general consensus of the people was that policymakers, both current and future, should be constrained in their ability to tax and spend money. Balanced budget requirements were an attempt to internalize the externalities presented in a common pool resource environment (von Hagen 2005). I hypothesize that depending on how stringent the balanced budget requirement is, I expect it to constrain policy makers decisions to be most in line with the status quo. By not being able to carry over debt, states are forced to internalize all of the associated costs of doing business. This should limit the desire and ability of governments to increase revenues and services in times of economic prosperity—which would increase volatility—as well as reduce the burden of providing services in times of economic downturn. Given this I expect more stringent balanced budget requirements to reduce large economic fluctuations and therefore reduce the overall volatility of state revenue streams.

Super-majority voting requirements

Super-majority voting requirements came out of the Tax Revolt at a time when there was a general social movement against government. Super-majority requirements increase the importance of the veto player. By changing the pivotal players (Krehbiel 1996) it becomes difficult for states to adjust revenues streams in times of crisis and economic downturn. When a recession occurs states with super-majority voting requirements are much more likely to cut spending rather than increase revenue. This in turn removes demand from the economy making it difficult for the state to recover. However, in times of economic prosperity legislators are more willing to collect additional revenues because the overall costs of the benefits provided to the citizens is more widespread. By limiting the fiscal decisions that policymakers can make in times of both economic recession and prosperity, the fluctuations of the natural business cycle in state economies are likely to be heightened and therefore increase volatility. Given this I hypothesize that states with greater super-majority requirements are likely to have more volatile revenue streams.

Tax and expenditure limitations

TELs, like super-majority requirements, were a product of the Tax Revolt. However, unlike super-majority requirements, TELs were meant to limit government growth by tying either taxing or spending (sometimes both) laws to the annual increase in either personal income or population. This greatly reduces the decision making horizon for policymakers and constrains them in times of financial difficulties and downturns as well as times of prosperity. When the economy drops policymakers, under the most restrictive TELs, are unable to raise funds necessary to provide public services and are therefore pushed into an economic emergency requiring a great deal of monetary borrowing. Likewise, when the economy grows, legislators are unable to increase revenues to adjust for previous payments and required services. Similar to super-majority requirements, this creates an environment of instability where state economies fluctuate as much as, if not more than, the ups and downs of the business cycle.

In this work I examine each of these under a neo-institutional framework. My expectations for each institution are based on the relevant literature on how they are likely to constrain the decision-making processes of policymakers. Each institution has a unique set of goals, and therefore my expectations and framing of the institutions varies a bit. For balanced budget rules and super-majority requirements I use a straight forward neo-institutional approach. However, for tax and expenditure limitations I include a discussion of the principal-agent relationship (which is a key component of rational choice neo-institutionalism). I do this because the goals of tax and expenditure limitations are inherently different than that of balanced budget rules or super-majority requirements as you will read in the following chapters.

Additionally, while each of these institutions in some way puts constraints on state-level policymakers (specifically legislators) my expectations on how they will impact state revenue volatility varies. As you will read in the following chapters, the rationale behind the adoption of each of these institutions is very different, and therefore so are the mechanisms through which they attempt to achieve their goals. Balanced budget rules were an attempt to limit government involvement from the outset. This structures them to constrain governments to the status quo before they began to expand during the welfare state. I believe this structuring will lead to a lower level of state revenue volatility in states with stricter balanced budget rules. Super-majority requirements, on the other hand, were an attempt to limit majority tyranny in state revenue collection and spending. By increasing the number of legislators needed to pass tax bills, the fluctuations of the natural business cycle are likely to be accentuated in both times of economic booms and bust (this will be discussed in more detail in Chapter 3). This then is likely to lead to more volatile revenue streams. Tax and expenditure limitations, while gaining popularity around the same time as super-majority requirements, function in a much different manner. TELs are an attempt to limit government growth by tying either taxing or spending to an index (change in population, inflation, personal income, etc). By doing so states are left with few options in times of economic downturns, and it is difficult for them to recover when the economy turns back around. Similar to super-majority requirements, this leads to more volatile revenue streams, as discussed in more detail in Chapter 4.

What is Volatility?

Since I specifically focus on how state fiscal institutions affect state economic volatility it is important to first understand what volatility is. The economic definition of volatility, in its most basic form, is a measure of risk based on the standard deviation of an asset return. Volatility is one component used to help gauge economic performance. Modern financial theory emphasizes a two-dimensional perspective when determining economic “success” based equally on both economic growth *and* risk. As Crain (2003) explains: “Just as rates of return alone provide an incomplete basis for gauging portfolio performance, the level or growth in state economies reveals an incomplete and perhaps distorted picture of performance. Taking the volatility of state economies into account refines the whole notion of 'economic success'” (p. 2). Measures of volatility give us a more complete picture of a state's economic progress because they provide an understanding of the fluctuation from equilibrium that state economies experience.

From a political science standpoint, the economic definition is more useful when put into context. At the state level, volatility refers to the mean-variance of state economic growth (be it revenue, GSP, income, etc). To illustrate this, Crain (2003) compares the economies of the two largest states (population wise), New York and California. In 1970 the two states had almost identical income per capita and income per worker. However, by 1999 income per worker was 15% higher in New York than California, and income per captia was 14% higher in New York than California. By traditional measures looking only at growth it appears that New York would be considered the economic “winner.” Following an analogy of portfolio theory, a measure of risk, or volatility, should also be considered. This creates a two-dimensional criterion for evaluating economic success. Looking again at New York and California, Crain finds that New York exceeded California in volatility by 60% when looking at income per worker and 25% when looking at income per capita. This reflects a high-income, high-volatility economy in New York which may, or may not, be preferable to the lower-income, lower-volatility economy of California. According to portfolio theory a risk premium exists for living in New York instead of California. A two-dimensional perspective provides more information and a more accurate picture of a state's economy.

Figure 1.2 illustrates revenue volatility in a selection of states based on a twelve year volatility measure that I discuss in more detail later on. As one can clearly see, there is a trend of states becoming more volatile beginning in the mid-1970s to mid-1980s. Additionally, there is significant variation among the states in their respective volatilities.

Figure 1.3 shows a comparison in a sample of three states between growth rates and revenue volatility. As Figure 1.3 indicates, growth rates vary a considerable mount within any given state. Revenue volatility, however, is much more stable. However as Figure 1.2 indicates, state revenue volatility levels do vary from year to year, and as both figures indicate there appears to be an upward trend over the years. What is important to remember when looking at volatility is that it is a measure of how much growth rates change over the years, not the overall level of growth. If a state had consistent growth rates then it would have a low volatility. However, the more growth rates vary, either positively or negatively, the greater volatility will be. Volatility measures the stability of growth rates. Another important aspect to note is that it is possible to have high volatility with a continued increase in growth rates over the years. However, this would mean that state revenues would need to consistently grow exponentially over the years which is incredibly unrealistic.

Measuring Volatility

State economic volatility can be measured in a variety of ways. The most common way of measuring volatility is to take the standard deviation of state growth rate for a given time period (Kormendi & Mcguire 1985, Grier & Tullock 1989, Ramey & Ramey 1995). The time period I examine in this work is 1969-2005. However, as Ramey and Ramey (1995), and later Crain (2003), note there are potential drawbacks to this approach and the authors provide two alternative ways to measure volatility.

The first proposed method is based off of a two-stage process. First, a base line regression model is run on the level of income as explained by basic factors expected to influence state income (ie education levels, population, percent of the population which is urban, and age). The second step, which measure volatility, is to then take the standard deviation of the error term (residuals). The idea behind this method is the unexplained part of the model (the residuals) account for the unknown factors influencing income fluctuation. One problem with this method is that it includes both predictable and unpredictable fluctuations in state economies.

An alternative to this method is to look at the standard deviation in "innovations" in income from a time-series forecasting equation (Ramey & Ramey 1995). Crain (2003) describes the method most simply writing:

> "The idea behind this second approach is that fluctuations in unexpected income correspond more closely to actual uncertainty about the economy than do fluctuations correlated with, say, a state's demographic composition. In other words, anticipated changes in the economy allow

> firms, workers, policymakers, and consumers to plan and adjust their choices appropriately. When the economy deviates from its expected path, plans get disrupted and productive activities require costly adjustments; for example, an unanticipated downturn in the economy distorts performance even more than an anticipated downturn" (p.34).

What this method includes that the others do not is a time trend to account for the "predictable" changes in state economies.

This, then, provides three somewhat established ways in which to measure volatility; one based on the standard deviation of growth rates, one based on the standard deviations of the residuals of a log-level regression, and one that includes a time trend to account for predictable fluctuations. The measure I use is in some ways the simplest of the three, the standard deviation of growth rates. I choose this measure over the others for a variety of reasons.

The first, and primary, reason I use the standard deviation of state growth rates relates to the nature of my research question. My main objective is to shed light on the possible reasons some state revenue streams are more volatile than other. To achieve this objective I need a measure of volatility that is broad. Unlike the research conducted by Ramey and Ramey (1991, 1995), and Crain (2003) volatility serves as the dependent variable in my work. Previous work has used volatility as an explanatory variable. As an explanatory variable there may be some use in having a narrow measure of volatility in order to avoid collinearity and/or model miss-specification. However, I look at volatility as a dependent variable in an attempt to understand the underlying possible correlates of a volatile revenue stream. Since very little is known about the causes of volatility, the most general measure seems the most appropriate place to start.

Another reason I use the measure I do is based on the counter-rationale Ramey and Ramey, and Crain use to dismiss it. In Crain's (2003) work he uses volatility to help explain per capita income. He dismisses using the standard deviation of growth rates because the theoretical foundation his work is based on makes it easier to use the variable level to connect the dots. This is same logic is found in Ramey and Ramey (1995). However, in my own work I hope to explain volatility in state revenue streams through the lens of neo-institutionalism. It is a much easier leap to see the connection between the constrained choices policymakers make and the fluctuation in revenue growth than to try and connect the dots between public choice and fluctuations of logged levels of GSP.

Additionally, state revenue is closely related to other metrics used to assess state economic activity. While states vary in how they collect revenue, metrics such as GSP provide some measure of the total tax capacity of the states, or how much money the state has available. As computed by the United States Department of Commerce, GSP entails the components of employee compensation, proprietor income, indirect business tax and nontax liability, and other capital charges. In any state, as GSP falls so do state revenues. However, the link between revenue and GSP is not linear but rather cyclical in nature. GSP adds to state revenues, however state revenues are used on programs and services which lead to an environment where a growth in GSP is possible. As revenues fall, and perhaps more importantly become unstable, it is difficult for the state to provide the services necessary for promoting greater economic success. Given the cyclical nature of state revenue and more common economic measures, and the fact that legislators can and do control how revenue is collected, focusing on how state institutions impact state revenue volatility shows to be very important.

There is one additional issue with the methods proposed by Crain and Ramey and Ramey. The methods they propose give a fixed value for volatility over an entire time span. This is not very problematic when the measure is used as an explanatory variable, however it is problematic when the variable is viewed as a dependent variable. Having a single measure of volatility over a time span means that there is no within state variation over time, only between state variation. For this reason I calculate the value of volatility similar to a moving average. For each state I measure volatility in three ways. For each year in the analysis I take the standard deviation of the revenue growth rate for four, eight, and twelve year clusters. For example, the four year volatility value for a state in 1978 is the standard deviation of the growth rate from 1975 to 1978; the eight year volatility runs from 1971 to 1978, and so on. This provides a continuous measure of volatility for each state for each time point.

What Accounts for Volatility?

As the literature shows, most research regarding volatility is focused on the outcomes of having a volatile economy rather than what conditions help create a volatile economy. However, we do get some clues that lead to a variety of possible explanations on why some states economies are more volatile than others. In this section I address four counter, rival explanations which may correlate with volatile revenue streams.

Political Environment

The overall political environment of a state is one of the most logical explanations to make. Given the vast literature on political ideologies, parties, unified governments, citizen ideology, and direct democracy it makes intuitive sense that these variables could impact a states overall economy. It is all but a given rule these days that Republicans are more conservative than their Democrat counterparts. Taking this into account it makes sense that state governments with Republican policymakers (both governors and legislators) would favor less government spending and taxation. In order to test for this in the analyses presented in the following three chapters I include variables that measure both the presence of a Republican governor in addition to a variable for unified Republican control of the government. I include a variable for unified control because studies have shown that economic voting is stronger under a unified government (Leyden & Borrelli 1995, Lewis-Beck & Nadeau 2000), and therefore citizens are more likely to hold a Republican run government accountable for their fiscal and economic decisions.

Policymakers are not the only ones important when making policy decisions. Citizens also have an active role by both electing representatives and taking part in direct democracy activities in states that allow them. To account for this I include a measure for citizen ideology (Berry et al 1998) that places state citizens on a scale of 0 to 100 based on their relative liberal/conservative leanings. I also include a dummy variable to indicate whether a state has either the initiative or referendum (or in many cases both). The presence of direct democracy is included because it has been shown to constrain state spending (Gerber 1996, Gerber & Phillips 2006). Generally speaking, the presence of either the initiative or referendum allow citizens an additional check on the government whether being directly used or by simply being a legislative threat.

Demographics

State population demographics is another intuitive explanation to make when thinking about overall volatility. For one, the elderly population in the United States continues to grow larger every year (Crain 2003) thus possibly requiring more services to be provided by the state. To account for this I include a variable for the percent of the state population which is over 65 years of age. Additionally, I include a variable measuring the percent of the population which is under 18 years of age. By controlling for both the population under 18 and over 65 years of age we are left with the individuals who are most likely to be presently in the workforce as well as those whom will be in the future and those that have most likely left (Elders 1992).

Also under demographic concerns is the issue of unemployment. State unemployment is important for a couple of reasons. First, those who are unemployed are likely to pay the least taxes in any given state, regardless of the type of tax. Additionally, unemployment requires considerable state resources and has consistently been one of the states' top budgetary concerns (Dye 1966, Crain 2003). I include two measures of unemployment. First, I account for individual state unemployment rates. Additionally, I include a measure of the federal unemployment rate to account for national influences that may be impacting the states.

The final demographic aspect I look at is population growth. States that experience a higher rate of growth have a broader tax base from which they can draw revenues. Conversely, if a state is losing population than the tax base becomes diminished. These varying population levels theoretically should correlate with state revenue volatility (Crain 2003).

Economics

State economic environment is perhaps one of the easiest explanation to make when examining correlates of economic volatility. As Crain (2003) points out some types of state taxes appear to be more volatile than others. To account for this I include variables measuring the overall percent of state revenue collected by state sales tax, income tax, property tax, and fuel tax.

Also included under the economic environment is the percent of manufacturing in the state. A high percent of manufacturing jobs could theoretically either raise or decrease volatility. Under a stable economy manufacturing can provide consistent jobs to citizens in addition to providing state revenue. However, if the business climate shifts dramatically a high level of manufacturing can result in amplified shocks to the economic system.

A final variable included to test this hypothesis is the amount of intergovernmental revenue the state receives. Studies have shown that the amount of revenue states receive from the federal government can have important consequences regarding fiscal policy (Shadbegian 1996). Additionally, those states which receive a greater amount of outside funding are more likely to supplant state expenditures with federal dollars (Nicholson-Crotty 2004).

Region/State

The final rival explanation I include in my work is the geographic location of the states. Throughout history different regions within the United States have experienced different times of economic prosperity. For instance, up until the middle of the 20th century states in the southern part of the country lagged in both income and population. However, after this time the south has made a surge as it catches up with the rest of the country. Additionally, tax policy has been shown to follow regional diffusion (Berry & Berry 1992). Finally, different regions have similar unaccounted features that may not be well examined by the other variables in the analysis. Unfortunately, including dummy variables for region causes collinearity in the right hand side of the equation. However, I include a variable controlling for fixed-effects by state sucking up the majority of the variation that would have been explained by regional dummies. This variable accounts for state specific within variation that is missed by the other explanatory variables.

Outline

The following chapters take an in-depth look at the impact of these institutions on state revenue volatility. Chapters 2 through 4 examine each of these state institutions in turn. Chapter 2 looks at balanced budget rules; Chapter 3 looks at super-majority voting requirements; and Chapter 4 looks at tax and expenditure limitations. In each chapter I outline the theoretical foundations of these institutions. I then present information on what we know about them based on the previous literature. Before my formal analysis I explain how each institution is measured and present a justification for these measurements. Fourth, I present my analysis and results on how the specific institution affects state volatility compared to the other rival explanations. I finish with a discussion of these results and include my concluding remarks.

Chapter 5 is a qualitative in nature. In this chapter I look at two states that are most similar in almost every characteristic except in their adopted institutions, Michigan and Ohio. I then take a detailed look at how the differences in these institutions have impacted these states and policymakers during the current economic situation.

Chapter 6 offers my conclusion to this work. I address what this work has added to the science as well as offering suggestions for future work.

Figure 1.1

Evolution of Economic States

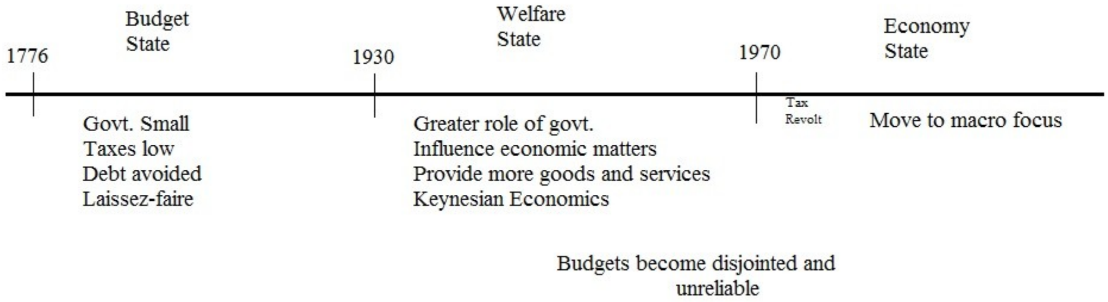
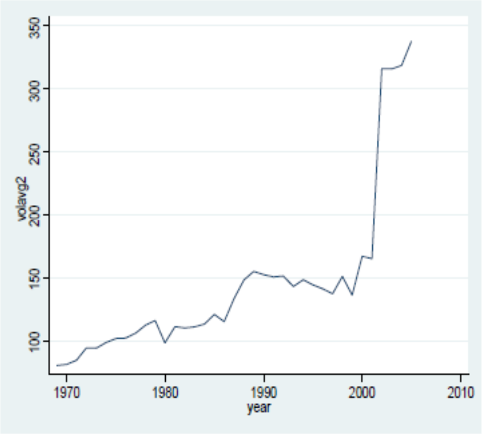
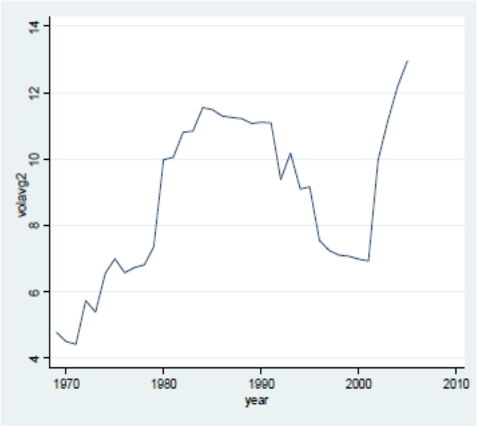

1776
Budget State
Govt. Small
Taxes low
Debt avoided
Laissez-faire
1930
Welfare State
Greater role of govt.
Influence economic matters
Provide more goods and services
Keynesian Economics
Budgets become disjointed and unreliable
1970
Tax Revolt
Economy State
Move to macro focus

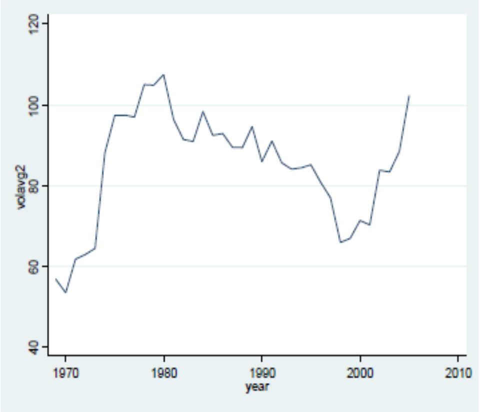
Figure 1.2 Volatility over Time



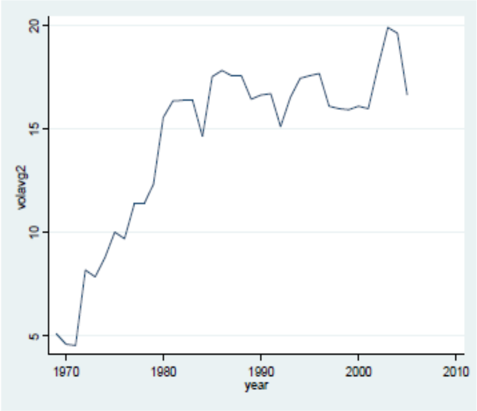
California



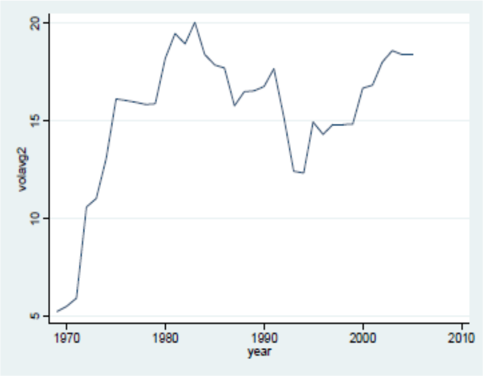
Alabama



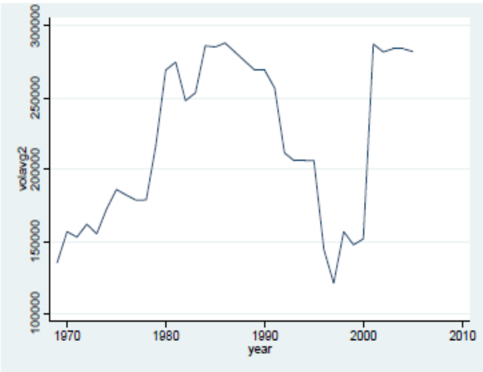
New York



Tennessee

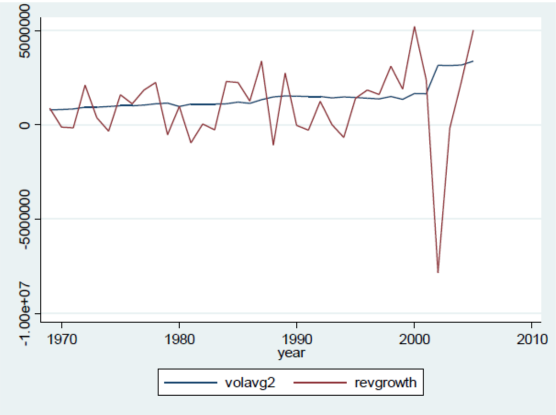


Missouri

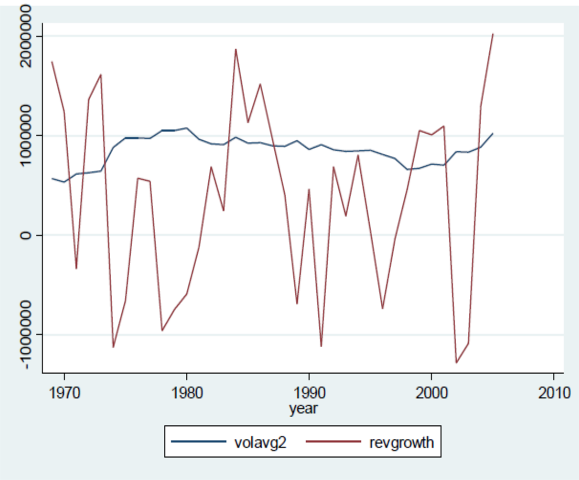


Wisconsin

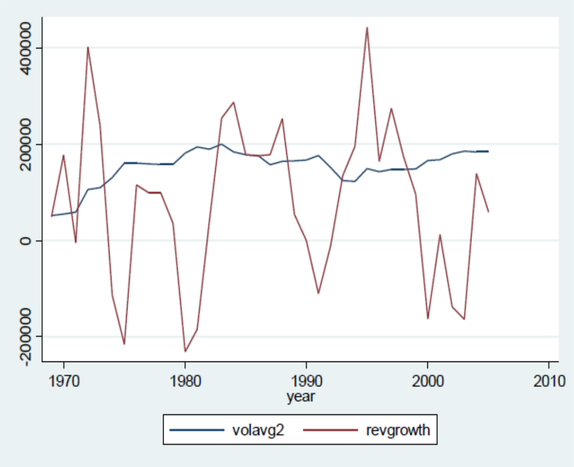
Figure 1.3 **Growth vs Volatility**



California



New York



Missouri

Chapter 2

Balanced Budget Rules: The Grandfather of Fiscal Institutions

The United States has a long history of imposing fiscal institutions to limit what governments and policymakers can and cannot do. From the early start of this country there were debates surrounding what the proper role of the government should be in regards to economic matters. Many believed that the government should be limited in its involvement with the economy and hold a laissez-faire position while others believed the government should directly try to control economic aspects. Based on lessons learned from the United Kingdom and the Industrial Revolution those desiring government to have a hands-off approach to the economy eventually won out. As the United States formed and began expanding there was a great belief that government should be kept small and debts should be avoided. These beliefs impacted state constitutions as they were being formed and adopted, and states included fiscally constraining institutions into there original forms of government. These beliefs, which garnered moral overtones by the early 19th century, presented themselves in the beginning as state balanced budget rules.

Balanced budget rules are by far the most widespread fiscal institution in the American states. Every state, with the exception of Vermont, has some form of official balanced budget requirement, and Vermont balances its budget every year by tradition. However, the stringency of these rules varies greatly among the states. Some of the states have adopted their balanced budget rule into their constitutions and others have rules that are statutory in nature. Additionally, what exactly having a “balanced” budget means varies considerably among the states. There are three broad groupings that are commonly used when looking at balanced budget rules (see Porterba 1995). The first, which 44 states follow, is that the governor of the state must submit a balanced budget. The second, which 37 states require, is that the legislature enacts a balanced budget. The final broad category is that the state legislature passes a balanced budget and restricts the carryover deficit (24 states of the aforementioned 37 follow this).

Not only are balanced budget rules the most widespread of the state fiscal institutions, but they are also in many respects the oldest. Most states adopted balanced budget rules simultaneously with statehood, and they have only been modified slightly with the advent of new state constitutions and updated statutes. Being both the oldest and most widespread fiscal institution, balanced budget rules seem to be the ideal starting place to begin examining how adopted institutions impact state economic success and policy.

The running theme in this work is that fiscal institutions do in fact matter. This goes against the “institutional irrelevance” hypothesis that there are always ways for policymakers to get around the rules. When looking specifically at balanced budget rules they are important because they inform the budget debate, structure the debate on government programs, and affect fiscal policy outcomes (Poterba 1996). As Poterba (1996) notes, balanced budget rules impose a certain “self control” for political actors because they provide a mechanism for constraining the discretion of future budget deliberators. This follows in line with Laibson's (1994) work where the author outlines a similar set of issues regarding individual saving behavior. Balanced budget rules, as are the other institutions that I examine in the following two chapters, are an attempt to constrain policymakers. They outline the “rules of the game” (North 1990) that current and future lawmakers must follow and create the complex network of roads that limit what direction public policy can go.

In this chapter I take an in-depth look at balanced budget rules. First, I examine why the states originally decided to adopt balanced budget rules. Second, I discuss the various literature that has accumulated on balanced budget rules and economic success. Third, I discuss the various methods for measuring balanced budget rules in the American states. Last, I examine how the varying nature of this institutions impacts state revenue volatility. When examining this institution I expect to find that states with the most stringent requirements will experience a lower level of volatility. Strongly enforced rules will likely constrain the policymakers decisions in favor of the status quo and therefore reduce large economic fluctuations. At the end of this chapter I present statistical evidence for this relationship.

The History of Balanced Budget Rules

Long before the United States was founded, important developments occurred which lead to the “norm of balance” in the American states' budgeting practices. During the dark ages in Europe the idea of any sort of budget, let alone one which was balanced, was practically unheard of. Under the feudal system the revenue stream and spending of kings and queens were often in complete disarray (Hou 2006). It wasn't until the early

19th century that public budgeting as we know it today began to develop (Webber & Wildavsky 1986, Caiden 1997, Schick 2000).

Like most institutions in the United States, balanced budgets came from a series of political debates and compromises, and most authors (historians and political scientists) agree that the development of the budget practice was a response to socio-economic demands stemming from the Industrial Revolution. In regards to balanced budgets the chief discussion was over what the government's proper role in economic affairs should be. In the early affairs of America this debate was dominated by the Federalists and the Democratic Republicans. The Federalists wanted government to help in economic growth while the Democratic Republicans preferred little, if any, government involvement and no accumulation of debt (White 1951, 1954; Hou & Smith 2006). This created a tension between those who wanted a small government and those who wanted a government which would help develop the economy. However, at the time most of this discussion was based on the affairs of the national government rather than the states. It is worth a note that the idea of a national balanced budget is still debated to this day in America.

The discussion of a balanced budget in early America can be found in the writings of Thomas Jefferson and James Madison. In a 1798 letter to John Taylor, Jefferson wrote, “I wish it were possible to obtain a single amendment to our Constitution. I mean an additional article taking from the Federal Government the power of borrowing,” (Ford 1896). A similar discussion can be seen in James Madison's letter to Jefferson: “Debts may be incurred with a direct view of the interests of the unborn, as well as the living...all that seems indispensable in stating the account between the dead and the living is, to see that the debts against the latter do not exceed the advances made by the former," (Padover 1953).

These writings came shortly after the end of the United Kingdom's industrial revolution and near the end of North America's where certain economic principals rooted themselves in economic thought. As Hou (2006) states: "During the Industrial Revolution, the orthodox economic doctrine, as well as philosophical wisdom, was a firm belief in the (Adam Smith's) invisible hand of the market: government should be kept small and taxes low so as to create entrepreneurial incentives for capital accumulation and investment. The fiscal policy at the time was barely anything more than 'laissez-faire'" (p.9). Those in favor of a small, limited government eventually gained greater favor because, based on the lessons of the past, it was believed that this would actually help the economy.

The norm of a balanced budget formed in response to the shift in the economic role of government after the Industrial Revolution. Based on the lessons learned from debt management in the 18th century, 19th century governments preferred to not borrow money because a balanced budget was more favorable to a public debt market (Webber 1980). Balancing the budget took on a normative element as people began to believe it was something that governments should do, and by the mid-19th century, as the United States grew, the norm of a balanced budget had taken on moral overtones (White 1951, 1954). It became widely accepted that taxes should be low and debt should be avoided, and the the norm of having a balanced budget solidified into a practical limitation on government that lasted from the early 1800s to 1960s (Hou & Smith 2006).

Stemming from this normative belief structure, as the states began to form in the United States almost every state adopted a balanced budget requirement in their originial constitutions and statutes. The moral overtones of a balanced budget, combined with a limited view of the role of government (see Figure 1.1), created an environment in which there was a consensus that government involvement, and therefore taxing and spending, should be very limited. As the country expanded over the next century and a half and new states were granted statehood these feelings were written into the states' constitutions or statutes by requiring that state governments have a balanced budget. The overall idea was that the state's should internalize the externalities associated with government in order to quell government growth (von Hagen 2005) The federal government also tended to abide by the same doctrine until the 1930's when Keynesian economics gained prominence at the national level (Hou 2006).

Between the early 1900s and the 1960s state governments, along with the federal government, gained a heightened importance in American life because citizens began demanding more services and goods be provided. This not only changed the way states raised revenues—shifting from a focus on the property tax to that of the income and sales tax—but also decreased role of the local governments because they were unable to handle the burden of heightened demands and shifted it to that of the states (Teaford 2002). Despite these changes state governments still held strong to the norm of a balanced budget.

However, budgetary development encountered increasingly troublesome problems beginning in the 1960s because of fragmented processes, structural imbalances, and huge cumulative debts arising from the increased demand (Hou 2006). These developments lead to a large outcry against government irresponsibility, which eventually lead to the development of states adopting the institutions of tax and expenditure limitations and super-majority voting requirements (which I discuss in the following two chapters). Despite these outcries, however, most states kept their balanced budget rules unchanged from the previous decades (Levinson 1998). Many balanced budget rules even belonged to the original states' constitutions dating back to the early 19th century.

Although balanced budget rules were primarily left unchanged after their original adoption, some important changes occurred in the 1970s and 1980s in budgetary policy. First, many states began adopting “rainy day funds,” or budget stabilization funds, that allowed them to save for unexpected revenue shortfalls (Levinson 1998). Few states had such funds before 1981 (Gold 1981), but by 1983 19 states had adopted them (Gold 1984), and by 1994 almost all (45) states had “rainy day funds” in place (ACIR 1985). Additionally, by the late 1970s many states borrowed money from the federal treasury to cover their unemployment insurance and repaid the loans during more prosperous years (Burtless & Vroman 1984). However, states' balanced budget rules only cover the general fund in states' budgets. This type of “creative accounting” is one way states with the strictest balanced budget rules found ways of dealing with revenue shortfalls.

Impacts of Contemporary Balanced Budget Rules...

State balanced budget rules have remained largely unchanged since their initial adoption based on the “norm of balance.” However, their current impact on state economies is largely unknown. The studies that have looked at the impact of these rules provide inconclusive, and to some degree contradictory, findings. Gold (1992) credits this to the lack of formal enforcement of balanced budget rules in the states. In modern America states often use “creative accounting” (as mentioned earlier) in order to bypass their long standing rules about balanced budgets. Some examples of “creative accounting” include states transferring oil trust funds to general funds (CA), shifting payroll so the last payday is in the next fiscal year (NY), and accelerating tax collection to move receipts across fiscal years (MN) (Poterba 1995). Schick (1998) contends that these events occur because balanced budget rules are based off an impractical norm: “A strict BBR is unworkable because the budget is sensitive to economic fluctuations and cannot be kept in balance when output falls and unemployment rises,” . Despite these attempts to bypass balanced budget rules, lawmakers are still constrained by the roads that the institution lays out. In this section I highlight some of the major studies that have examined balanced budget rules and their findings.

One of the earliest contemporary studies to examine the effects of balanced budget rules is that of Abrams and Dougan (1986). This early attempt found no significant effects of balanced budget rules on lawmakers' budget decisions. The study, however, was incredibly limited in its scope and only implemented a cross-sectional analysis. Abrams and Dougan did, however, suggest that future studies make use of panel data in their analysis, as I do in this work. More contemporary works show great discontinuity on the effects of balanced budget requirements. For instance, Bohn and

Inman (1996) find that only certain aspects of balanced budget rules—year-end no-deficit-carry-over provisions—have a significant and positive relationship with state general fund balances. Chaney et alia (2002) support the conclusion of "creative accounting" by finding that balanced budget requirements reduce pension fund levels because states draw from these in order to meet their balanced budget requirements.

However, other studies find that balanced budget rules are effective in their goals of keeping government small and avoiding debt. Alt and Lowry (1994) find that anti-deficit rules have real effects on the state's taxing and spending. This supports the conclusions found by Von Hagen (1991) and Bunche (1991) that states with strict balanced budget rules have substantially lower general debt than in states without them.

... on the Business Cycle and Volatility

Other studies find some indirect, or unintended, effects of balanced budget requirements. In regards to state economic volatility Schmitt-Grohe and Uribe (1997) find that balanced budget rules can be economically destabilizing. This supports the standard economic argument against balanced budget rules which states that these rules amplify the business cycle fluctuations during booms because states reduce taxes and increase expenditures while subsequently reducing demand in times of recession. This supports the findings of King, Plosser, and Rebelo (1988) who find that the amplitude of the real business cycle increases when governments follow balanced budget rules and finance state spending with the income tax. In a latter piece, Levinson (1998) finds further evidence that state balanced budget rules increase business cycle fluctuations, although this is more dramatic when comparing large states to small states. However, Alesina and Bayoumi (1996) find only small, negative, and insignificant results when examining how balanced budget rules effect the fluctuations in the business cycle. Balanced budget rules have also been found to affect the state bond market (Goldstein & Woglom 1992, Bayoumi & Woglom 1995, Lowry & Alt 1995).

On the other hand Poterba (1994) finds that specific balanced budget rules—no-deficit carry-over rules—are correlated with quicker fiscal adjustments when unforeseen deficits appear. This is somewhat supported by Rose (2006) with the finding that strict no-deficit carry-over rules counter the pre-election spending and post-election restraint pattern that is typical of the political business cycle. The most current research on the topic suggests that balanced budget rules do in fact matter for state economic decision-making (Hou & Smith 2010). What Hou and Smith add in their study is a different framework for analyzing balanced budget requirements. They argue that balanced-budget requirements must be looked at as systems, and each component must be taken into consideration. When looking at balanced budget requirements in this vein they find that certain parts of the balanced budget system do in fact contribute to states having more balanced budgets and fewer deficits.

The varying results in these studies show the need for more detailed studies such as mine. There seems to be evidence for balanced budget rules both increasing and decreasing the fluctuations of the natural business cycle. While the majority of studies argue that balanced budget requirements increase the amplitude of the business cycle, I argue that it should decrease it because strong requirements should effectively internalize the externalities of government and limit the amount of fluctuation in collecting revenue. Additionally, by being able to more quickly adjust to economic downturns (Poterba 1994) states should be less likely to build up large debts requiring increased revenues.

Measuring Balanced Budget Rules

Although balanced budget rules have been such a steadfast institution in the American states, authors disagree on the best way to measure them. Most research uses one of three measures established in the 1980s and 1990s. However, there are various pros and cons associated with each method, and as Hou and Smith (2006) argue these measures may be misleading when using them as explanatory variables. In this section I will outline the three most common measurement methods for balanced budget rules as well as the critiques for these measurements as put forth by Hou and Smith (among others). Additionally I will discuss the Hou-Smith method and justify why I choose not to use it over the more established methods.

As Hou & Smith (2006) acknowledge, the three most common measurement methods of balanced budget rules have been crucial for laying the groundwork for studying the impact of the institution. These measures come from the National Association of State Budget Officers (NASBO), the Advisory Commission on Intergorvernmental Relations (ACIR), and the National Conference of State Legislatures (NCSL). NASBO provides a measure in the form of four dichotomous variables while the ACIR provides a stringency index, and the NCSL includes one distinction. The fourth measure I discuss is that of Hou and Smith (2006) which takes a networks approach in measuring balanced budget rules.

The first attempt to quantify balanced budget rules came from the ACIR. The ACIR was established in 1959 to study and consider intergovernmental relations in the United States, and it was dissolved in 1995. In 1987 the ACIR released a report on balanced budget rules, and included in this was an additive index they had developed which measured the stringency of state balanced budget rules. This index ranges from one to ten with one being the least stringent and ten being the most stringent. The index includes two categories which are added together. However, only the most stringent provisions in each category are included. The first category looks at whether the rule is either constitutional or statutory in origin. Statutory rules receive one point and constitutional rules receive two. The second category looks at the nature of the provisions within the balanced budget rule. These are (a) the governor only has to *submit* a balanced budget (one point); (b) the legislature only has to *pass* a balanced budget (2 points); (c) the state may carry over a deficit but it must correct it the next year (four points); (d) the state cannot carry over a deficit into the next biennium (six points); (e) the state cannot carry over a deficit into the next year (eight points). To illustrate how exactly this index is utilized I use Missouri as an example. For the first category Missouri has a constitutional balanced budget requirement and therefore receives two points. For the second category Missouri cannot carry its deficit over into the next biennium and receives six points. On the stringency index Missouri receives a total score of eight which means that the state has one of the more stringent balanced budget rules.

The second organization to attempt to quantify balanced budget rules was

NASBO. NASBO formed shortly before the ACIR and serves as the professional membership organization for state finance officers. Their mission is to advance state budget practices through collective efforts. NASBO's efforts at quantifying balanced budget rules are based on the ACIR index. However, instead of having an additive index of stringency, NASBO breaks balanced budget rules into four dichotomous categories creating a taxonomy. The four categories include (a) the governor must submit a balanced budget; (b) the legislature must pass a balanced budget; (c) the governor must sign a balanced budget; (d) the state may not carry over a deficit. This taxonomy is often reported in *The Book of The States* series put out by the National Governor's Association and is updated every few years in NASBO's *Fiscal Survey of the States*.

The third measure is more of a distinction included by the NCSL to the NASBO measure rather than its own independent way of quantifying balanced budget rules. The NCSL was originally founded to provide research, technical assistance, and opportunities for policymakers to exchange ideas. In 2004, Ronald Snell, while working for the NCSL, included the distinction of whether balanced budget rules are constitutional or statutory to the NASBO measurement.

In 2006 Hou and Smith published an article arguing that these common measures may be good for convenience, but they may cause problems when using them as explanatory variables. Hou and Smith argue that most balanced budget rules are based on networks, and the measures put forth by the ACIR, NASBO, and NCSL miss this relationship. They state, “in most cases, the systems [balanced budget rules] are each an interlocking network of multiple provisions in different parts of both the constitution and the code, covering the executive preparation, legislative review, and implementation phases of the budget cycle, incorporating a multitude of players and factors into both the political and budgetary process of state administration," (Hou & Smith 2006, p.23). This networks approach is based off the idea that balanced budget rules may not be explicit, and that they may take their meaning through interpretation (Briffault 1996). Hou & Smith (2006) suggest that measures for balanced budget rules need to account for both political and technical aspects of what the rule actually requires. They define nine articles, later referred to as rules (Hou 2010), which must be taken into consideration. These are (1) the governor must submit a balanced budget; (2) own-source revenue must match expenditures; (3) own-source revenue and (unspecified) debt (or debt in anticipation of revenue) must match (meet or exceed) expenditures; (4) the legislature must pass a balanced budget; (5) a limit is in place on the amount of debt that may be assumed for the purpose of deficit reduction; (6) the governor must sign a balanced budget; (7) controls are in place on supplementary appropriations; (8) within fiscal-year controls are in place to avoid deficit; (9) No deficit can be carried over into the next fiscal year (or biennium) (Hou & Smith 2006, Hou 2010). Of these distinctions Hou and Smith argue five have previously been ignored (2,3,5,7,8).

When looking at the different ways of measuring balanced budget rules there are reasons to be critical of each approach. First, the ACIR measure is an additive index. Indexes in general are suspect because the values assigned to each component are open to the subjective judgments of the one(s) creating the index. Often times, and the ACIR is no exception, there is little if any empirical justification for assigning specific values to each category. This is one of Hou and Smith's (2006, 2010) primary objections to the ACIR, and to a lesser extent NASBO and NCSL, when making a distinction between constitutional and statutory balanced budget rules. They assert,

> “There has not been much literature that explicitly argues for or against this constitutional-statutory distinction; neither NASBO nor ACIR has offered any rationale for the assumption. It may have been built upon the belief that, first, state constitutions are much more difficult to amend while statutes are revised on a near-yearly basis; and secondly, constitutions are much more difficult to circumvent than statutes. There has been little empirical support for this constitutional-statutory distinction,” (Hou 2010, p.58).

In fact Hou and Smith argue that statutes may in fact be the more stringent of the two because they are often longer and more detailed (Hou & Smith 2006, Hou 2010), and it appears that there may be some initial support for this (Calcagno & Escaleras 2007). On the other side, Bohn and Inman (1996) find that constitutional rules are more effective than those that are statutory.

However, I argue the constitutional-statutory distinction in the ACIR index is a very small component, providing only two of the possible ten points at most. Additionally, the ACIR index provides things that the other measures do not. For one, the ACIR provides a more useful measure than NASBO or Hou and Smith for directly comparing the balanced budget rules of one state with another. If I simply wanted to know whether Wisconsin or Nebraska had stronger balanced budget rules, the ACIR provides a simple, no-nonsense answer. However, if I were to look at the other measures I would have great difficulty finding an obvious answer to the same question. Second, the ACIR measure, while it may be stylized, provides a measure of the entirety of the balanced budget rule, not just the independent aspects. As Hou and Smith (2006, 2010) argue balanced budget rules are complex networks. For the other measures (NASBO, ACSL, Hou-Smith) to be useful in explaining the entire "rule" in an individual state a complex series of interactive terms would need to be included. No author who justifies using these approaches has done so, and it is beyond the scope of this work.

When deciding which method to use for this work, perhaps the most important determinant is which measure most adequately addresses my question of how balanced budget rules impact state economic volatility. My work does not directly question whether balanced budget rules serve their intended purposes of reducing debt and keeping states budgets balanced. Instead I am looking at a possible "side-effect" of balanced budget requirements impacting state economic decisions and outcomes. I do not believe this is possible by breaking down each individual component of balanced budget rules as NASBO, NCSL, and Hou-Smith suggest. This leaves the ACIR as the most appropriate measure for me to use in this work. Table 2.1 lists all the states and their respective ACIR index scores.

Balanced Budget Rules and Volatility

Given the widespread and lasting nature of balanced budget rules it seems intuitive that they would have a significant impact on state revenue streams. Balanced budget rules were adopted in the states based on the idea that governments should be small and debt should be avoided. The general consensus of the people was that policymakers, both current and future, should be constrained in their ability to tax and spend money. Balanced budget requirements are, at their root, an attempt to internalize the externalities presented in a common pool resource environment (von Hagen 2005).

However, state governments are very different than they were 200 years ago when many states began adopting balanced budget rules. States bring in more revenue, provide a greater number of services, and have greater responsibilities. Additionally, given the changing nature of state budgeting practices the way state government's operate in their fiscal environment is different as well.

Despite these differences balanced budget rules have remained remarkably unchanged over the years. I hypothesize that depending on how stringent the balanced budget requirement is, I expect it to constrain policy makers decisions to be most in line with the status quo. By not being able to carry over debt, states are forced to internalize all of the associated costs of doing business. This should limit the desire and ability of governments to increase revenues and services in times of economic prosperity—which would increase volatility—as well as reduce the burden of providing services in times of economic downturn. Given this I expect more stringent balanced budget requirements to reduce large economic fluctuations and therefore reduce the overall volatility of state revenue streams.

Analysis

To test my hypothesis on the impact of balanced budget rules of state revenue volatility I look at time-series panel data from 1969-2005. Volatility is measured as the standard deviation of revenue growth for four, eight, and twelve year increments. Therefore, the four year volatility measure for 1996 would be the standard deviation of growth from 1993-1996. Given the nature of the data and the various explanations on what is likely to contribute to state economic volatility, Nebraska is dropped from the analysis. This provides data for 49 states over 37 years giving me 1813 observations. Summary statistics and variable explanations can be found in Appendix A.

This data includes a series of control variables to account for other possible explanations for volatile revenue streams. In the introductory chapter I discussed four categories of variables that could potentially impact revenue volatility. Given the current literature the most theoretically plausible correlates with state revenue volatility is the state's economic environment. Economic variables include the amount of intergovernmental revenues received by the state (Shadbegian 1996, Nicholson-Crotty 2004), the percentage of GSP coming from manufacturing (Crain 2003), and the percent of state revenue coming from each of the property, sales, fuel, and income taxes (Crain 2003). Under the political environment of the state I include variables for the presence of a Republican governor, a unified Republican government (Leyden & Borrelli 1995, Lewis-Beck & Nadeau 2000), the presence of direct democracy (Gerber 1996, Gerber & Phillips 2006), and citizen ideology (Berry et al 1998). To account for demographic concerns I include variables for the percent of the state population under 18 and over 65

(Crain 2003), population growth (Crain 2003), and both federal unemployment and state unemployment (Dye 1996, Crain 2003). Regional and state differences (Berry & Berry 1992) are accounted for in the *fixed effects* variable produced from the fixed-effects vector decomposition (discussed in more detail later in this section).

The method I use to analyze the data is a generalized estimating equation (GEE), or population average. A full explanation of this method and how it compares to other estimating techniques can be found in Appendix B. Generally, GEE is good for dealing with correlated data that are often present in panel cross-sectional analysis. Where OLS models (either fixed or random-effects) produce estimates based on a case-level basis, GEE produces estimates in comparison to a mean population. For example, when looking at balanced budget rules OLS would provide a coefficient based on how state X's volatility is likely to change if the stringency of the rule increases or decreases for that state. On the other hand, GEE estimates how states with the same BBR stringency are most likely to change compared to the mean, or average, state. This technique offers "the benefits of asymptotically-consistent variance-covariance estimates...even where the nature of dependence is unknown" (Zorn 2006, p.329). Given the commonality of conditional interdependence in pooled cross-sectional time-series analysis GEE is appropriate for providing more precise estimates (see Zorn 2006, 2001; also Whitford & Yates 2003).

Additionally, before I analyze the data by GEE I first run a fixed effects vector decomposition on the independent variables to control for the unit specific errors and time invariant and rarely changing variables. This method is superior to standard fixed effects models because it controls for the unit specific error without completely eliminating results from time-invariant variables and produces a more reliable estimate for the rarely changing variables than other methods such as Hausman-Taylor, pooled OLS, and random-effects models (Plumper & Troeger 2007).

FEVD is a three stage process. In the first stage a fixed-effects model is run. This allows me to determine the unit specific error for the model. The second stage breaks down the unit effects into a part explained by the time-invariant and rarely changing variables and an error term by regressing the unit specific error onto these variables (in this case BBRs and direct democracy). The third stage re-estimates the model by running pooled-OLS including the time-invariant and rarely changing variables in addition to the error not explained by these variables. The addition of the variable *fixed* controls for the unit specific error in the model and allows the use of fixed effects in the second stage of my analysis (GEE).

In the generalized estimating equation I also include an AR(1) correction for serial correlation and robust standard errors clustering the errors on the individual states. Additionally, I include year dummy variables to account for temporal disturbances. This gives me what could be considered an over specified model. However, this model also produces the most conservative estimates and therefore weights the estimates towards the null hypothesis.

Results

Overall the results show support for my primary hypothesis that stricter balanced budget requirements will reduce state revenue volatility. Additionally, I find evidence of some of the potential other factors discussed in the introductory chapter of this work having significant effects as well. Of the seventeen independent variables tested, nine to thirteen (depending on the measure of volatility) of the explanatory variables are statistically significant. In this section I will address each of these along with the substantive impact of each variable. Additionally, certain key variables fail to achieve significance which is interesting, and I include a discussion on these as well. Results for the analysis are presented in Table 2.2.

I begin by examining the results for my primary institutional hypothesis. For all three measures of volatility, balanced budget rules are negative and significant. More importantly, the substantive impact of balanced budget rules on state revenue volatility is quite substantial. Looking at eight year volatility I find that a one standard deviation increase on the BBR index decreases volatility by approximately $24,778,364. This means that a state with an index score of 10 has a about $25 million less average fluctuation in revenue streams over an eight year period than a state with an index score of 7 when compared to the average state. Coefficients for the four and twelve year volatility are lower and greater, respectfully, than the eight year volatility. This makes sense because the standard deviation is likely to increase when it is looked at over a greater number of years. This provides support for my hypothesis that strict balanced budget rules are likely to reduce volatility.

Other variables under the political environment explanation show some interesting results. First, with the exception of four year volatility, neither having a

Republican governor nor unified Republican government appear to be significant. The negative sign on the coefficient for unified Republican government makes sense because citizens are more likely to hold a unified government accountable for economic decisions, and Republicans, in general, are less favorable towards taxing and spending than their Democratic counterparts (Leyden & Borrelli1995, Lewis-Beck & Nadeau 2000). The positive coefficient on the presence of a Republican governor is most likely a result of having divided government. However, as previously stated, these variables only achieve some form of statistical significance when looking at four year volatility. Under eight and twelve year volatility I find that these variables become insignificant. This is interesting because it may relate to the short term impact of partisan politics on state-level economics. With more time points in measure of volatility the impact of individual governors and governments becomes washed out. This adds merit to my contention that institutions due in fact constrain political actors despite partisan politics.

Second, I find that the presence of direct democracy is positive and significant across the board of volatility measures. When direct democracy is present, states are likely to have an eight year volatility starting point $57,786,730 greater than states without direct democracy when compared to the average state. The simple presence of direct democracy is shown to increase volatility, which makes sense given the known relationships between citizen and legislators and the expanding literature on state initiatives and referendum. Citizens, unlike policymakers, are not constrained by state fiscal institutions and can pass initiatives without worrying about how to pay for them.

Third, I find citizen ideology to be both statistically and substantively important.

Citizen ideology is a measure of where the citizens of a state lie on the liberal to conservative spectrum ranging from 0 to 100. Higher numbers equate to being more liberal. Somewhat counter to what one would expect, I find that an increase in citizen liberalism decreases state revenue volatility. A one standard deviation increase in ideology reduces eight year volatility by $5,054,262, ceteris paribus. I say that this is somewhat counter because most would think that a more conservative population would be less likely to favor government taxation and spending. However, as we see in the following chapters, institutions that limit government spending and taxation bind state economies to the business cycle and thus can increase volatility. A strong conservative state population is likely to look unfavorably at tax increases that can help stabilize state revenues.

Only one of the six demographic variables, state unemployment, shows a significant impact on all three measures of state revenue volatility. The impact of state unemployment is positive and significant as expected. A one standard deviation increase in state unemployment increases eight year volatility $13,210,053. This makes sense given the dual impact of unemployment increasing the amount of services provided by the state as well as reducing the overall amount available to draw revenue. It is worth noting that a one standard deviation increase is about 2%, which is quite a significant rise in unemployment.

National unemployment is a bit tricky to explain. I include this variable to account for a nation-wide influence that could theoretically affect state revenue volatility. However, unlike state unemployment that has a positive and significant impact across the board, federal unemployment has a negative and significant impact when looking at four year volatility but a positive and significant impact when looking at twelve year volatility. Additionally, the variable does not have a statistically significant impact when looking at eight year volatility. Unfortunately, I do not have an explanation for this phenomenon except for possible unidentified collinearity.

The variables accounting for age demographics behave oddly. For the percent of the state population under 18 all measures of volatility are positive but only four and eight year volatility coefficients achieve statistical significance. For the population over 65 eight and twelve year volatility is positive while four year volatility has a negative coefficient. Only the measure for twelve year volatility achieves statistical significance, although at a very liberal level. Looking only at the measures that are statistically significant we see that both populations under 18 and over 65 increase volatility. This makes intuitive sense because these are the demographic populations that are both unlikely to be in the workforce and more likely to require government services. However, the varying nature in both the signs and significance of these variables suggests that more work needs to be done in this area. Interestingly, population growth does not appear to be statistically significant in any of the models.

At the outset, state economic environment provides one of the strongest explanations for what accounts for volatility given the current literature. However, only about half of the variables which fall under this category are both statistically and substantively significant. Intergovernmental revenue is significant and positive in its impact on all measures of state revenue volatility. A one standard deviation increase in intergovernmental revenue increases eight year volatility approximately $171,109,711 when compared to the average state, ceteris paribus. This makes sense given that states often use federal funds to supplant state expenditures (Nicholson-Crotty 2004). When a state receives a greater amount of federal funding it both increases revenue (which may increase volatility) and is likely to use those funds to pay for state services. When large amount of funds are no longer available the state is left trying to front the bill which is likely to increase volatility.

The amount of manufacturing in the state is also positive and significant as expected, but only for eight and twelve year volatility. With a high degree of manufacturing in a state, when the business climate shifts dramatically we can expect to see amplified shocks to the economic system.

When it comes to state tax structure, the most significant variable is that based on the proportion of state revenue coming from the sales tax. This variable is negative and significant for all measures of volatility. A one standard deviation increase in the proportion of state revenue brought in by the sales tax is likely to reduce eight year volatility by $32,300,506 compared to the average state. This fits with the conventional wisdom that the sales tax, on average, is less volatile than other tax bases such as the income tax. However, it runs counter to Crain (2003) who finds that in 2/3 of the states sales tax is actually more volatile when looking over a twenty plus year period.

Interestingly, property tax, fuel tax, and income tax are for the most part insignificant. Property tax does not have a significant impact on any measure of volatility. This is most likely a result of the decline of the property tax as a source of state revenue throughout the 20th century. Fuel tax and income tax are only significant when looking at four year volatility. What we find here is that both have a negative impact on volatility. The sign is the same for both eight and twelve year volatility, although the coefficients fail to be significant.

Finally, I find that there are significant and positive effects that are specific to each state as seen the *fixed effects* variable. These are effects that are unique to the within variation of each state including regional development.

What I find from my analysis is there is evidence that balanced budget requirements do, in fact, reduce state revenue volatility even after controlling for certain aspects of a state's political environment, demographic makeup, and economic environment.

The most important variables impacting state revenue volatility under the political environment are the presence of direct democracy (+), and citizen ideology (-). Under state demographics the most significant impacts come from state unemployment (+), however we do see some evidence of age playing a factor as well (especially in the percent of the population under 18). Significant variables of impact under the state's economic environment show that intergovernmental revenue (+) and the percent of revenue coming from the sales tax (-) are correlated with state revenue volatility. Also, I find that manufacturing is significant in most models (+). Additionally, I find that there are certain state specific factors that play a role that are not accounted for.

Interestingly, several of my control variables do not appear to have a significant impact on state revenue volatility. To begin with, partisanship of the governor or a unified government does not appear to have a statistically significant impact. There is some evidence for four year volatility, however the eight and twelve year volatility measures are very insignificant and there is great inconsistency in the coefficients.

I also find that population growth is insignificant across the board. It seems logical that large shifts in population would affect revenue volatility, however I find no evidence of this. Similarly, the nationwide influence of unemployment levels does not appear to impact individual states when other factors are accounted for.

Somewhat surprisingly, I find no significant impact from the percent of property, fuel, or income taxes affecting state revenue volatility. Only when looking at the four year volatility measure do I find a significant impact from the state income tax.

The degree which the significant independent variables affect state revenue volatility is also interesting. Figure 2.1 presents a table showing how a one standard deviation change in each significant independent variable impacts the amount of average volatility (8-year) each variable accounts for. For 8-year volatility the average volatility in state revenue streams is about $200,432,400. A one standard deviation increase in the balanced budget index accounts for a reduction of 12.4% of the average revenue volatility. Also reducing revenue volatility are citizen ideology (2.5%) and the percentage of revenue coming from the state sales tax (16.1%). The greatest share of increased revenue volatility comes from intergovernmental revenues. A one standard deviation increase in intergovernmental revenues accounts for an increase of 85.4% of the average revenue volatility. One standard deviation increases of direct democracy, state unemployment, and manufacturing account for increases of 14.5%, 6.6%, and 32.8%

respectively.

Conclusion

Based on the “norm of balance” which began developing during the Industrial Revolution, as states began forming in the United States politicians put in place balanced budget rules to limit what current and future policymakers could do. The overall idea was that governments should be kept small and debt should be avoided. By the early 1800s this idea had developed moral overtones. However, the role of the American states has changed significantly sense these rules were originally established. As Hou (2006) notes, the states moved from the budget state to the welfare state and eventually into the economic state. Despite these changes, balanced budget rules remained remarkably the same.

I hypothesized that depending on how stringent a state's balanced budget requirement is, I expect it to constrain policy makers decisions to be most in line with the status quo. By not being able to carry over debt, states are forced to internalize all of the associated costs of doing business and therefore should be limited in the desire and ability of governments to increase revenues and services in times of economic prosperity—which would increase volatility—as well as reduce the burden of providing services in times of economic downturn. Given this I expected more stringent balanced budget requirements to reduce large economic fluctuations and therefore reduce the overall volatility of state revenue streams, and I find strong evidence to support this. While including variables that control for other rival explanations on what accounts for state revenue volatility I still find strong impacts, both statistically and substantively, of balanced budget rules on volatility. This goes against the institutional irrelevance hypothesis that state institutions do not matter because policymakers find ways to get around them.

Table 2.1 **ACIR Index**

State	ACIR Score (1987)
AL	10
AK	6
AZ	10
AR	9
CA	6
CO	10
CT	5
DE	10
FL	10
GA	10
HI	10
ID	10
IL	4
IN	10
IA	10
KS	10
KY	10
LA	4
ME	9
MD	6
MA	3
MI	6
MN	8
MS	9
MO	10
MT	10
NE	10
NV	4
NH	2
NJ	10
NM	10
NY	3
NC	10
ND	8
OH	10
OK	10
OR	8
PA	6
RI	10
SC	10
SD	10
TN	10
TX	8
UT	10
VT	N/A (0)
VA	8
WA	8
WV	10
WI	6
WY	8

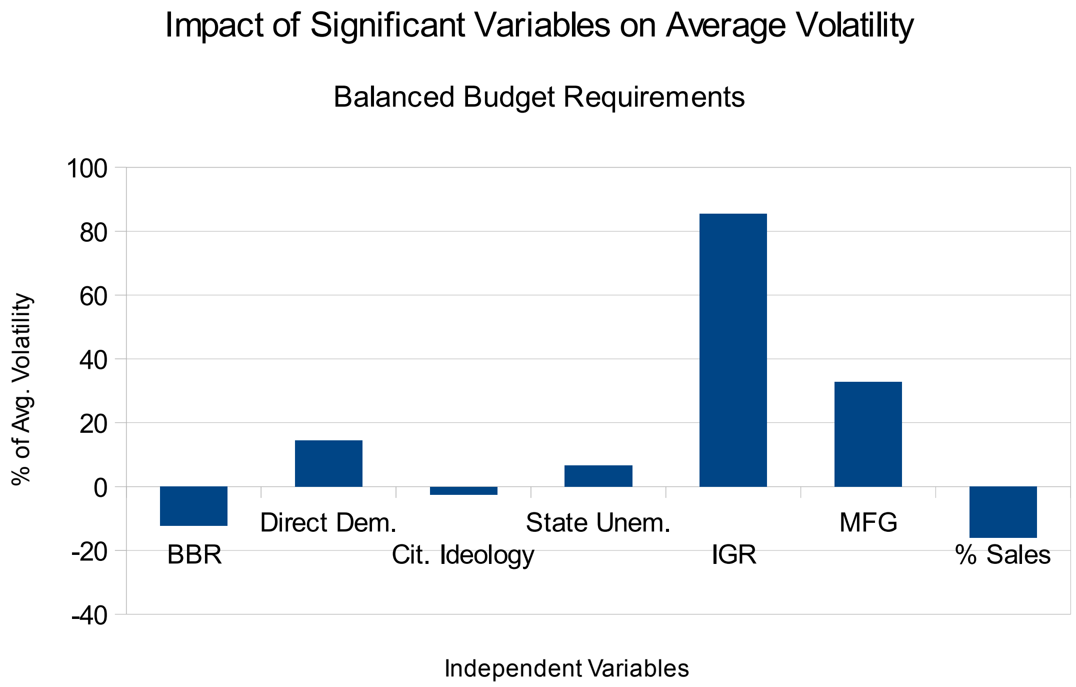
Table 2.2 Volatility and Balanced Budget Rules

Volatility (BBR)

	Population Average		
Variable	4 year	8 year	12 year
BBR Index	-7791.12**	-9530.14***	-11293.21***
	(3444.02)	(3065.85)	(2324.90)
GOP Governor	18751.97**	-3722.53	2173.17
	(8669.98)	(3617.16)	(2425.57)
Unified GOP	-18347.26*	1517.01	245.95
	(9794.91)	(7418.11)	(4984.41)
Direct Democracy	51226.61***	57786.73***	54897.05***
	(12734.72)	(12212.29)	(9306.57)
Citizen Ideology	-642.07**	-319.89**	-354.32***
	(280.88)	(154.09)	(125.89)
Under 18	32459.85**	42817.89*	2836.86
	(16464.06)	(25991.92)	(7833.58)
Over 65	-43912.88	83630.16	143563.30*
	(221701.80)	(148265.00)	(81757.82)
Population Growth	-170.30	-3122.13	-2056.94
	(2700.95)	(2708.33)	(1585.89)
Federal Unemployment	-10386.78**	3426.69	8857.02***
	(4504.53)	(3053.86)	(3220.14)
State Unemployment	10647.43***	6539.63***	4977.01***
	(3910.13)	(2133.78)	(1424.26)
IGR	39.26**	33.74**	27.06***
	(17.35)	(14.71)	(11.40)
Manufacturing	.07	.16**	.23***
	(.10)	(.08)	(.06)
% Property Tax	-4366.36	52397.84	98882.43
	(152302.10)	(95241.66)	(65168.24)
% Sales Tax	-387925.20***	-230717.90***	-123016.00***
	(77548.11)	(54424.03)	(44235.04)
% Fuel Tax	-648367.00***	-226927.70	-9758.36
	(180257.70)	(148224.30)	(118959.80)
% Income Tax	-244822.40**	-92867.93	-19420.56
	(102990.30)	(79634.49)	(65910.36)
Fixed	1.01***	1.05***	1.02***
	(.10)	(.10)	(.09)
Constant	383278.60***	147286.00**	48084.51
	(84507.58)	(69531.47)	(58242.02)
Wald Chi-2	15225.78	32896.82	6834.76
N	1813	1813	1813

*p<.1, **p<.05, ***p<.01

Figure 2.1


Impact of Significant Variables on Average Volatility
Balanced Budget Requirements
100
80
60
40
20
0
-20
-40
% of Avg. Volatility
BBR
Direct Dem.
Cit. Ideology
State Unem.
IGR
MFG
% Sales
Independent Variables

Chapter 3

Super-majority Voting Requirements: Limiting Government and the Tyranny of the Majority

As the United States grew over the 20th century, so did the role of both the federal and state governments. As the US moved through the post-industrial, welfare, and economy states (Hou 2006) the relationship between government and the economy began to change. During the 1960s and 70s the economic practices of government switched from a finance stage to that of an economy stage, thus shifting from a micro to macro focus on politico-economic matters. The norm of a balanced budget became increasingly troublesome in the 1960s due to fragmented processes, structural imbalance, and huge cumulative debts. These practices led to cries against political irresponsibility (Hou 2006) that culminated with the Tax Revolt which began in 1978.

Through the 1960's, it appeared to many scholars that state governments were dying (if not already dead) because the role of the states appeared to be more delegators of national authority rather than their own autonomous bodies (Teaford 2002). However, the American states are inherently different today then in the early part of the century and have been for over forty years. Legislatures are more professional, governors have more powers, state governments have grown exponentially, and the complexities of intergovernmental relations have grown. As Elazar notes, "the quiet revolution [of the 1970's]…has transformed state government…into a solid instrument for meeting the complex needs of American society," (Teaford 2002, p.195).

As the American states took a heightened role in governmental affairs they took on more responsibility for providing goods and services for their citizens. These goods and services cost a considerable amount of money, and the states were faced with the issue of generating revenues in order to pay for them. For the most part states dealt with this through taxation.

At the same time there was a growing distrust in government in the United States. The Vietnam War polarized America accompanied by the political scandal surrounding then President Nixon. On a national scale this was evident in the election of "The Class of '74" where new, and very different members were elected into the 93rd Congress.

The passage of California's Proposition 13 in 1978 started the Tax Revolt. This revolt left in its wake two prominent politico-economic institutions which I address in this work—super-majority voting requirements and tax and expenditure limitations. These two institutions, having been in the states for over 30 years, have had a long lasting impact on the state-level budgetary processes in the post Tax Revolt era.

In this chapter I specifically examine super-majority voting requirements. First, I examine the theoretical underpinnings of why states originally adopted these requirements. In doing so I discuss both the Tax Revolt and how super-majority voting requirements were an attempt to calm the tyranny of the majority. Second, I provide an overview of the few studies that have directly examined the impacts of state's adopting super-majority voting requirements. Third, I discuss how I measure these requirements. Last, I examine how this institution affects the volatility of state economies.

When examining super-majority voting requirements I expect to find a positive impact on volatility. Super-majority requirements make the veto players in the policy-making process more extreme. By increasing the vote margin in order to pass bills, unless the majority party has an extremely dominant presence, the minority party has a heightened importance that must be taken into account. However, by increasing the importance of the veto players it becomes difficult for states to adjust revenues streams in times of crisis and economic downturn. When a recession occurs, states with super-majority voting requirements are more likely to cut spending rather than increase revenue. This in turn removes demand from the economy making it difficult for the state to recover. However, in times of economic prosperity revenues are likely to increase because the rewards are spread over a greater number of people given the nature of legislative decision making under super-majority requirements (discussed in greater detail later in this chapter). By limiting the fiscal decisions that policymakers can make in times of both economic recession and prosperity, the fluctuations of the natural business cycle in state economies are likely to be heightened and therefore increase volatility. What I find is that there is strong evidence of this relationship even when controlling for other important aspects.

The Tax Revolt

Super-majority voting requirements are the least widespread institution that I examine. As of 2000 only 13 states required a super-majority of 3/5, 2/3, or 3/4 of the state legislature to pass an increase in taxes or form a new tax. Of these 13 states, seven have adopted super-majority requirements through the initiative process while six states have self imposed them (Knight 2000). These requirements have been discussed in state legislatures for a very long time—Arkansas adopted them for all taxes except alcohol and sales in 1934--however, it wasn't until the Tax Revolt and California adopting them in 1979 that this institution gained more popularity in the American states (Kenyon & Benker 1984). In the 1970s 6.3% of states had adopted super-majority voting requirements, but by the 1990s 14.6% of states had adopted them. Before the Tax Revolt only Arkansas (1932), Louisiana (1966), Mississippi (1970), and Florida (1971) had adopted super-majority voting requirements. After the Tax Revolt nine states adopted this institution. Table 3.1 shows the states which have adopted super-majority voting requirements and the super-majority required. In order to understand why some states adopted super-majority requirements during and after the Tax Revolt I believe it is important to understand why the Tax Revolt occurred in the first place and how the adoption of super-majority voting requirements where an attempt to correct past grievances.

When examining the causes of the Tax Revolt the literature produces a theoretical jumble of ideas. Unlike most things in academia, scholars were quick to address the foundations of the revolt, producing over 100 articles between 1978 and 1980 (Lowery & Sigelman 1981). The Tax Revolt spurred many politico-economic changes in the states. Super-majority voting requirements are just one institution that gained prominence do to the Tax Revolt, however it is arguably one of the most important and most binding. Other results of the Tax Revolt can be seen in 17 states conducting initiatives on state and local taxation in 1978 alone (Mikesell 1979), and by 1980 38 states had moved to reduce or stabilize taxes (Peirce 1980). With the advent of the Tax Revolt, Shapiro, Puryear, and

Ross (1979) most succinctly summarize the overarching feeling stating that it is troublesome to learn "within a stable democracy as ours, the government could find itself so out of line with the desires of the governed," (p.1). But what exactly brought about the revolt? Was government really that far out of touch?

In 1981 David Lowery and Lee Sigelman attempted to make sense of the mass literature that was culminating on the Tax Revolt. Their work discusses the eight most common hypotheses for the foundations of the Tax Revolt. These hypotheses all revolve around the assumption that the Tax Revolt was a systematic national phenomenon that was a function of individual-level social, political, and economic factors, however as the authors argue none of these hypotheses gain empirical support and therefore this assumption must be reworked.

One hypothesis, or explanation, of the Tax Revolt is based on individual self interest and rationality. This explanation by far dominated the initial research agenda shortly after the Tax Revolt began. This self interest model proposed that the Tax Revolt came about due to the individual feelings of being over taxed by the government, and people would prefer to keep their hard earned money. A score of authors proposed this hypothesis based on individual rationality (Mariotti 1978; Courant, Gramlich, & Rubinfeld 1979; Citrin 1979; Levy 1979; Magaddino et alia 1980). However, the majority of the studies that empirically tested this explanation did so improperly. The main problem is that they analyzed aggregate data in order to explain individual behavior and thus committing the ecological fallacy.

Another explanation hypothesizes that the revolt occurred due to the absolute level of taxes being higher than citizens were willing to pay and the belief that governments were too large. The idea behind this explanation is that citizens saw government as a Leviathan and wanted to limit it by removing some of its resources (Buchanan 1979, Brennan & Buchanan 1979). There was some empirical support for this hypothesis (Attiyeh & Engle 1979, Citrin 1979, Mushkin 1979, Herbert & Bingham 1979), but the results provided uncertain validity (Lowery & Sigelman 1980).

A third explanation is closely related to the tax level hypothesis but looks at government efficiency, or the relative tax rate, instead of the absolute tax level. This hypothesis posits that the Tax Revolt was a response to waste and inefficiency in the public sector (Mushkin 1979, Lucier 1980), and that taxes were too high relative to the benefits that the citizens were receiving. Unfortunately, the only studies that directly tested this hypothesis assumed that the increasing citizen feeling of government wasting money underlies voting for Tax Revolt referenda (Herbet & Bingham 1980, Citrin 1979). No studies directly tested this feeling on how an individual actually votes on referenda.

A fourth explanation lies in the belief that state tax systems were unjust and, citizens perceived great inequalities. As Shapiro et alia note “Proposition 13 was an expression, by the property owner-voter, of dissatisfaction with bearing a growing share of the public financial responsibility,” (1979, p.4). Under this explanation the Tax Revolt came about because certain individuals—especially property owners--felt like they were carrying too much of the tax load. Unfortunately this hypothesis has yet to be tested.

The fifth common explanation of the Tax Revolt shifts away from looking specifically at taxes and looks at the economy in general and personal finances in particular. As Broskin (1979) argues “the recent movements to limit taxes and government spending are deeply rooted in the lack of private economic progress in the last half decade,” (p.42). This “economic pinch” hypothesis states that the Tax Revolt was a result of people feeling as if they were falling behind financially. This can be sparked by a recession and inflation, but the main focus is on personal anxiety with the market. Courant et alia (1980) included a “gloom” variable when examining Michigan's 1978 Headlee and Tisch amendments and found that those with more “gloom” were more likely to vote for the amendments, but no other studies have systematically tested this hypothesis.

Perhaps the most intuitive explanation for political scientists looks at political ideology. This hypothesis crosses lines with some of the previous explanations by positing that Republicans are more likely to think that government is out of line based on their conservative ideology. At its core this explanation argues that the Tax Revolt was a response to 50 years of New Deal liberalism (Musgrave 1978). This hypothesis gained initial support with Citrin (1979) and Feld (1979) finding that liberals and Democrats were less likely to support Tax Revolt referenda. However, Courant et alia (1980) found that there was no relationship at all. These inconsistent finds require further testing.

The seventh explanation deals with political disaffection. At the time of the Tax Revolt there was a quickly declining confidence in government. On a day to day basis citizens were faced with potholes in the streets, people cheating on welfare, and corruption in high places (Musgrave 1978). As promising as this explanation appears on the surface it had yet to be empirically tested in the early 1980s.

The final hypothesis for the Tax Revolt revolves around information. While this explanation has not been tested and is usually suggested in an offhand manner, I believe it still bears some consideration. This explanation reflects the naive attitudes of citizens and the lack of information they have about how government works. Under this explanation citizens do not understand the differences between what is being promised by referenda and what the actual policy response will be. Under this explanation only the ill-informed could support such measures (McCaffrey & Bowman 1978).

The main problem with all of these hypotheses is that many of them were not empirically tested, and if they were tested it was done in a none stringent way. In order to somewhat rectify this, Lowery and Sigelman (1981) tested these eight hypotheses implementing the 1978 American National Election Study. What they found was that there was little evidence that supported any of the eight most common explanations for the Tax Revolt. Finding no evidence the authors suggest two possible alternative frameworks for examining super-majority voting requirements. The first alternative takes issue with the assumption in the previous eight explanations that the Tax Revolt was a systematic national function of individual-level social, economic, and political factors. The first alternative suggests that the revolt did not come about from systematic nationwide influences, but rather it was specific to the characteristics of each individual state in which it occurred.

The second alternative, which in my opinion holds the most weight, is that the Tax Revolt was not actually based on individual-level things, but rather it was an expressive and symbolic social movement. In the terminology of Berelson, Lazarsfled, and McPhee

(1954) it was likely a style issue rather than a position issue. Style issues are characterized by the self-expression of an indirect, projective kind rather than an expression of one's immediate self-interest. Style issues are related to a question of taste, lifestyle, and morality rather than that of money and material power. Position issues, on the other hand, come from socio-economic conditions and persist over time. Viewing the Tax Revolt under this light helps us understand why the eight most common explanations fail to provide empirical validity.

This alternative explanation makes intuitive sense when you pair it with Hou's (2006) description of economic regimes. Additionally, most current work regarding the Tax Revolt examine it as a social movement to the point of near consensus (see Martin 2008). However, if one looks at the Tax Revolt as a symbolic social movement then it is important to understand what this movement was about. Specifically, it is important to understand how passing super-majority voting requirements adds to this movement.

Why Super-majority Voting Requirements?

In Buchanan and Tullocks' *Calculus of Consent* (1962) the authors argue that super-majority voting requirements can reduce majority exploitation of minorities, an inherent flaw in democracy. In a system where majority rules the majority can easily distribute state resources without considering the desires of the minority. The majority incurs zero political costs for transferring the resources from the minority to the majority. Buchanan and Tullock argue that super-majority voting requirements reduce the external cost of “majority tyranny” by limiting fiscal policy to non-redistributive projects that promote the general welfare of all.

From a theoretical standpoint, Buchanan and Tullock argue the greater number of legislators needed to pass a tax measure the more limited number of reasonable redistributive policies can pass through the legislature. With a simple majority requirement the majority in the legislature are able to commandeer 49% of the polity's money for their own redistributive purposes. However, under a super-majority requirement of 2/3s of the legislature needed for approval only 32% of the polity's money is available to the majority for their own means. The main idea of super-majority voting requirements is that they reduce external costs of spending but increase the decision-making costs of the legislators. Thus, an equilibrium exists somewhere between a majority and unanimity where both costs are minimized. We find empirical support of this relationship in several current works (Bradbury & Johnson 2006, Knight 2000, Crain & Miller 1990). Additionally, Riker (1992) argues that the current majority expects to be plundered by future majorities so it is best for the majority to get as many resources as possible. To remedy this problem he argues that states adopt a more inclusive rule, ie super-majority requirements, to limit this exploitation to non-redistributive spending.

Alternatively Dixit, Grossman, and Gul (2000) argue that it is unclear if super-majority voting requirements hinder cooperative games to limit majority tyranny. They argue that the general exploitation of the minority is quite rare and since there is a continuing game between the majority and the minority an unspoken agreement is made to not exploit the minority (based on the work of Alesina 1988). However, by passing super-majority requirements incentives to keep the agreement are reduced because the defecting party cannot be punished until a super-majority is gained later on.

One of the most recent studies that examines super-majority voting requirements (Bradbury & Johnson 2006) empirically tests the previously discussed assertions of Buchanan and Tullock (1962) and Dixit, Grossman, and Gul (2000). The authors find that states which have adopted super-majority requirements have less redistributive spending giving support to the original hypothesis put forth by Buchanan and Tullock. In their study that spans from 1960 to 1997 the authors conclude that states with super-majority requirements have limited "majority tyranny" of redistributive spending. Additionally, they argue "Supermajority rules may, in fact, lower the probability of retribution to any reneging ruling majority, thus lowering the costs of defecting and increased plunder of minorities" (Bradbury & Johson 2006, p.447).

Given the empirical evidence the "calculus" of Brennan and Buchanan appears to carry the most weight on the democratic underpinnings of super-majority voting requirements. Combined with the idea that the Tax Revolt was a symbolic reaction to government tyranny we can easily see why some states would choose to adopt super-majority requirements. Citizen dissatisfaction with government combined with inefficiencies in budgeting practices lead to citizens putting pressure on state governments to pay more attention to the desires of the public. Super-majority requirements forced state legislatures to give the opinions and desires of the minority a more prominent role in policy decisions, especially when it came to fiscal matters.

However, while the people wanted to limit both taxation and the size of government by adopting super-majority voting requirements, the end result is that majority coalitions increase non-redistributive programs and spending while they have control which in turn can lead to large economic fluctuations.

The Impacts of Super-majority Requirements

There appears to be a paucity of empirical research surrounding super-majority voting requirements. Additionally, those studies that do address them often group them with other fiscal constraints such as tax and expenditure limitations.

Most studies examine whether super-majority requirements have achieved there specified goal of limiting state spending and keeping taxes stable, if not reducing them. There is a serious issue, however, that must be considered when examining super-majority requirements. This is the issue of endogeneity. The first study to address this issue came from Judy Temple (1997). Her study used fixed effects and a random growth model to account for unobserved attitudes that affect both the adoption of super-majority requirements and tax policy. However, most states adopted this institution in the 1970s and the 1990s, but not during the 1980s. This suggests that Temple's use of a linear time trend may not be completely correct because it appears that the trend is nonlinear in nature. Nonetheless, Temple finds that super-majority requirements do not reduce the level of state taxation.

Knight (2000) is the only other study that deals with the issue of endogeneity in super-majority requirements. His study uses both state and year fixed effects the same as Temple to better control for unobserved attitudes towards taxation, but instead of using a random growth model to account for the trend he uses an instrumental variables approach. Knight looks at the variation in the rules to amend state constitutions as instruments for the adoption of super-majority requirements. Looking at the years 1963 to 1995 he concludes that super-majority requirements have significantly reduced state taxes.

The conflicting results in these two relatively recent studies stand in contrast to the results found in earlier works where the consensus seems to be that super-majority requirements limit government growth and taxation. For example, Rafool (1996) notes that many tax reformers find super-majority requirements more effective than other measures because "super-majority states report that diligent consensus building by legislative leaders is necessary to gain approval of most tax increases." There simply isn't an easy way to get around super-majority requirements like there may be in balanced budget rules and tax and expenditure limitations. This observation supports Crain and Miller (1990) where the authors regress per-capita growth rates in real state spending over 2-year periods between 1979 and 1986 on a variety of fiscal institutions such as line-item vetoes, balanced budget rules, and super-majority requirements. While these authors do not account for endogeneity they find that super-majority requirements reduce the 2-year growth in spending by one percent. The authors note "a super-majority requirement for raising taxes makes the generation of additional revenues more costly for legislators, which in turn may restrain the growth of spending," (Crain & Miller 1990, p.1029).

One major issue that these studies do not take into account is the fact that at some points in time states are operating in times of economic booms and at other times economic busts. Additionally, based on the cross-national work around volatility the evidence points towards volatility and growth going hand in hand, where states with lower growth often have higher volatility (Ramey & Ramey 1991, 1995; Hnatkovska & Loayza 2003). I believe the conflicting results in the literature surrounding super-majority requirements fails to adequately address these concepts. Overall, the empirical literature points towards states with super-majority requirements having lower levels of growth. However, volatility is a much different concept than growth. Instead of simply looking at the long or short-term trend in growth, volatility deals with the fluctuations in that trend. While the trend in growth may be smaller in states with super-majority requirements, the literature points towards super-majority coalitions "plundering" the legislative minority with non-redistributive programs in times of economic prosperity. However, in times of economic distress, legislatures are forced to cut spending rather than increase revenues because a super-majority coalition to raise taxes is near impossible to form when the economy is down. Both of these aspects increase the fluctuations of the natural business cycle, so while overall growth may be lower in states with super-majority requirements, the fluctuations of that growth trend are accentuated.

Measuring Super-majority Requirements

Establishing a measure of super-majority voting requirements is quite simple. For one, given the few number of states that have adopted super-majority requirements, there is not a great deal of variation between one state's method when compared to the others. The main difference in super-majority voting requirements among the states is the actual majority needed to pass a bill.

States with super-majority voting requirements require that a state's legislature passes taxing bills by either a 3/5, 2/3, or 3/4 majority rather than a simple majority of over fifty percent. To assign a measure of stringency to super-majority requirements I simply calculate the rounded percent of the legislature needed to pass the bill. For example, in 1980 Delaware passed a super-majority requirement on all taxes requiring a 3/5 majority of the legislature to approve a new tax or tax increase. In this instance from 1980 on Delaware has a super-majority score of 0.6. Nevada, on the other hand, passed a 2/3 requirement in 1996 and therefore receives a score of 0.66. States that only require a simple majority to pass taxing bills receive a score of 0.51.

Super-majority Requirements and Volatility

Super-majority requirements are arguably one of the most restrictive (if not *the* most restrictive) institution coming out of the Tax Revolt. This is mainly because it is almost impossible to get around a rule which dictates the voting method on a certain type of bill. Unlike balanced budget rules, legislatures can not use “creative accounting” to try and side step the institution. Super-majority requirements establish hard, unwavering rules which legislators must follow.

When viewing the Tax Revolt as a social movement we find that above all else it was a movement against government tyranny. Super-majority requirements on passing tax bills requires a larger share of the legislature to form coalitions in order to pass the bill and therefore reduces the amount of polity money available for the majority coalition to use for redistributive spending despite the wishes of the minority.

Additionally, by changing the percent of the legislature needed to pass the bill the pivotal players in the legislature change and therefore change the location of the pivot point to get past legislative gridlock (Krehbiel 1996). In a simple majority the pivot lies with the median voting legislator to get 51%. Under super-majority voting rules, however, that pivot moves because in order to pass a bill the legislature needs either 67% or 76% majority making the pivot player the legislator at each respective cut off. This makes gridlock more likely when attempting to increase revenue streams, especially in times of economic distress.

Requiring a super-majority to pass tax legislation also all but removes the veto player role of the governor. Since such a large majority is required to pass the bill through the state legislature, in almost every case the coalition's size is already great enough to override a gubernatorial veto on the legislation. This makes the governor less important in the decision making process while at the same time making the new pivot legislator more important.

Super-majority requirements make the veto players in the policy-making process more extreme. However, by increasing the importance of the veto players it becomes difficult for states to adjust revenues streams in times of crisis and economic downturn. When a recession occurs states with super-majority voting requirements are most likely to cut spending rather than increase revenue. This in turn removes demand from the economy making it difficult for the state to recover.

However, in times of economic prosperity revenues are likely to increase because the rewards are spread over a greater number of people given the nature of legislative decision making under super-majority requirements, and the super-majority coalition is likely to try to get as much as they can before a new super-majority is established. I hypothesize that by limiting the fiscal decisions that policymakers can make in times of both economic recession and prosperity, the fluctuations of the natural business cycle in state economies are likely to be heightened and therefore increase volatility.

It is important to note that these expectations are very different than those I had in regards to balanced budget rules. While both institutions constrain policymakers by structuring the "rules of the game," the mechanisms through which they do so, and the goals the institutions attempt to achieve, vary greatly.

Analysis

To analyze the impact of super-majority voting requirements on state revenue volatility I use the same methods as presented in the previous chapter and Appendix B. Again, I look at 49 states over the years of 1969-2005 which provides me with 1813 observations. I model the relationship using generalized estimating equations after incorporating a fixed-effects vector decomposition. I also include an AR(1) correction for serial correlation and robust standard errors clustered on the individual states. Additionally, I include year dummies to account for temporal disturbances.

Again, this data includes a series of control variables to account for other possible explanations on what accounts for state revenue volatility. Economic variables include the amount of intergovernmental revenues received by the state (Shadbegian 1996, Nicholson-Crotty 2004), the percentage of GSP coming from manufacturing (Crain 2003), and the percent of state revenue coming from each of the property, sales, fuel, and income taxes (Crain 2003). Under the political environment of the state I include variables for the presence of a Republican governor and a unified Republican government (Leyden & Borrelli 1995, Lewis-Beck & Nadeau 2000), the presence of direct democracy (Gerber 1996, Gerber & Phillips 2006), and citizen ideology (Berry et al 1998). To account for demographic concerns I include variables for the percent of the state population under 18 and over 65 (Crain 2003, Elders 1992), population growth (Crain 2003), and both federal unemployment and state unemployment (Dye 1996, Crain 2003). Regional and state differences (Berry & Berry 1992) are accounted for in the *fixed effects* variable produced from the fixed-effects vector decomposition (Plumper & Troeger 2007).

Given the nature of balanced budget rules, it was not critical to deal with the issue of endogeneity in great detail in the previous chapter. However, since the majority of super-majority voting requirements came into play after the Tax Revolt, endogeneity must be carefully considered. In previous studies, both Temple (1997) and Knight (2000) include additional variables to help account for the endogenous nature of super-majority requirements. I do not.

I argue that the nature of my methods helps alleviate some of the concern of endogeneity. First, the fixed-effects vector decomposition accounts for state specific error. Second, by including year dummies in the time-series, the model adds to a causation argument rather than one merely showing a correlation. Third, and most importantly, is the nature of the GEE model itself. Recall that GEE produces estimates based on a population average. Therefore states with a 2/3 super-majority requirement are compared to the average state. By looking at populations of states, rather than individual states, it is incredibly hard to argue that every state had the same level and type of endogenous factors coming into play. The final model is, by nature, incredibly conservative. Every correction weights results towards the null hypothesis.

Additionally, previous studies have focused mainly on growth models. Volatility is very different than growth, and after testing I find that super-majority requirements are not correlated with the errors in my final volatility model, and therefore I do not have an issue with endogeneity.

Results

The results from my model show strong support for my main institutional hypothesis on super-majority voting requirements. In this section I discuss both the statistical and substantive impacts of important variables in addition to a brief discussion on why some variables failed to reach significance despite their theoretical foundations. Results for the analysis are presented in Table 3.2

I begin by examining the results of my primary institutional hypothesis. For all three measures of state revenue volatility I find that super-majority voting requirements are positive and significant. Perhaps more importantly, the substantive impact of super-majority requirements is quite impressive. Looking at the eight year volatility measure I find that a one standard deviation increase in the percent of the legislature needed to pass tax legislation increases volatility by $14,531,508. This means that a state which has a 2/3 super-majority requirement has a revenue stream about $14.5 million more volatile on average than states with a 3/5 super-majority requirement when compared to the average state. The results are even more dramatic when you compare states with no super-majority requirement. States with the most lenient super-majority requirement (3/5) have revenue streams that are, on average, $43.5 million more volatile than states that only require a simple majority when compared to the average state. These finding provide support for my hypothesis that super-majority requirements contribute to an increase in state revenue volatility.

Variables covered under the political environment explanation show some interesting results as well. First, with the exception of the four year volatility measure neither having a Republican governor or a unified GOP government achieve statistical significance. Similar to the results when examining balanced budget rules, the negative sign on the coefficient for unified Republican government makes sense because citizens are more likely to hold a unified government accountable for economic decisions, and Republicans, in general, are less favorable towards taxing and spending than their Democratic counterparts (Leyden & Borrelli1995, Lewis-Beck & Nadeau 2000). The positive coefficient on the presence of a Republican governor is most likely a result of having divided government. However, as previously stated, these variables only achieve some form of statistical significance when looking at four year volatility. Under eight and twelve year volatility I find that these variables become incredibly insignificant. This is interesting because it may relate to the short term impact of partisan politics on state-level economics.

Second, I find the presence of direct democracy both positive and statistically significant for all measures of state revenue volatility. When direct democracy is present states tend to have revenue streams starting $45,056,400 greater than states without direct democracy when compared to the average state.

Third, I find that citizen ideology is once again both statistically and substantively important. A one standard deviation increase in citizen ideology (ie becoming more liberal) equates with a $5,717,546 reduction in volatility when compared to the average state. One possible reason I find this relationship is that more liberal populations tend to be better educated. People who are more educated tend to have jobs that are not as volatile as those whom are less educated, such as those working in manufacturing. As the later part of this analysis shows (and I found in the previous chapter), there is evidence that more manufacturing is correlated with greater volatility.

When looking at demographic variables, only those relating to unemployment gain statistical significance. State unemployment has positive statistical and substantive impacts in all three measures of state revenue volatility. Under eight year volatility I find that a one standard deviation increase in unemployment (about 2%) is correlated with a $13,424,637 increase in state revenue volatility when compared to the average state. This makes sense given the dual impact of unemployment increasing the amount of services provided by the state as well as reducing the overall amount available to draw revenue. Federal unemployment, on the other hand, once again behaves oddly. Under four year volatility, the coefficient is negative and statistically significant, while under twelve year volatility it is positive and significant. To complicate the story further there does not appear to be any statistical significance when looking at the impact on eight year volatility, as I also found in Chapter 2.

Similar to the results from the previous chapter, I find only about half of the variables under the economic environment gain statistical significance. Again, I find that intergovernmental revenue has a positive and significant impact of state revenue volatility. Looking at eight year volatility I find that a one standard deviation increase in intergovernmental revenue increases volatility by $171,109,711 when compared to the average state.

The amount of manufacturing in a state I once again find to be positive and statistically significant, but only in the eight and twelve year measures of volatility. Under eight year volatility I find a one standard deviation increase in manufacturing increases volatility by $61,589,715.

As the tax structure of the state goes, I find very similar results as in the previous chapter. The most significant variable is the percent of revenue coming from the sales tax. This variable is statistically significant and negative under all three measure of economic volatility. What I find is that a one standard deviation increase in the percent of revenue coming from the sales tax reduces volatility by $29,410,318. Other tax revenue sources fail to meet statistical significance.

Finally, I once again find there are significant and positive effects from the *fixed effects* variable which controls for state specific error which is not otherwise accounted for.

What I find from the analysis in this chapter adds weight to the findings from the previous chapter. Most prominently, I find that institutions, specifically super-majority voting requirements, do in fact appear to matter to revenue volatility when accounting for several other rival explanations. In regards to super-majority requirements I find evidence of them increasing the volatility of state revenue streams, and therefore my analysis provides evidence in support of my hypothesis that the greater number of votes required to pass tax bills will increase state revenue volatility.

Similar to my findings in the previous chapter, I again have found that certain aspects of a state's political environment, demographic makeup, and economic environment all partially contribute to a state's overall revenue volatility. Aspects of the political environment that have significant impacts are the presence of direct democracy (+) and citizen ideology (-). Under state demographics, I find that state unemployment (+) contributes the most to revenue volatility while federal unemployment appears to have an unexplainable effect. Significant variables under the economic environment show that intergovernmental revenue (+) and the percent of revenue coming from the sales tax (-) are also important, as is the amount of manufacturing in a state (+).

These results are remarkably similar to the one's found in the previous chapter. This shows two things. First, the estimating technique provides consistent estimates. Second, I find additional support for the factors that influence state revenue volatility, as well as those that do not. Most importantly, what I find in both analyses is that state institutions do in fact matter, and they have a direct impact on state revenue volatility.

Again, the degree which the significant independent variables affect state revenue volatility is interesting. Figure 3.1 presents a table showing how a one standard deviation change in each significant independent variable impacts the amount of average volatility (8-year) each variable accounts for. As a reminder, for 8-year volatility the average volatility in state revenue streams is about $200,432,400. A one standard deviation increase in the super-majority requirements accounts for a positive 7.3% of the average revenue volatility. Also accounting for positive revenue volatility are direct democracy (11.2%), state unemployment (6.7%), intergovernmental revenues (84.3%), and manufacturing (30.7%). While intergovernmental revenues still account for the greatest share of state revenue volatility, the institutional constraints imposed by super-majority requirements still make up a sizable share of average revenue volatility. The independent variables which account for a reduction, or negative, proportion of average revenue volatility are again citizen ideology (2.9%) and the percent of revenue coming from the sales tax (14.6%).

Conclusion

This chapter continued the story of economic and budgetary development in the American states as established in the introduction and Chapter 2. As states began to shift into the economy state (Hou 2006) in the 1970s many states adopted new institutions as a result of the Tax Revolt. These institutions, primarily super-majority voting requirements, where meant to limit government and the tyranny of the majority. However, in doing so these institutions changed the strength of the veto players and moved the pivotal players in the decision making process in states where these reforms were adopted.

I predicted that given these rule changes in the legislative arena that the states with the strictest (ie largest percent needed) super-majority requirements would be more volatile than those states which did not. This is based on the idea that it is difficult for states to adjust revenues streams in times of crisis and economic downturn with these strict requirements, while at the same time in times of economic prosperity legislators should be more willing to collect additional revenues because the overall costs of the benefits provided to the citizens is more widespread because of the increased coalition needed to pass legislation. This reduces the number of feasible options for policymakers under an economic downturn, and amplifies the natural business cycle thus making state revenue streams more volatile. The results from this chapter provide evidence of this relationship. The impact of super-majority voting requirements on state revenue volatility is both substantively and statistically significant. This provides further support against the institutional irrelevance hypothesis where state institutions are exogenous to the policy making process.

Table 3.1

State Adoption of Legislative Super-Majority Requirements

State	**Year**	**Super-Majority Required**
AZ	1992	2/3
AR	1932	3/4
CA	1979	2/3
DE	1980	3/5
FL	1971	3/5
KY	2000	3/5
LA	1966	2/3
MI	1994	3/4
MS	1970	3/5
MO	1996	2/3
NV	1996	2/3
OK	1992	3/4
OR	1996	3/5
SD	1996	2/3
WA	1993	2/3

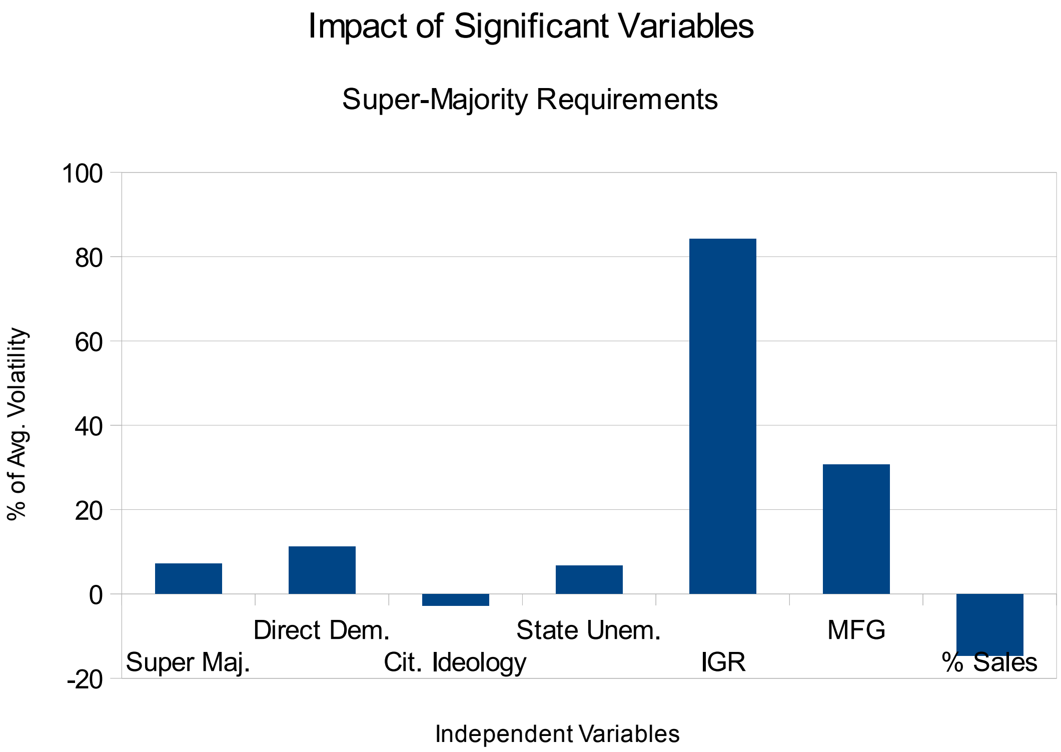
National Conference on State Legislatures
http://www.ncsl.org/issues-research/budget/state-tax-and-expenditure-limits-2010.aspx

Table 3.2 Volatility and Super-majority Requirements

	Volatility (SM)		
	Population Average		
Variable	4 year	8 year	12 year
SM Index	385738.90***	242191.80***	146762.00***
	(112614.50)	(63378.15)	(31868.96)
GOP Governor	19372.80**	-3409.13	2459.48
	(8614.86)	(3628.90)	(2386.68)
Unified GOP	-17858.97*	1533.19	199.91
	(9901.61)	(7479.52)	(5001.44)
Direct Democracy	35123.20***	45056.40***	44478.70***
	(11021.19)	(11979.08)	(8817.03)
Citizen Ideology	-677.22**	-361.87**	-381.29***
	(269.93)	(155.13)	(128.25)
Under 18	28436.65	40699.08	983.97
	(17555.51)	(27299.30)	(8117.28)
Over 65	-53023.51	96064.29	153141.20**
	(224803.30)	(147632.60)	(77804.55)
Population Growth	-85.96	-3046.47	-2010.02
	(2688.49)	(2700.89)	(1588.63)
Federal Unemployment	-10775.32**	3088.46	8514.18***
	(4434.54)	(2994.64)	(3237.41)
State Unemployment	10710.41***	6645.86***	5067.76***
	(3819.73)	(2116.31)	(1405.62)
IGR	38.74**	33.31**	26.74**
	(17.24)	(14.73)	(11.42)
Manufacturing	.06	.15*	.22***
	(.10)	(.08)	(.06)
% Property Tax	-1849.15	53742.79	98338.37
	(149040.10)	(92412.23)	(63294.82)
% Sales Tax	-359315.50***	-210073.70***	-112720.60***
	(53937.42)	(39549.49)	(35665.52)
% Fuel Tax	-614869.80***	-209739.20	-5057.04
	(186364.70)	(147958.40)	(119622.90)
% Income Tax	-221538.7**	-80330.12	-13002.39
	(88591.03)	(72250.47)	(62026.06)
Fixed	.99***	1.02***	.99***
	(.09)	(.09)	(.08)
Constant	117322.70	-54574.76	-112335.30*
	(79304.01)	(85748.20)	(68021.29)
Wald Chi-2	66403.15	8873.55	7707.21
N	1813	1813	1813

*p<.1, **p<.05, ***p<.01

Figure 3.1


Impact of Significant Variables
Super-Majority Requirements
% of Avg. Volatility
100
80
60
40
20
0
-20
Super Maj.
Direct Dem.
Cit. Ideology
State Unem.
IGR
MFG
% Sales
Independent Variables

Chapter 4

Tax and Expenditure Limitations: Controlling the Moral Hazard

The Tax Revolt of the 1970s and 80s spurred a great number of institutional changes in the American states. Sparked by Howard Jarvis and California's Proposition 13, voters realized they had the ability to go into the voting booth and give themselves a $7 billion tax break (Winters 1999). The realization of this ability matched with the growing social movement against big government and government control, in addition to the states' fragmented budget practices, structural imbalances, and huge cumulative debts, helped create a perfect storm for institutional change in the American states.

In the previous chapter I discussed the creation of super-majority voting requirements as one of these institutions. While I discussed how super-majority requirements are usually considered one of the most fiscally constraining institutions stemming from the Tax Revolt, these requirements are not very wide spread given that only thirteen states have adopted them over the years. In this chapter I discuss tax and expenditure limitations (TELs). TELs are another institution spawned from the Tax Revolt, however this institution is much more widespread than that of super-majority voting requirements, and in many aspects it can be viewed as less restrictive.

TELs are constitutional or statutory provisions intended to ensure fiscal discipline. They were first proposed by citizens during the Tax Revolt of the 1970s and 80s in an attempt to limit government spending and over taxation in the states. Tax and expenditure limitations were meant to be a means to bind the hands of government and prevent greater spending (Wildavsky 1979). Voters believed that taxes would be reduced without giving up public services (Ladd & Wilson 1982, Levy 1975). In the 1970's only two states had a form of tax and expenditure limitation, but by 2005 30 states had some sort of TEL in place. Table 4.1 indicates the states with TELs, their year of adoption, and type. Notable examples are Proposition 13 in California, the Hancock Amendment in Missouri, and the Taxpayer Bill of Rights (TABOR) in Colorado. 15 are statutory in nature, and 15 are constitutional amendments. Of these 30, 6 have come from voter initiative (California 1979, Colorado 1992, Massachusetts 1986, Michigan 1978, Missouri 1980, Washington 1979) (Kioko 2008).

TELs are meant to limit government growth by tying either taxing or spending (sometimes both) laws to the annual increase in either personal income or population. This greatly reduces the decision making horizon for policymakers and constrains them in times of financial difficulties and downturns as well as times of prosperity by limiting their decision making focus to the short-term. As you will read in this chapter, the goal of this institution is overcome the moral hazard of differential preferences between citizens and the legislature, and between the current legislature and future legislators. I hypothesize this creates an environment of instability where state economies are tied to a short term focus which in turn amplifies the shocks of the business cycle. This in turn should increase the revenue volatility in states with the most restrictive TELs. What I find in my analysis is that there is strong support for this assertion.

This chapter examines TELs and serves as my final quantitative chapter in this work. First, I examine the theoretical goals of TELs and how they are achieved. In doing so I discuss several theoretical frameworks that have been used to examine the relationship TELs have on policy before discussing how I believe they work in a principal-agent relationship. Second, I provide an overview of the recent major studies which examine TELs and discuss what we know about this institution. Third, I discuss the additive index developed by Amiel, Deller, and Stallman (2009) as the measure I use to gauge the stringency of TELs and how it compares to other measures of TELs in the literature. Finally, I examine how this institution affects state revenue volatility before concluding with a discussion on the importance of these findings.

Controlling the Moral Hazard

TELs fall under the "general class of political phenomena that attempt a tough trick: locking in the preferences of a set of political principals by constraining the future actions of potentially unknown and hostile agents" (Kousser, McCubbins, & Moule 2008, p.1). Recall, the Tax Revolt, more than anything else, was a social movement where citizens gathered around the shared pejorative belief toward government growth and inadequacies. Stemming from the work of others, it is my contention that TELs were a means to limit the ability for government, mainly legislatures, from getting too out of line with the preferences of citizens. In this section I discuss several theoretical frameworks for examining TELs before adding my own discussion of viewing them under a neo-institutional principal-agent relationship.

When TELs are studied there is always an implicit (sometimes explicit) underlying theory of government (Poulson 2004). The two most prominent views when examining TELs are “institutional irrelevance” and “public choice.”[1] As discussed earlier in this work the “institutional irrelevance” view points towards budget rules having no impact on state fiscal policy because of the interdependent nature of budget rules. Under this perspective fiscal institutions contain no information beyond that of aggregate voter preferences. According to Riker (1980) all institutions result from the preferences of the electorate. In regards to the “institutional irrelevance” perspective Poulson (2004) notes, “If institutions no longer suit the majority of the electorate they will be overcome” (p.3).

Those who view TELs under the “public choice” perspective, however, see fiscal institutions as being exogenous because many of them are incredibly stable. For example, all states except Vermont have adopted balanced budget requirements. Additionally, states now have several decades of experience with TELs. Under the “public choice” view fiscal institutions and rules can provide fiscal discipline by limiting what decision makers can do and therefore offsetting the bias towards expansionary government (Poulson 2004).

There are three dominate frameworks that model how to look at TELs under the public choice framework: leviathan, median voter, and rent-seeking. The leviathan model was first proposed by Brennan & Buchannan (1980) and places TELs as part of the social contract. Politicians are assumed to try to maximize state expenditures and taxing in order to best benefit the people while operating within the constraints imposed by TELs. However, this model presents a very simple explanation of decision making by elected officials. The relationship is actually much more complex and reflects interactions among citizens, interest groups, and politicians.

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[1] For a detailed review of the literature in this regard see Poterba (1994).

The median voter model, based on the work of Downs, looks at TELs as a means of establishing the value of additional services that the median voter equates with the price of that service (Flowers 1997, Sjonquist 1981, Chicoicine & Walzer 1986). In this model, TELs are adopted when at least a majority of the public will receive a net benefit from having them in place. While this approach might help us explain why TELs are adopted (in a functional rather than theoretic sense), it does not provide us with any conceptual grounding for analyzing what TELs do or how they impact both government and policy.

The third way of looking at TELs is that of rent-seeking where politicians attempt to minimize the political costs associated with raising a given budget or revenue (Hettich & Winer 1984). This theory places interest groups and citizens on opposite sides of the budgetary spectrum. Special interests attempt to extract "rent" from politicians which can lead to bloated and wasteful spending by the government. When a TEL is introduced to the state legislature, these groups tend to be actively involved in both the formation and implementation of the TEL. This framework points towards some TELs not being very effective because groups have extracted rents from the politicians in order to benefit their private interests.

However, none of these frameworks provide us with any true explanation of the functional mechanism through which TELs work . I believe much of this comes from the lack of correctly identifying a conceptual picture of where exactly TELs fit into the political arena. Prominent "public choice" theories view government as being the key player in creating fiscal institutions. However, citizens can, and do, play a pivotal role as well, not just politicians. The "public choice" assumption of politicians willing imposing restricitons on themselves does not make a whole lot of sense unless looked at in regards to citizen pressure and demands.

In order to address this issue I present a fourth framework which centers around a principal-agent relationship (see Kioko 2008; also Kousser, McCubbins, and Moule 2008). The principal-agent framework comes from the work of economists and focuses on the idea that individuals (the principals) delegate certain tasks to others (agents) who may be more capable of accomplishing the task. However, within any principal-agent framework there exists the possibility of the "moral hazard." The moral hazard is the idea that once the agent has been delegated power there is no way for the principal to ensure that the agent will follow through with full earnest. This comes from information asymmetry between the principal and the agent as well as the possibility of the actors having differing preferences.

Downs and Rocke (1994) provide one of the best illustration of how this relationship applies to political science. They view the chief executive (the president) as being the agents of the citizens. The president and the citizens may have very different foreign policy preferences. The citizens can control the president with the threat of being removed from power. It is difficult for the public to monitor the chief executive's decisions but can easily monitor the success/failure of those decisions (i.e. the success or failure of a war).

As Kousser et al (2008) point out, this same relationship is seen in the difficulties faced by legislators attempting to control the executive branch (see also McKelvey &

Ordeshook 1984, Shepsle & Weingast 1984, McCubbens et al 1987, Epstein & O'Halloran 1999, Huber & Shipan 2002), members of Congress trying to discipline the budgetary decisions of future Congresses (Schick 1995, 2005), and voters giving power to elected officials (Gerber et al 2001, 2004).

Applying these concepts to fiscal policy is quite intuitive. Tax payers (principals) give economic decision making authority to their elected officials and representatives (agents). This gives the agents a great deal of power because states both bring in and spend an incredible amount of money. Given the incredibly complex nature of the economic system in any given state it is very unlikely that the ordinary tax payer can pay close enough attention to ensure that the principals are making good decisions. Unlike the example presented by Downs and Rocke, it is also difficult for the public to see immediate outcomes of these economic decisions. Fiscal institutions, especially TELs, are a way to somewhat remedy the moral hazard by ensuring that there are rules and norms in place that the principals must adhere to. Government, in general, has the desire to grow and people desire services provided by the government (Lewis-Beck & Rice 1985, Nathan 2006). These preferences become unaligned, however, when governments grow faster than citizens are willing to pay for, so institutional controls are put in place in order to keep them from deviating too greatly.

The Tax Revolt, the Moral Hazard, and Neo-institutionalism

It has been my contention throughout this work that institutions do in fact matter and are endogenous to the decision making process of legislators. Framing TELs under a institutional irrelevance or public choice framework goes directly against this assertion. However, by viewing TELs as a way to overcome the moral hazard, two things become apparent. First, it becomes easier to see how and why TELs began developing and gained popularity after the Tax Revolt. Second, when viewing TELs under a principal-agent context it becomes clear how this institution structures the “rules of the game” which legislators must abide by.

As noted earlier, in the 1970s only two states had TELs in place with New Jersey being the first to adopt the institution in 1976 (New 2010). However, by 2005 3/5 of the American states had some form of TEL in place. This drastic increase in popularity of tax and expenditure limitations was a direct result of the Tax Revolt. TELs are an attempt to reign in government growth by implementing structures that constrain future and current lawmakers from shifting their preferences away from those of the constituents and current legislators. These constraints, either constitutional or statutory, by their nature influence and restrict the decisions which policymakers are able to make.

Understanding the theoretical underpinnings of why TELs were adopted following the Tax Revolt is crucial to understanding how this institution affects the policy-making decisions that state legislatures make. Overcoming the moral hazard is an incredibly difficult feat to achieve. In order to be effective, it most likely requires very stringent and detailed rules on what policymakers can and cannot do. By adopting tax and expenditure limitations to help alleviate the moral hazard, the states' policymakers become heavily constrained in their actions. However, the amount that these actors are constrained is contingent on how binding the specific TEL actually is (more on this later).

The Literature on the Effectiveness of TELs

The effectiveness of TELs is the source of some debate. Most early studies found that TELs are ineffective at controlling growth (Abrams & Dougan 1986, Cox & Lowery 1990, Bails 1990) because states shift their tax structures to get around them (Piper 2000) or they have never been truly binding (Kousser et al. 2007). As Wallis and Weingast note:

> "Balanced budget provisions do not produce balanced budgets; debt restrictions do not restrict debt issues; tax and expenditure limitations limit neither taxes nor expenditures; and budget stabilization funds fail to provide budget stabilization," (2006, p.1)

Other studies, however, find that TELs do have real impacts on state policy (Elders 1992; Bails & Tieslau 2000; New 2001, 2010; Staley 2011; Staley & Madden 2012).

Studies examining TELs typically make cross-state comparisons of fiscal activity over time. However, the specific approaches that these studies take varies greatly from one study to another. One of the earliest studies to examine TELs comes from Elders (1992). This work examines TELs using a dummy variable to account for either revenue limits or spending limits between 1950 and 1985. What this study finds is that while *revenue* limits show no correlation with the growth of taxes in the states, there is strong evidence of reduced tax growth in states with *spending* limits. More current work pointing towards TELs being effective is found in Bails and Tieslau (2000). Their study uses a single dummy variable to account for the presence of TELs in panel data between the years 1969 and 1994. These authors find evidence that in states where some form of TEL is in place state spending tends to be lower, ceteris paribus. More recently two studies by New (2001, 2010) indicate that initiative passed TELs reduce government growth and are more effective while legislatively passed TELs actually increases government's growth when examining the years 1972-1996.

While several newer studies find evidence of TELs being effective in at least some areas, several older studies have found that TELs are ineffective at limiting government growth. Abrams and Dougan (1986) provide one of the earliest studies using a pooled cross-sectional regression for 1980. What they find is that constitutional limits have no effect or significance on government growth. However, they do note that this finding may come from the endogenous nature of the institution with citizen preferences. Another early study by Mullins and Joyce (1996) implements a time-series regression from 1970-1990 using a dummy variable for TEL limitations and examines their effect on government size, revenue source reliance, state revenue shares, and state expenditure shares. This study finds that TELs have a very limited effect, if any, on any of these things

Cox and Lowery (1990) implement a different method in examining the effects of TELs by comparing three states which had TELs in place (OH, NC, KY) with three matching states which did not (OH, NC, KY). These authors compare the growth of government in those with TELs against their respective matching states without TELs. What the authors find is that there appears to be no difference between states with TELs and those without.

At least two studies implement yet another method, interrupted time-series, to explore the relationship between TELs and government growth. Howard (1989) looks at how TELs impact the ratio of taxes collected to personal income, and Bails (1990) examines how TELs impact the average percent change in state revenue and expenditures. Neither study finds a significant difference between their dependent variables before and after the implementation of TELs.

In general, the majority of these studies (both finding evidence for and against the effectiveness of TELs) share a set of potentially troubling characteristics. For one, these studies treat all TELs as equal. However, it has been noted that TELs vary greatly in their restrictiveness (New 2001, 2010; Poterba & Reuben 1999; Amiel, Deller, & Stallman 2009). A second concern is that pooled models often underestimate the standard errors of the model and can therefore greatly inflate the *t*-statistic leading to overstated impacts. A third concern is the endogeneity problem pointed out by Rueben (1997) and Shadbegian (1998) stemming from the differences in the electorates in the American states. These concerns will be addressed in turn in the following sections either through my measurement of TELs or my methodology for analyzing their impact.

Measuring TELs

Most previous literature previous literature does a rather poor job of measuring the stringency of TELs. In fact, most studies simply use a dummy variable to signify the presence of a TEL in the state (Bails & Tieslau 2000, Abrams & Dougan 1986, Mullins & Joyce 1996, Howard 1989, Bails 1990), while some include two dummies to signify a distinction between one type of TEL and another, whether that distinction is in regards to how to TEL is passed (New 2001, 2010) or whether the TEL is focused on taxing or spending (Elders 1992). In reality, TELs are much more complex than this. Similar to balanced budget rules, there are several aspects in which TELs vary. Given this, for my work I chose to use an index which measure the stringency of TELS. This index, developed by Amiel, Deller, and Stallman (2009), looks at six distinct characteristics of each state TEL to measure its stringency, or how binding a TEL is. These characteristics include 1) the type of TEL; 2) if the TEL is constitutional or statutory in nature; 3) growth restrictions; 4) method of approval; 5) override provisions; and 6) exemptions. These characteristics are largely based on the previous work of Joyce and Mullins (1991) with a few additions.

1) TELs can be broken into four relatively large categories: a)revenue and/or expenditures; b) appropriations; c) tax revenue; and d) general fund expenditure limits. TELs that limit the aggregate amount state revenues (or expenditures, or both) can grow from year to year are the most binding. The other categories characterize specific areas under either taxing or spending that are limited by the TEL. Since these only limit specific areas of revenues or expenditures they are less restrictive.

2) Whether a TEL is statutory or constitutional also contributes to its overall restrictiveness. As Fino (2003) points out statutory restriction can be easily changed and manipulated, especially in times of economic woes. Constitutional requirements, however, are often harder to change (even though states amend their constitutions more frequently the US Constitution) and are therefore commonly viewed as more stringent.

3) TELs are often indexed so that the growth in taxing or spending cannot exceed the growth of another area. Growth restrictions relate to what the TEL is tied to. Common ties are population change, changes in personal income, changing preferences, and inflation. The most stringent of these ties growth to either inflation or population change. When a TEL is tied to inflation the amount of funds available to provide services can increase, but if the population grows than these resources must be spread over a greater number of people. When a TEL is tied to population change it allows the state to provide goods and services to a greater number of people as long as there is no increase in inflation, which is rarely the case. The least restrictive TEL is one that only restricts new taxes from being imposed rather than limiting the growth of the current ones.

4) The method of approval is a bit tricky to deal with. The most restrictive TELs are constitutional in nature, especially when the state is required to hold a convention in order to amend it. However, if the TEL is statutory then it is less restrictive because the legislature only needs to pass a bill in order to amend it.

Where things become more complicated is when direct democracy—either initiative or referendum—come into play. Referendums are usually considered more binding than initiatives because the TEL must pass through both houses of the legislature and also through a popular vote by the people. However, depending on the process and difficulty to get an initiative on the ballot, some states initiatives could be considered harder to pass than a referendum and therefore be more restrictive. For example, California ties its initiative process to a percentage of people voting in the last gubernatorial election. However, a state like Nebraska ties this percentage to the number of registered voters in the state and therefore requires a great deal more signatures. Therefore, a TEL passed through the initiative in Nebraska would be more stringent than one passed in the same manner in California.

5/6) Overrides and exemptions relate to specific provisions within the TEL that allow policymakers to circumvent it. The weakest TELs allow legislators to bypass the TEL simply by declaring a state of economic emergency or a simple majority vote in the legislature. The strictest TELs, however, do not permit overrides or require both citizen and legislative approval in order to raise taxes. Often TELs also have specific exemptions written in for things such as court mandates and capital projects. Each type of exemption written into the TEL weakens the stringency of the TEL and makes it less binding.

In the index created by Amiel, Deller, and Stallman (2009) each TEL characteristic is given an ordinal value. The points for the first four characteristics are added together while points from the last two (overrides and restrictions) are subtracted from the total. The first four categories should theoretically make the TEL more binding while the final two categories should theoretically weaken the given TEL. This gives an index ranging from 0 to 30 where a 0 indicates no TEL in place and a 30 represents the most restrictive TEL. This index has a mean value of 5.2 with a standard deviation of 7.2.

TELs and Volatility

TELs are more widespread than super-majority voting requirements, however in many ways they can be less restrictive. As the previous section points out there are several aspects of TELs which can vary from state to state, and even from year to year. While most studies view all TELs as the same, I believe I have illustrated how this is an incredibly misguided perception. Depending on the type, nature, restrictions, approval, exemptions, and overrides of the TEL some are more stringently binding than others. Less restrictive TELs are more likely to have built in loop-holes and other methods for policymakers to get around them. However, in the states with more stringent TELs this becomes much more difficult.

The growth restriction characteristic of TELs is the main instrument that binds the hands of legislators. By restricting taxing and spending growth to that of population, inflation, or personal income legislators do not have the ability to make any long-term fiscal planning or adjust revenue and spending in times of economic booms and busts. By shortening the decision making horizon of legislators, and restricting their ability to adjust state budgets in a quick fashion, I believe ties the state economy to the natural business cycle while at the same time accentuating the fluctuations. When the economy drops, policymakers operating under the most restrictive TELs are unable to raise funds necessary to provide services and are therefore pushed into an economic emergency. Like super-majority requirements this creates an environment where spending cuts are much more likely than revenue increases. Additionally, depending on the type of TEL in place states may be forced to borrow money by issuing bonds in order to pay for required services. Likewise, when the economy grows, legislators are unable to increase revenues to adjust for previous payments and required services. By tying policy makers to the short-term, the ability for legislators to make and achieve long term planning which could lead to stability is greatly decreased.

Additionally, as noted in the previous chapter growth and volatility are often negatively related (Ramey & Ramey 1991, 1995; Hnatkovska and Loayza 2003). While the literature surrounding TELs is inconclusive regarding the impact of TELs on government, the handful of studies that do find significant impacts of tax and expenditure limitations have shown that they have a negative impact on growth (Elders 1992; Bails & Tieslau 2000; New 2001, 2010). However, volatility is a very different concept than growth. While the long-term impact of TELs may reduce overall growth in government, the way in which TELs constrain policymakers is likely to accentuate the fluctuations of the growth trend.

Again, it is worth noting that these expectations differ from both those of balanced budget rules and super-majority requirements (to some extent). Unlike the constraining institution of balanced budget rules, which I hypothesized and showed evidence lead to lower levels of volatility, I expect TELs to by associated with greater levels of volatility. This expectation is similar to that of super-majority requirements, however the theoretical reasoning behind it is different. While each of these institutions in some way constrains policymakers in their decision-making processes by establishing the “rules of the game,” the varied nature in how these institutions are structured to attempt to achieve their goals leads to different hypotheses on their likely impact on state revenue volatility.

Analysis

To analyze the impact of TELs on state revenue volatility I use the same methods as in the previous two chapters. Again, my analysis covers 49 states over a 37 year period giving me 1813 observations. I model the relationship using generalized estimating equations after incorporating a fixed-effects vector decomposition. I also include an AR(1) correction for serial correlation and robust standard errors clustered on the individual states. Additionally, I include year dummies to account for temporal disturbances.

Once again this data includes a series of control variables to account for other possible explanations on what accounts for state revenue volatility. Economic variables include the amount of intergovernmental revenues received by the state (Shadbegian 1996, Nicholson-Crotty 2004), the percentage of GSP coming from manufacturing (Crain 2003), and the percent of state revenue coming from each of the property, sales, fuel, and income taxes (Crain 2003). Under the political environment of the state I include variables for the presence of a Republican governor and a unified Republican government (Leyden & Borrelli 1995, Lewis-Beck & Nadeau 2000), the presence of direct democracy (Gerber 1996, Gerber & Phillips 2006), and citizen ideology (Berry et al 1998). To account for demographic concerns I include variables for the percent of the state population under 18 and over 65 (Elders 1992, Crain 2003), population growth (Crain 2003), and federal and state unemployment (Dye 1996, Crain 2003). Regional and state differences (Berry & Berry 1992) are accounted for in the *fixed effects* variable produced from the fixed-effects vector decomposition.

As in the last chapter on super-majority voting requirements, endogeneity is once again an important concern that must be considered. Perhaps more so than the other institutions, endogeneity between TELs and citizen preferences is important to consider because while most TELs are stable over time, some have become either more or less binding over the years as calculated by the state index. However, while the adoption of TELs may be slightly correlated with citizen preferences, these preferences are unlikely to have a direct impact on volatility (save for how they have impacted institutional adoption). I deal with this issue in two ways. First, as in the other analyses a variable is included measuring citizen ideology. While this does not directly remove the issue of endogeneity it does purge the effect TELs from citizen ideology (Elders 1992). This at least serves a proxy for citizen preferences. Second, the method itself helps correct for some of the possible endogeneity.

First, the fixed-effects vector decomposition accounts for state specific error so I am left with within state variation. Second, by including year dummies in the time-series, the model adds to a causation argument rather than one merely showing a correlation. Third is the nature of the GEE model itself. Recall that GEE produces estimates based on a population average. Therefore states with, say, a 15 on the state TELs index are compared to the average state. By looking at populations of states, rather than individual states, it is incredibly hard to argue that every state had the same level and type of endogenous factors coming into play because the citizen ideologies of the states adopting TELs vary greatly . As noted in the previous chapter, however, growth is a very different concept than volatility. After testing by regressing TELs on the error term I find that tax and expenditure limitations are not correlated with the errors in my final volatility model, and therefore I do not have an issue with endogeneity.

The final model is, by nature, incredibly conservative. Every correction weights results towards the null hypothesis.

Results

The results from my model show strong support for main institutional hypothesis on the stringency of TELs being correlated with increased volatility. In this section I discuss both the statistical and substantive impacts of important variables. Results for the analysis are presented in Table 4.2.

I begin by examining the results of my main institutional hypothesis on the stringency of TELs. For all three measure of state revenue volatility, the coefficients for TELs are positive and statistically significant. As with the other institutions I examine in this work, the substantive impact of TELs is also very real. I find that a one standard deviation increase in the stringency of TELs increases state revenue volatility by $16,260,120. This means that a state with a middle-of-the-road TEL with an index of 15 has, on average, a revenue stream that is about $16 million more volatile than a state with a rather low TEL stringency of 7 when compared to the average state. However, if you compare states with a middle-of-the-road TEL index of 15 to states with no TEL in place, I find that the revenue stream is about $32.5 million more volatile when compared to the average state. These findings provide support for my hypothesis that more stringently binding TELs will increase revenue volatility in the states, ceteris paribus.

Variables under the political environment explanation show similar results as the proceeding two chapters. Again I find that neither Republican gubernatorial control nor a unified Republican government are statistically significant, with the exception of Republican gubernatorial control under the four year volatility measure. I also find that the coefficient for direct democracy is once again positive and incredibly significant for all measures of revenue volatility. Under the eight year volatility measure, states that have direct democracy present tend to have revenue streams starting $21,469,985 more volatile than states without direct democracy when compared to the average state. Finally, I find that citizen ideology is once again negative and significant for all measures of volatility. Under citizen ideology, a one standard deviation increase (becoming more liberal) equates with a $5,328,708 reduction in state revenue volatility.

When looking at the demographic variables I once again find that the only ones that appear to have a statistically significant impact on volatility are those measuring unemployment. Under eight year volatility I find that a one standard deviation increase in state unemployment increases revenue volatility $13,009,891 when compared to the average state. Similar to the previous two analyses of fiscally constraining state institutions is the impact of federal unemployment. When I examine the impact of TELs on state revenue volatility I find that federal unemployment is statistically significant in both the four and twelve year volatility models, while it is insignificant under eight year volatility. What is particularly interesting is that when looking at four year volatility the coefficient sign is negative and under twelve year volatility the sign is positive, just as I found in the previous two analyses.

I also find similar findings as the proceeding analyses when examining the results of economic environment variables. For all three measures of volatility I once again find that intergovernmental revenue is both positive and statistically significant. I find that a one standard deviation increase in intergovernmental revenue is correlated with a $168,066,859 increase in state revenue volatility when compared to the average state. Somewhat different from the other analyses, however, is the impact of manufacturing of revenue volatility. In the previous analysis I found manufacturing to be significant in both the eight and twelve year volatility models. However, in this analysis I only find the amount of manufacturing in the state statistically significant in the twelve year model.

Results for the variables measuring the tax make-up of the state also show similar results to previous analyses with one caveat; under the four year volatility model all taxing methods show statistical significance except for the property tax. However, the only variable to show statistical significance across all models of volatility is the percent of revenue coming from the sales tax which is once again negative. I find that under eight year volatility a one standard deviation increase in the percent of revenue coming from the sales tax decreases state revenue volatility by $30,527,546 when compared to the average state.

Lastly, as with the previous two analyses I find here are significant and positive effects from the *fixed effects* variable which controls for state specific error which is not accounted for.

In my final quantitative chapter of this work I find markedly similar results as the previous two chapters. First, I once again find strong support for my institutional hypothesis along with similar support for the rival explanations of a state's political environment, demographic makeup, and economic environment. The analysis in this chapter provides evidence that more stringently binding TELs are correlated with an increased level of revenue volatility and therefore provides support for my hypothesis.

Similar two the previous chapters, I find that a state's political aspects that impact volatility are direct democracy (+) and citizen ideology (-). Demographics also are found once again to partially contribute to revenue volatility as well. State unemployment (+) appears to have the most significant effects. This makes sense given its dual nature of reducing the tax base while at the same time requiring states to provide a greater number of services. Federal unemployment again appears to have some impacts depending on the model of volatility used, however the changing nature of the sign on the coefficient remain unexplainable.

Under a state's economic environment I once again find about half of the variables have significant impacts on state revenue volatility. Intergovernmental revenues (+) have the largest substantive impact, but I also find that the amount of revenue coming from the sales tax (-) to be the most consistent correlate of revenue volatility compared to the other measures of a state's revenue stream. Interestingly, in this analysis I also find evidence of the percent of revenue coming from the fuel (-) and income (-) taxes also having significant impacts, but only under the four year volatility model. Perhaps most surprising is that under this chapter's analysis I do not find either statistical or substantive impacts coming from state manufacturing, however the coefficient signs are in the same direction as in the other analyses.

I find these results are once again consistent with the results found in the previous two chapters. This is the third time, and third institution I examine in this work, I have found that institutions do in fact matter when looking at state revenue volatility. Additionally, this analyses has added weight to other factors which may influence state volatility and those which do not.

As in the previous chapters, I once again find the degree which the significant independent variables affect state revenue volatility interesting. Figure 4.1 presents a table showing how a one standard deviation change in each significant independent variable impacts the amount of average volatility (8-year) each variable accounts for. As a reminder, for 8-year volatility the average volatility in state revenue streams is about $200,432,400. A one standard deviation increase in the stringency of TELs accounts for a positive 8.1% of the average revenue volatility. Also accounting for positive revenue volatility are direct democracy (16.7%), state unemployment (6.5%), and intergovernmental revenues (85.9%). While intergovernmental revenues still account for the greatest share of state revenue volatility, the institutional constraints imposed by TELs still make up a sizable share of average revenue volatility. The independent variables which account for a reduction, or negative, proportion of average revenue volatility are once again citizen ideology (2.7%) and the percent of revenue coming from the sales tax (15.2%).

Conclusion

In this chapter I took an in depth look at tax and expenditure limitations. Along with super-majority voting requirements, TELs stand out as one of the most lasting and influential institutions states adopted as a result of the Tax Revolt. However, instead of limiting the tyranny of the majority as I argue super-majority voting requirements do, TELs act as a way of overcoming the moral hazard by constraining the decisions future and current policymakers can make in regards to taxing and spending. By limiting the decision making horizon of these actors the idea is to limit government by keeping legislators in line with the preferences of the citizens.

I predicted that states which had strict/binding TELs would have greater revenue volatility than those which did not. By restricting taxing and spending growth to that of population, inflation, or personal income legislators do not have the ability to make any long-term fiscal planning or adjust revenue and spending in times of economic booms and busts. By shortening the decision making horizon of legislators, and restricting their ability to adjust state budgets in a quick fashion, I believe ties the state economy to the natural business cycle while at the same time accentuating the fluctuations. The analysis in this chapter shows evidence of this relationship both statistically and substantively. By finding such results I offer further evidence against the institutional irrelevance hypothesis common in political science and policy research.

Table 4.1

State Adoption of Tax and Expenditure Limitations

State	**Year**	**Constitutional or Statutory**
AK	1982	C
AZ	1978	C
CA	1979	C
CO	1991	S
	1992	C
CT	1991	S
	1992	C
DE	1978	C
FL	1994	C
HI	1978	C
ID	1980	S
IN	2002	S
IA	1992	S
LA	1993	C
ME	2005	S
MA	1986	S
MI	1978	C
MS	1982	S
MO	1980	C
	1996	C
MT	1981	S
NV	1979	S
NJ	1990	S
NC	1991	S
OK	1985	C
OR	2000	C
	2001	S
RI	1992	C
SC	1980	C
TN	1978	C
TX	1978	C
UT	1989	S
WA	1993	S
WI	2001	S

National Conference on State Legislatures
http://www.ncsl.org/issues-research/budget/state-tax-and-expenditure-limits-2010.aspx

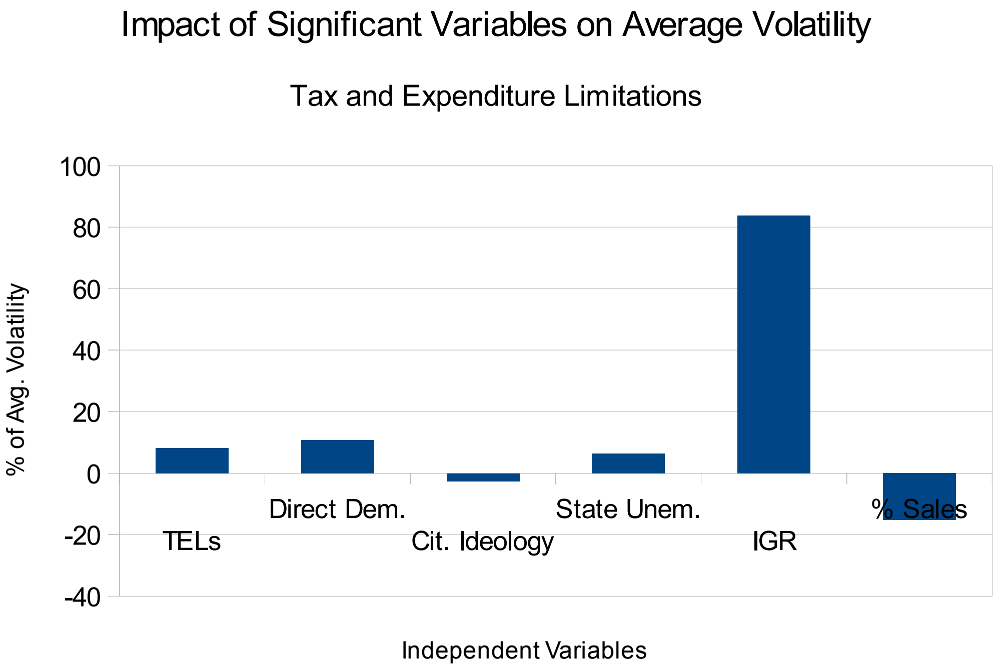
Table 4.2 Volatility and TELs

Volatility (TELs)

	Population Average		
Variable	4 year	8 year	12 year
TELs Index	3425.47*** (1060.23)	2258.35*** (737.36)	1942.69*** (461.01)
GOP Governor	19336.32** (8613.38)	-3563.67 (3604.91)	2262.09 (2414.50)
Unified GOP	-18332.8 (9795.04)	1381.41 (7437.98)	134.50 (4983.74)
Direct Democracy	33254.38*** (11148.04)	42939.97*** (11289.49)	41001.94*** (8688.31)
Citizen Ideology	-669.00** (266.66)	-337.26** (156.25)	-366.61*** (130.76)
Under 18	31929.20** (16346.95)	42659.36 (26005.39)	2731.43 (7711.81)
Over 65	-32494.09 (209110.70)	62552.85 (148322.70)	127311.20 (75666.06)
Population Growth	-220.817 (2627.516)	-3068.69 (2717.96)	-2017.66 (1599.53)
Federal Unemployment	-13429.06*** (4448.43)	2160.79 (2957.83)	8019.85** (3184.53)
State Unemployment	10487.2*** (3788.51)	6440.54*** (2104.19)	4893.35*** (1396.81)
IGR	38.70** (17.25)	33.14** (14.78)	26.60** (11.47)
Manufacturing	.04 (.10)	.13 (.08)	.20*** (.06)
% Property Tax	-368.28 (148025.20)	50512.03 (92795.39)	96952.10 (63816.97)
% Sales Tax	-373001.70*** (55389.20)	-218053.90*** (40374.45)	-115005.20*** (35438.95)
% Fuel Tax	-684233.40*** (179306.70)	-242894.10 (146093.10)	-21314.75 (118837.90)
% Income Tax	-222728.40** (88566.54)	-80232.07 (72217.86)	-11200.97 (61865.50)
Fixed	.99*** (.10)	1.04*** (.08)	1.02*** (.08)
Constant	346648.70*** (90905.61)	88528.51 (75164.53)	-28818.48 (64768.76)
Wald Chi-2	157330.61	5288.81	10530.30
N	1813	1813	1813

***p<.1, **p<.05, ***p<.01**

Figure 4.1


Impact of Significant Variables on Average Volatility
Tax and Expenditure Limitations
100
80
60
40
20
0
-20
-40
% of Avg. Volatility
TELs
Direct Dem.
Cit. Ideology
State Unem.
IGR
% Sales
Independent Variables

Chapter 5

Ohio vs Michigan: Differences in the Rust Belt

In the introduction to this work I commented that the varying degree of state economic hardship given the nation-wide recession has been left out of most of the mainstream dialogue. However, the fact remains that some states have weathered the storm much better than others. I believe one way of understanding this phenomenon is by looking at the individual fiscal institutions that the states have adopted over the years. In this work I specifically examined balanced budget rules, super-majority voting requirements, and tax and expenditure limitations. Additionally, instead of focusing on growth as much of the literature surrounding state economic success does, I have focused on volatility—a measure of risk associated with the growth of state economies. Up until now this work has been heavily quantitative using statistical methods to analyze numerous states over a relatively long time-series. However, there are several benefits to examining political and economic phenomena under the lens of a small case study. Small *N* studies have been shown to allow researchers the ability to make generalizations on a unit of analysis other than the state, most rigorously test a hypotheses, and provide greater measurement advantages than large *N* studies (Nicholson-Crotty & Meier 2002). Additionally, case studies can also enhance the internal validity of research just as large *N* studies can enhance the external validity of research (King, Keohane & Verba 1994). This chapter provides internal validity for the statistical generalizations I presented in the previous chapters.

In this chapter I examine two states, Michigan and Ohio, which by most accounts are as similar as any two states in the country can be in regards to their environments and demographic factors. However, there are key differences in these two states as well. Looking at the time-series data, the fiscally constraining institutions these two states have adopted over the years are very different. Both states have balanced budget requirements, however Ohio's is more stringent than Michigan's. Michigan also has both tax and expenditure limitations and super-majority voting requirements; Ohio does not have either of these institutions. Additionally, Michigan's average volatility between 1969 and 2005 is almost double that of Ohio's. In this chapter I examine recent accounts of how these states are reacting to the recent economic crisis and provide expectations for how these states are most likely to respond based on the previous analyses.

In this chapter I use Mill's method, also known as the most-similar method. The idea behind this method is that the researcher finds two cases, in my case states, which are similar in every respect except for the outcome variable one is interested in. The researcher then looks for differences between the two cases for variations which may account for the differences in outcome. Since everything else in the comparison cases are similar, ceteris paribus, these independent variables can be seen as having real impacts on the outcome variable. In my analysis I look at Ohio and Michigan as my test cases. These two states were chosen for two primary reasons. First, Ohio and Michigan are incredibly similar in all important aspects except for their respective institutions and average volatility. Second, these two states have been used in institutional comparative analysis in previous works (see Kousser, McCubbins, & Moule 2008).

Table 5.1 reports the 37 year average of all variables previously used in this work for both Ohio and Michigan. The analyses and results in the previous three chapters point to several variables that have the most statistical and substantive impact on volatility and therefore should be the key variables to focus our attention. These variables, used to control for rival explanations in the previous analyses, include the presence of direct democracy, citizen ideology, unemployment, intergovernmental revenue, manufacturing, and the percent of state revenue coming from the sales tax. While the values of these variables are slightly different between Ohio and Michigan, no difference is greater than or equal to one standard deviation and therefore they have little statistical difference.

As Table 5.1 shows both Ohio and Michigan have direct democracy procedures. Both states also have relatively similar citizen ideologies, although Michigan appears to be about 7% more liberal than Ohio. However, this difference is not that great given the standard deviation of citizen ideology across the states is about 15. Unemployment is also very similar between the two states. Federal unemployment is of course the same for both states, however state unemployment is about 1.5% higher in Michigan than Ohio. Again, this is less than a one standard deviation difference. Intergovernmental revenue is very similar between the two states with Ohio receiving, on average, slightly more than Michigan. The percent of revenue each state receives from the sales tax is almost identical between Ohio and Michigan with Ohio receiving about 0.01% more if its revenue from the sales tax. While the other variables are less important to consider given the analyses in the previous chapters, one can see that there is not a great deal of variation between the states in partisan makeup, demographics, or other tax bases.

Where Michigan and Ohio do differ is in their average revenue volatility, which is my dependent variable, and their adopted institutions, which are my primary independent variables. Michigan's volatility is about twice that of Ohio's ($595,965,700 compared to $332,022,700 for eight year volatility, respectively). In regards to their adopted institutions, Ohio has a very strict balanced budget rule with a score of 10 while Michigan has a relatively mild balanced budget rule with a score of 6. Also, Ohio does not have a super-majority voting requirement while Michigan, as of 1994, requires a 3/4 majority vote to raise its property tax, nor does Ohio have any sort of TEL in place while Michigan has a middle-of-the-road TEL with a score of 15 which it adopted in 1979.

Given the analyses in the previous chapters, the variation in volatility between these two states makes sense given the institutions present in each. In the previous chapters I found strict balanced budget rules tend to decrease volatility while super-majority voting requirements and strict TELs tend to increase volatility. Ohio has a strict balanced budget requirement but neither super-majority voting requirements or TELs. Michigan has a less stringent balanced budget requirement but does have both a super-majority requirement and a TEL.

In the remainder of this chapter I look at both Michigan and Ohio and examine how these institutions have contribute to legislative behaviors which may impact the volatility of their respective economies during the current economic recession.

Expectations

In the previous three previous chapters I outlined how the institutions of balanced budget rules, super-majority voting requirements, and tax and expenditure limitations are likely to impact state revenue volatility and presented rather stringent statistical evidence to support my claims. In this chapter I provide accounts of these institutions' "real-world" impact on Michigan and Ohio during the current economic recession and therefore provide internal validity for the results found in the previous chapters.

Ohio has a strict balanced budget requirement (10 on the ACIR scale), however it does not have either a super-majority voting requirement or any form of tax and expenditure limitation. Given this, I expect to find accounts of how this institution creates an environment where the state must internalize its externalities and therefore should limit the both the desire and ability of policymakers to increase revenues and services in times of economic prosperity as well as reduce the burden of providing services to citizens in times of economic downturn. Given the current time of economic recession I expect to find accounts of the state finding alternative ways to fund projects besides raising taxes or reducing services. Balanced budgets should keep policymakers most in line with the status quo where all costs of doing business are internalized by the states because they are not allowed to carry over debt.

Michigan, on the other hand, has only a medium stringency balanced budget rule (6 on the ACIR scale). However, what Michigan has that Ohio does not is both a super-majority voting requirement and a tax and expenditure limitation. In 1994 Michigan adopted a super-majority requirement in order to raise the property tax, and in 1978 it passed the Headlee amendment giving it one of the earliest TELs with a medium stringency (15 on the scale of 30). Given this I expect to find two things based on my previous analyses. First, I expect to find evidence of Michigan policymakers finding it difficult to raise revenues under the current economic downturn and being forced to make dramatic cuts in order to deal with drops in the revenue stream due to the states super-majority voting requirement. This in turn can amplify the shocks of the natural business cycle. Second, given the type of TEL Michigan has in place I expect to find evidence of policymakers being unable to raise funds necessary to provide services and are therefore being pushed into an economic emergency.

Institutional Impacts in Michigan

In 1994 Michigan passed a legislative super-majority requirement requiring 3/4 of the state legislature to approve any increase to the state's property tax. This makes Michigan one of only 13 states in the U.S. which have implemented a super-majority requirement to raise taxes in one form or another. Since its passage, many critics have been vocal about the downsides of super-majority requirements in both Michigan and the twelve other states which have the law on the books. For instance as Leachman, Johnson, and Grundman (2012) point out many believe, and research has shown, that super-majority requirements decrease bond ratings and credit worthiness and therefore increase the cost of state capital improvements. Additionally, super-majority requirements tend to encourage states to cut spending which makes it more difficult for states to recover from an economic downturn (Leachman, Johnson, and Grundman 2012).

I argue in Chapter 3 of this work that super-majority voting requirements will increase state volatility. Under an economic crisis, such as the one recently experienced by the United States, the feasible options for policymakers are greatly constrained. A super-majority coalition to raise taxes in times of recession is incredibly difficult to form therefore requiring vast spending cuts. However, in times of an economic boom the super-majority is likely to increase non-redistributive spending and services at the expense of the minority. Both of these aspects are likely to amplify the shocks of the natural business cycle. Given the recent nationwide economic crisis I find evidence of the former (budget cuts) occurring in Michigan, especially in regards to education. Like most states the majority of Michigan's property tax goes towards education, and since 1994 adjustments to the property tax must be passed by 3/4 of the state legislature.

Since the 1930's most states, including Michigan, have allowed local governments to collect property taxes used to fund education. One of the biggest issues contributing to the economic crisis in the US states appears to be an all but total collapse of the housing market. This collapse has lead to a massive drop in housing values which in turn leads to dramatic drops in property tax revenues. This has negatively impacted public education in Michigan and has lead to severe cuts being made in many of the districts.

Currently, many of Michigan's schools districts are in “dire straights” because of decreased school enrollment and cuts in state aid (Shockley & Clark 2012). One of the most recent districts to enter crisis mode is the Pontiac School District which currently has a $24.5 million deficit (Abbey-Lambertz 2012). In addition to this already large deficit, in April, 2012 the state withheld $1.25 million from the district because of questions about the districts desire to cut its budget by $15 million (Abbey-Lambertz

2012, Higgins 2012). However, the district has already laid off 95 employees in an effort to make budget cuts.

Other school districts are having similar issues. For instance, some schools are being “forced” to pass budgets that are balanced on paper but not in reality in order to meet state recommendations. One example of this is the Gilroy Unified School District. In their proposed budget to the state they include a cost of living adjustment to the amount of money expected from the state. However, the state has not paid the district for this cost of living adjustment since the 2007-2008 school year. This creates two problems. First, the state owes the school district a combined $61.7 million for the cost of living adjustments it has not paid, nor does it have the ability to pay. Second, while on paper the district's budget is balanced, in reality the district must plan on further budget cuts including service cuts and furlough days. Both the state and the local school district are faced with an increasing need to make budget cuts.

Having a super-majority voting requirement puts huge constraints on the Michigan policymakers, and more often than not they are forced to make huge cuts because of the institutional difficulty in raising new revenue. In 2011, when the most recent budget was passed, Michigan was faced with dramatic cuts in several areas such as mental health, corrections, welfare, local governments, state employee compensation, K-12 education, and funding for universities and community colleges (Luke 2011, Gardner 2011). In regards to mental health, huge cuts were made to the Department of Community Health in the areas of mental health care, health promotions, and payment to hospitals for physician residency training. The state also closed three major corrections facilities, and put a 48 month time limit on welfare recipients. State employees were also forced to start paying 20% of their healthcare premiums. Finally, all levels of education received severe budget cuts.

While these accounts do not specifically pinpoint super-majority requirements as a factor contributing to these spending cuts, this type of activity is consistent with what I would expect from a state with super-majority requirements under a fiscal crisis. One of the main contributors to the nation-wide recession is a decrease in housing values. This decrease reduces the amount of property taxes being collected by the government. Given that Michigan's super-majority requirement is targeted at the property tax and property taxes usually go towards funding education I would expect to see cuts in regards to education rather than an increase in taxes. This is exactly the type of action I find occurring in Michigan. Additionally, I find evidence of the state directly cutting a wide range of other services. Some of these can be attributed to the presence of super-majority requirements. However, some of these may also be attributed to having both super-majority requirements and TELs.

Michigan has one of the oldest, and most stable TELs in the country which can lead to economic hardship for the state. Passed in 1978, and going into effect in 1979, the Headlee amendment adds certain provisions (Sections 24-34) to Article IX of Michigan's constitution. This amendment has four major components which limit the legislature's ability to control taxing and spending. First, the Headlee amendment dictates that the total revenue collected by the state may not exceed 9.49% of personal income in Michigan. Second, if the state mandates that local government must provide new programs and/or services then the state must provide full funding for these benefits. Third, the amendment prohibits local governments from adding new taxes, increasing existing taxes, or increasing bond indebtedness without voter approval. Fourth, the state may not reduce the portion of its outlays that go to local governments below 41.61% the level where they were when the amendment was passed (Reed 2003).

The Headlee amendment originally passed with strong voter support. The sentiment was so strong that Richard Headlee, the man spearheading the amendment, commented that “No statewide candidate can be elected without first backing tax limitations” three months before voters approved the amendment (Reed 2003). As discussed in the previous chapters, much of this sentiment can be attributed to the disjointed budgeting processes and debts being incurred by the state over the last forty years during the welfare state (1930-1970).

Since its passage, the Headlee amendment has garnered both much support and much controversy. Simply looking at news accounts from the last couple of years it becomes apparent that the Headlee amendment is having real impacts on the state's economic environment. The most current examples of the Headlee amendment coming into to play fall under two main categories, 1) raising taxes to pay for services and/or goods and 2) requiring the state to pay for state mandated local programs.

One example of the first category comes from Allen Park, Michigan. In 2011 the city proposed approximately $1.8 million in new taxes increasing revenue from $10.59 million to $12.5 million (Houpt 2011). The municipality proposed these new taxes in order to balance its budget without cutting essential services such as the entire fire department. However, voters rejected the new taxes by a three to one margin. The Headlee amendment requires that new taxes must be approved by the citizens, and without such approval governments are incredibly constrained in their ability to pay for goods and services.

Allen Park is not unique in having this type of trouble. Throughout Michigan cities are faced with a deficit crisis because of plummeting property values and decreased revenue sharing by the state (Detroit Free Press 2012). In fact, about 60 cities in Michigan filed deficit-elimination plans with the state Treasury Department in 2011 alone. In Allen Park, taxable income dropped ten percent between 2009 and 2010. In short, traditional revenue sources appear to be drying up in Michigan and both the cities and the state are running out of options and must appeal to voters which, if Allen Park is any indication, is not likely to happen.

Another example comes from Ann Arbor, Michigan where a new tax was proposed for road repairs. The $0.8 million proposed tax was based on Michigan's Public Act 283 of 1909 which predated the Headlee amendment. However, despite the state legislature's acknowledgment that road repairs were needed, it banned the new tax without voter approval (Chronicle Staff 2011).

There are also several current examples of the Headlee amendment having impacts in regards to the second category of requiring the state to pay for mandated services. Perhaps the most controversial and prominent example comes out of Detroit, Michigan. Given the great financial crisis of Detroit, an agreement was reached that instilled a nine member Financial Advisory Board, run by a newly hired Program

Management Director, to oversee the city's budget (Oosting 2012). The deal calls for the city and state to split the salaries of the advisory board members ($25,000) while the city is supposed to provide the six-figure salary of the program director. This agreement has been approved by the city council, mayor, governor, and state treasurer. However, the majority of the city's residence believes that the state should have to pay for the entire cost of the program since the legislature is mandating that the advisory board be created under Public Act 4 (Oosting 2012). They argue that this act, the Emergency Manager Law, violates the Headlee amendment by forcing local government to add new costs (Scott 2012).

Other current examples exist regarding the Headlee amendment's requirement for the state to financially support the local governments. Currently, Governor Rick Snyder wants to lower state revenue sharing $42 million less than required by the Headlee amendment and instead move to a reward system to earn revenue sharing based on requirements outlined by the Economic Vitality Incentive Program (Raiche 2012). To many this action is in direct violation of the Headlee amendment. Recently, the Delta County Board of Commissioners sent a letter to the Michigan Association of Counties asking them to take legal action to ensure that counties receive full funding for mandated services. They are asking that legislation be written that ensures that future legislators and governors are forced to abide by the Headlee amendment. If the state does not comply the groups are considering a class-action lawsuit against the state.

These recent events can help illustrate how TELs may create an environment which leads to greater revenue volatility. My hypothesis in Chapter 4 argues that TELs can accentuate the fluctuations of the natural business cycle because as the state economy drops policymakers are unable to raise funds necessary to provide services and are therefore pushed into an economic emergency. What I find in these recent accounts is consistent with my expectations for states operating under tax and expenditure limitations. First, given the nature of the TEL in Michigan policymakers cannot increase taxes to pay for services without voter approval. Second, the Headlee amendment forces the state to pay for all mandated services to local government. This puts a lot of strain on the state government because it does not have the ability to raise enough revenue to do so unilaterally, while at the same time the state cannot spread the costs over the local governments. Third, the state must continue to provide a certain amount of money to the local governments or risk law suits which could further damage the economic vitality of the state. The nature of Michigan's tax and expenditure limitation makes it incredibly difficult for the state to cope with a recession such as the one currently faced in the American state. By forcing the state to pay for services without a means of increasing revenue the fluctuations of the business cycle are heightened.

Given my analyses in the previous chapters, when a state such as Michigan has both super-majority voting requirements and TELs there is a perfect storm for increased economic volatility. The anecdotal evidence in this section points towards these institutions having real impacts and consequences on how state policymakers are constrained in their abilities under an economic downturn.

Institutional Impacts in Ohio

Unlike Michigan, Ohio has neither a super-majority requirement nor a tax and expenditure limitation. However, Ohio does have a much stronger balanced budget requirement than Michigan does. As discussed in the second chapter of this work, balanced budget requirements are the oldest and most widespread fiscal institution in the United States. They come from a "norm of balance" where citizens gave moral overtones to the ideas that governments should be kept small and debt should be avoided. Balanced budgets, therefore, are an attempt to internalize the externalities of government. Ohio has one of the strongest balanced budget requirements in the country with the highest score of 10 as measured by the ACIR. Michigan, on the other hand, has only a slightly stringent balanced budget rule with a score of 6.

I hypothesized in Chapter 2 that balanced budget rules should limit the desire and ability of governments to increase revenues and services in times of economic prosperity as well as reduce the burden of providing services to citizens in times of economic downturn, both of which are likely to reduce volatility. Balanced budgets should keep policymakers most in line with the status quo where all costs of doing business are internalized by the states with the most stringent requirements because they are not allowed to carry over debt. I found strong statistical evidence for this relationship in Chapter 2. In this chapter I provide some current examples that illustrate Ohio (having a strict balanced budget rule) crafting policy which internalizes the costs of services provided by the states and reduces large economic fluctuations.

Similar to Michigan, Ohio is faced with the same problems do to a decrease in housing values. Due to the rapid decline in property values, eleven school districts in Ohio have fallen into emergency status and six have reached the classification of “crisis” (Associated Press 2012). Over the last 15 years 38 of the state's 614 school districts have been classified as a crisis in Ohio. Common ways for local governments to deal with funding shortages, as seen in Michigan, include cuts such as reducing classes, reducing staff, reduced activities and services, in addition to higher fees and taxes for residence. While many of these temporary solutions are being implemented by Ohio school districts, Ohio has a somewhat unique system in place to help alleviate the some of the problems and pressures felt by local governments. Instead of requiring large-scale cuts, policymakers in Ohio have implemented a state revenue fund that allows school districts to borrow money from the state without incurring interest (Associated Press 2012). Over the past several years this pool of money has been included in Ohio's budget, however until recently it has rarely been used. When revenue streams are high, Ohio puts some of this money away into special “rainy day” funds for use in times of economic downturn instead of using it to increase other services or reduce taxes.

Michigan also has a “rainy day” fund which is meant to help stabilize the state's budget in times of economic downturn. However, Michigan's fund has been almost entirely depleted since 2004; a decade ago it held $1.2 billion (Luke 2012, Martin 2011). As noted earlier, Michigan does have a balanced budget requirement, however it is much less stringent than the one found in Ohio. The main difference is that Ohio's requirements pushes legislators to restock the surplus fund, while Michigan often uses revenue surpluses to restore cut services to the citizens instead of refilling the reserves.

Ohio is not allowed to carryover any debt while Michigan is. This allows Michigan to expand services without having to internalize the full costs of doing business.

Ohio's balanced budget requirement dictates not only must the governor submit a balanced budget, but also the legislature must approve the budget and there can be no carry-over debt to the next fiscal year. There can, however, be a surplus deposited into these special funds. Because of the strict nature of Ohio's balanced budget requirement the state effectively internalizes the cost of business by having the foresight to plan for an economic bust by establishing pools of money to maintain current services.

Currently many states in the US are starting to recover from the economic collapse. However, at least 21 states of the 29 expecting surpluses this year (including Ohio) are putting parts of their surplus into reserves rather than increasing the spending of services such as education and health care (Associated Press 2012). While many states' revenues are projected to be a combined total pre-recession levels, state spending is only up 2.2% (Rugaber 2012). Many Ohio citizens are upset that this money is not going to increase services such as education and healthcare. However, the nature of Ohio's balanced budget rule does not allow large increases to services, and surplus funds (such as the one for education) must be refilled. The balanced budget requirement pushes policymakers into staying most inline with the status quo rather than increasing the scope of government. Additionally, since Ohio does not have super-majority requirements or TELs the state has the ability to make adjustments that states constrained by these institutions cannot. This allows Ohio to create reserve funds in order to keep current services operational under an economic downturn.

Outside the realm of education, Ohio is experiencing similar problems as Michigan in providing other mandated services. However, the strict nature of the state's balanced budget rule has caused the state legislature to come up with some creative ways to try and balance the budget shortfalls it is currently facing. For instance, Ohio is currently facing a $1.2 billion shortfall for transportation. Instead of increasing taxes and raising revenue through traditional means the state is looking at implementing public-private partnerships (Niquette & Chappatta 2012). This partnership would allow private businesses to purchase naming rights on things such as rest stops and bridges. The companies that win naming rights then share in the cost along with the state in maintaining them. Ohio would be the first state in the union to sell road and bridge naming rights. As Guy Davidson, director of municipal investments at AllianceBerstein LP, notes "When the money's getting tight, you've got to get creative. State and local governments have assets that are off the balance sheet that they can draw on and monetize" (Niquette & Chappatta 2012). The goal of this program in Ohio is to fill budget gaps without increasing the cost to citizens. Ohio's balanced budget requirement requires that the state may not carry-over any debt. In order to pay for services, Ohio must come up with another means than borrowing or raising taxes. Strong balanced budget rules help states maintain the status quo. This partnership illustrates how Ohio is maintaining the status quo of providing services to the citizens in times of economic recession while at the same time keeping the cost to citizens the same. Ohio has effectively internalized the costs of providing transportation within a balanced budget.

The cost of business for states providing services to the people is immense.

However, in states such as Ohio with strict balanced budget requirements the government is limited in its ability to adjust both revenue and spending. The idea behind strict balanced budget rules is to force the government to account for both what it needs to pay for and how it is going to pay for it. The constraints of this institution limit both the desire and ability for the government to expand services while at the same time requiring that the state take into account the true cost of business and internalize the associated externalities. The idea is to keep both revenue and spending at constant levels while at the same time providing the same level of services under an economic decline.

What I find is these accounts from Ohio are consistent with my expectations for a state operating under a strict balanced-budget rule but not super-majority requirements or TELs. First, instead of primarily cutting spending to deal with issues of education funding such as Michigan has done, Ohio's budget allows for a reserve fund for education in times of economic hardship. Solid budget planning allows for the state to maintain a consistent level of funding without raising taxes or greatly cutting services. Second, instead of expanding services when the economy begins to recover, Ohio is restocking its reserve funds. Third, instead of increasing government expenses on transportation, the state is looking at a public-private partnership to help cut the state's cost of providing the service. All of these actions point to an attempt to maintain the status quo rather than increasing or decreasing services which is consistent with my expectations.

Conclusion

The majority of the work in this dissertation has presented theoretical and quantitatively empirical assertions on how the adopted state institutions of balanced budget rules, super-majority requirements, and tax and expenditure limitations impact state revenue volatility by constraining what policymakers can and cannot do. This chapter varies from this by offering anecdotal evidence of my expectations during the current economic recession and recovery. Looking at two states which are the most similar in pertinent aspects, Michigan and Ohio, I find evidence of behavior which is consistent with my expectations based on the previous analyses. While Michigan has a super-majority voting requirement, a TEL, and a medium strength balanced budget requirement, Ohio only has a strict balanced budget requirement. Given the institutional arrangements in these two states the fact that the average volatility in Michigan is almost twice that of Ohio makes perfect sense. The analyses in the previous chapters have presented evidence that balanced-budget requirements reduce revenue volatility while super-majority requirements and TELS tend to increase it.

When looking specifically at Michigan I find evidence that the state is dealing with the decrease in property tax revenue by cutting costs associated with education. States with super-majority requirements are often constrained in times of economic downturn to cutting costs rather than increasing taxes. Michigan's super-majority requirement is specifically targeted at the property tax, so the fact that I find the most evidence of programs being cut in regards to education follows logically.

In regards to Michigan's tax and expenditure limitation I find evidence of the state running into problems raising revenue to pay for services because the Headlee amendment requires voter approval to raise taxes. This greatly limits the ability of the legislature to raise funds during the recession as well as limiting the ability of the legislature to plan for future economic downturns. Additionally, the nature of Michigan's TEL requires the state to pay for mandated services. This greatly increases the financial burden to the state in regards to expenditures without having a good means of raising the necessary revenues. Given the evidence presented in the previous chapters these accounts are consistent with states operating under tax and expenditure limitations in times of economic downturns.

Ohio, on the other hand, does not have these institutions nor do I find accounts of similar behavior in the state. However, I do find evidence of Ohio creating a balanced budget that accounts for future economic busts in order to maintain services to the citizens. Additionally, as the state begins to see increased revenues from a slow comeback from the recession, the state is restocking its reserves rather than expanding goods and services to the citizens or reducing taxes. These actions are consistent with what I expect in states with strong balanced budget rules. The state is maintaining the status quo by not increasing nor decreasing the goods and services provided to the people. Similar activity is seen in the public-private partnership to offset transportation costs. The partnership is an attempt to provide the same level of service without increasing the cost to citizens.

Table 5.1

Ohio vs Michigan

Variable	Ohio	Michigan
4 year volatility	$325,255,700	$553,594,500
8 year volatility	$332,022,700	$595,965,700
12 year volatility	$332,767,700	$597,007,200
BBR index	10	6
Supermajority score	.51	.75
TELs index	0	15
Republican governor	.68	.73
Unified GOP	.35	.14
Direct democracy	1	1
Citizen ideology	49.45	57.31
Population under 18	.28	.29
Population over 65	.12	.11
Population growth	.49	.84
Federal unemployment	6.14	6.14
State unemployment	6.32	7.87
IGR	5449.94	5362.10
Manufacturing	1169682	982209.20
% Property tax	.01	.05
% Sales tax	.32	.31
% Fuel tax	.10	.07
% Income tax	.33	.43

Note: Measures reflect average for 1969-2005 with the exception of the institutional variables, in which case only the highest score is reported. Michigan adopted its TEL in 1978 and super-majority requirement in 1994.

Chapter 6

Conclusion: Institutions and Instability?

Since 2007, every state in the United States has been impacted by the nationwide economic recession. States have seen unemployment levels at there highest peaks since the Great Depression and revenue streams plummet as governments attempt to provide services to their citizens. While the causes of this recession are still a source of contentious debate, the fact that some states have weathered the storm better than others is not. Simply stated, the impact of this recession has not been uniform across the American states. In this dissertation I have examined three fiscally constraining institutions which may help shed some light on this phenomenon. These are balanced budget rules, super-majority voting requirements, and tax and expenditure limitations. It has been my contention throughout this work that institutions have real impacts on the decision making processes of policymakers by constraining their available options. By doing so, these institutions lay out the road map which legislators must follow, and therefore they have real impacts on the policies states adopt and their corresponding effects.

I envision institutions as a road map. When thinking about policy decisions, elected officials generally know that they want to get from point A to point B. However, the path they take is determined by the individual institutions--which create the roads--in each individual state. Policymakers are constrained in their decision making ability by how the roads are laid out, and each state in the US has a relatively unique road system.

By examining these roads we can begin to understand how and why some states react to nationwide issues differently. In regards to volatility, I assert that by looking at the fiscally constraining institutions that states have adopted over the last 220 years we can gain a better understanding of why some states have higher levels of volatility than others.

Volatility is a measure of risk associated with growth. While most studies examining state economic success focus on growth over the years, I focus specifically on volatility. Volatility provides a more complete picture of economic success than that of growth alone (Crain 2003). Similar to evaluating a stock option, a two-dimensional perspective provides more information and a more accurate picture of a state's economy. Knowing how a state's economy has grown only provides part of the picture. It is equally important to know the risk and fluctuations associated with that growth.

In this dissertation I have taken a neo-institutional perspective in examining the foundations of state revenue volatility. Under this lens institutions are endogenous to the policy-making process. This differs from much of the work surfacing in the 1950s and into the 1980s. While examining state politics and institutions was instrumental in much early political science (see Wilson 1989, Woolsey 1983), by the mid-20th century scholars had abandoned the institutional approach in favor behavioralism and rational choice which were individualistic in nature and viewed policymakers' preferences and choices as exogenous to the political environment established by institutions. As Stillman (1991) notes, authors saw political actors operating in a “stateless society.” However, stemming from the work of March and Olsen in the 1980s (1984, 1989), a resurgence emerged in institutional theory as scholars once again began viewing the decisions made by policymakers as not exogenous to the decision making process but in fact incredibly *endogenous* where individual preferences are shaped by a large extent by their involvement with institutions (Wildavsky 1987).

For each institution I examined in this work I employed a rational choice neo-institutionalist perspective. More or less this form of neo-institutionalism posits that formal (and informal) rules help solve the collective action problems that are often confronted by policymakers. Originally this was used to explain the development of new institutions by reducing transaction costs and has more recently been expanded to include the realization that institutions are sometimes created either to constrain options available to current and future policymakers or to increase future transaction costs in order to maintain the status quo (Williamson 1975; see also North & Thomas 1973).

Two main questions have guided this work. First, why were these institutions originally adopted and what goals were they meant to achieve. Second, given the changing nature of the United States over the last 220 years how have these institutions impacted state revenue volatility. By answering these questions I have hoped to address the holes in the literature regarding the possible factors that contribute to volatile economies. In addition, the dissertation seeks to illustrate the link between the formation of economic institutions and the decision making process of elected officials which can have significant impacts on economic policy outputs and conditions in the states long after their creation.

In the remainder of this conclusion I highlight what this work has added to our collective knowledge on state politics, policy, institutions, and economies. First, I look at each institution in turn. In doing so I summarize the theoretical foundations of each and my expectations and analysis on how they are likely to impact state revenue volatility. Second, I discuss how this work has both added to the literature and increased our understanding of how institutions impact legislative decision making and the resulting consequences. Third, I address problems encountered while pursuing this project and make suggestions for future work examining the connections among volatility, institutions, and policy. I conclude with some final remarks about the work as a whole.

Institutions and Volatility in the American States

In this work I have examined three of the possible nine fiscally constraining institutions found in the American states (ACIR 1987). These are balanced budget rules, super-majority voting requirements, and tax and expenditure limitations. I have presented a narrative that takes the reader through the course of American state fiscal and budgetary history as it moves from a budget state, to a welfare state, and into an economy state (refer back to Figure 1.1). As the American states, and the nation as a whole, progressed so did the needs and desires of the citizens. These changing desires lead to an increased role of government which eventually resulted in various institutions being adopted in the states.

Balanced budget rules

Balanced budgets were paramount after the Industrial Revolution and took on moral overtones in the early 1800s. Balanced budget requirements are the oldest and most widespread fiscally constraining institution in the states. Given this, I found it important to examine this institution in more detail because both the role of the individual states and budgeting ideas have shifted over the 220 year course of American history.

There are three broad groupings that are commonly used when looking at balanced budget rules (see Porterba 1995). The first, which 44 states follow, is that the governor of the state must submit a balanced budget. The second, which 37 states require, is that the legislature enacts a balanced budget. The final broad category is that the state legislature passes a balanced budget and restricts the carryover deficit (24 states of the aforementioned 37 follow this).

The norm of a balanced budget formed in response to the shift in the economic role of government after the Industrial Revolution. Based on the lessons learned from debt management in the 18th century, 19th century governments preferred to not borrow money because a balanced budget was more favorable to a public debt market (Webber 1980). Balancing the budget took on a normative element as people began to believe it was something that governments should do, and by the mid-19th century, as the United States grew, the norm of a balanced budget had taken on moral overtones (White 1951, 1954). The overall idea was that the state's should internalize the externalities associated with government in order to quell government growth (von Hagen 2005).

The literature surrounding balanced budget rules is inconclusive on whether this institutions achieves its goals of keeping government small and avoiding debt. Early studies point to this institution failing to achieve its goals due to lack of enforcement

(Gold 1992) and “creative accounting” (Poterba 1995). Other studies, however, have shown that balanced budget rules are effective in keeping governments small and avoiding debt (Bohn & Inman 1996, Alt & Lowry 1994, von Hagen 1991, Bunche 1991). In regards to volatility there is evidence for balanced budget rules being both economically destabilizing (Schmitt-Grohe & Uribe 1997; King, Plosser, & Rebelo 1988) as well as being economically stabilizing (Alesina & Bayoumi 1996, Poterba 1994, Rose 2006).

I hypothesized that depending on how stringent a balanced budget requirement is in a given state, it should constrain policymakers decisions to be most in line with the status quo. By not being able to carry over debt, states are forced to internalize all of the associated costs of doing business. This should limit the desire and ability of governments to increase revenues and services in times of economic prosperity—which would increase volatility—as well as reduce the burden of providing services in times of economic downturn. Given this I expect more stringent balanced budget requirements to reduce large economic fluctuations and therefore reduce the overall volatility of state revenue streams.

What I find in my statistical analysis is that there is strong support for this assertion. Looking at 49 states over a 37 year time span I find that states with stringent balanced budget rules are likely to have lower revenue volatilities. I find that a state with an index score of 10 has a about $25 million less average fluctuation in revenue streams over an eight year period than a state with an index score of 7 when compared to the average state and controlling for other rival explanations. Additionally, I find anecdotal evidence of at least one state, Ohio, responding to the current economic downturn and recent resurgence in manners consistent with my expectations.

Super-majority requirements

Up until the late 1930s governments, for the most part, did not interfere with economic matters. However, the Great Depression lead to a giant shift in the way people viewed government. People wanted the government to have a greater economic role and provide more goods and services to the citizens. The adoption of Keynesian economics allowed the government to justify its newly developed role (Hou 2006).

As the United States grew over the 20th century, so did the role of both the federal and state governments. As the US moved through the post-industrial, welfare, and economy states (Hou 2006) the relationship between government and the economy began to change. The norm of a balanced budget became increasingly troublesome in the 1960s due to fragmented processes, structural imbalance, and huge cumulative debts. These practices led to cries against political irresponsibility (Hou 2006) that culminated with the Tax Revolt which began in 1978.

The Tax Revolt spurred the adoption of several state institutions including super-majority voting requirements. As of 2000 only 13 states required a super-majority of 3/5, 2/3, or 3/4 of the state legislature to pass an increase in taxes or form a new tax. Of these 13 states, seven have adopted super-majority requirements through the initiative process while six states have adopted them legislatively (Knight 2000). These requirements gained increasing popularity after the Tax Revolt (Kenyon & Benker 1984). In the 1970s

6.3% of states had adopted super-majority voting requirements, but by the 1990s 14.6% of states had adopted them. Before the Tax Revolt only Arkansas (1932), Louisiana (1966), Mississippi (1970), and Florida (1971) had adopted super-majority voting requirements. After the Tax Revolt nine states adopted this institution.

The Tax Revolt has been most aptly described as a social movement (Lowery & Sigelman 1980, Martin 2008) and relates to a style issue which is characterized by questions of taste, lifestyle, and morality rather than that of money and material power (Berelson, Lazarsfled, & McPhee 1954). Given this, the adoption of super-majority requirements in the wake of the Tax Revolt makes sense because super-majority requirements help quell the tyranny of the majority (Buchanan & Tullock 1962). Bradbury and Johnson (2006) find that states which have adopted super-majority requirements have less redistributive spending. However, they also argue "Supermajority rules may, in fact, lower the probability of retribution to any reneging ruling majority, thus lowering the costs of defecting and increased plunder of minorities" (Bradbury & Johson 2006, p.447).

Super-majority requirements forced state legislatures to give the opinions and desires of the minority a more prominent role in policy decisions. However, in doing so, while the people wanted to limit both taxation and the size of government by adopting super-majority voting requirements, the end result is that the majority coalitions increase non-redistributive programs and spending while they have control which in turn can lead to large economic fluctuations.

Similar to balanced budget rules, the empirical evidence on whether super-majority requirements achieve their intended purposes is inconclusive, and in some regards contradictory. Most studies find that super-majority voting requirements do not reduce taxes (Crain & Miller 1990, Rafool 1996, Temple 1997) while others find that they do in fact have a real impacts on state tax levels (Knight 2000, Bradbury & Johnson 2006).

I hypothesized that the greater the vote share is to pass legislation, the more volatile a state's revenue stream will be. Super-majority requirements make the veto players in the policy-making process more extreme. However, by increasing the importance of the veto players it becomes difficult for states to adjust revenues streams in times of crisis and economic downturn. When a recession occurs states with super-majority voting requirements must cut spending rather than increase revenue. This in turn removes demand from the economy making it difficult for the state to recover. In times of economic prosperity, however, revenues are likely to increase because the rewards are spread over a greater number of people given the nature of legislative decision making under super-majority requirements, and the super-majority coalition is likely to try to get as much as they can before a new super-majority is established. Therefore, by limiting the fiscal decisions that policymakers can make in times of both economic recession and prosperity, the fluctuations of the natural business cycle in state economies are likely to be heightened and therefore increase volatility.

What I find in my statistical analysis is that there is strong support for this assertion. Looking at the same number of observations as balanced budget rules I find states with super-majority voting requirements are likely to have greater volatility in their revenue streams. In my analysis I find a state which has a 2/3 super-majority requirement has a revenue stream about $14.5 million more volatile on average than states with a 3/5 super-majority requirement when compared to the average state. The results are even more dramatic when you compare states with no super-majority requirement. States with the most lenient super-majority requirement (3/5) have revenue streams that are, on average, $43.5 million more volatile than states that only require a simple majority when compared to the average state. Additionally, I find anecdotal evidence of Michigan, which has a super-majority requirement on the property tax, responding to the current economic downturn consistent with my expectations.

Tax and expenditure limitations

TELs are another institution spawned from the Tax Revolt, however this institution is much more widespread than that of super-majority voting requirements, and in many aspects it can be viewed as less restrictive.

TELs are constitutional or statutory provisions intended to ensure fiscal discipline. They were first proposed by citizens during the Tax Revolt of the 1970s and 80s in an attempt to limit government spending and over taxation in the states. Tax and expenditure limitations were meant to be a means to bind the hands of government and prevent greater spending (Wildavsky 1979). Voters believed that taxes would be reduced without giving up public services (Ladd & Wilson 1982, Levy 1975). In the 1970's only two states had a form of tax and expenditure limitation, but by 2005 30 states had some sort of TEL in place. Notable examples are Proposition 13 in California, the Hancock

Amendment in Missouri, and the Taxpayer Bill of Rights (TABOR) in Colorado. 15 are statutory in nature, and 15 are constitutional amendments. Of these 30, 6 have come from voter initiative (California 1979, Colorado 1992, Massachusetts 1986, Michigan 1978, Missouri 1980, Washington 1979) (Kioko 2008).

TELs are meant to limit government growth by tying either taxing or spending (sometimes both) laws to the annual increase in either personal income or population. Unlike balanced budget rules and super-majority voting requirements, the goal of TELs is inherently different. Balanced budget rules were an attempt to keep government small and debt avoided from the outset. Super-majority voting requirements were meant to limit both the size of government and the tyranny of the majority. However, the goal of TELs is to keep preferences between citizens and the legislature, and between the current legislature and future legislators, in line with each other and therefore overcome the moral hazard. Given this I examine TELs under a principal-agent relationship, one of the key components in rational choice neo-institutional analysis.

Again, I find contradictory and conflicting results when examining the literature on TELs. Most early studies found that TELs are ineffective at controlling growth (Abrams & Dougan 1986, Cox & Lowery 1990, Bails 1990) because states shift their tax structures to get around them (Piper 2000) or they have never been truly binding (Kousser et al. 2008). Other studies, however, find that TELs do have real impacts on state policy (Elders 1992; Bails & Tieslau 2000; New 2001, 2010; Staley 2011; Staley & Madden 2012).

I hypothesized that states with stricter, more binding tax and expenditure limitations are likely to have greater levels of revenue volatility. By restricting taxing and spending growth to that of population, inflation, or personal income legislators do not have the ability to make any long-term fiscal planning or adjust revenue and spending in times of economic booms and busts. By shortening the decision making horizon of legislators, and restricting their ability to adjust state budgets in a quick fashion, I believe ties the state economy to the natural business cycle while at the same time accentuating the fluctuations. When the economy drops, policymakers operating under the most restrictive TELs are unable to raise funds necessary to provide services and are therefore pushed into an economic emergency. Like super-majority requirements this creates an environment where spending cuts are much more likely than revenue increases. Additionally, depending on the type of TEL in place states may be forced to borrow money by issuing bonds in order to pay for required services. Likewise, when the economy grows, legislators are unable to increase revenues to adjust for previous payments and required services. By tying policy makers to the short-term, the ability for legislators to make and achieve long term planning which could lead to stability is greatly decreased.

In my statistical analysis I find strong evidence of this relationship. I find that a state with a middle-of-the-road TEL with an index of 15 has, on average, a revenue stream that is about $16 million more volatile than a state with a rather low TEL stringency of 7 when compared to the average state. Additionally, if you compare states with a middle-of-the-road TEL index of 15 to states with no TEL in place, I find that the revenue stream is about $32.5 million more volatile when compared to the average state.

Additionally, I find anecdotal evidence of Michigan, which has a middle-of-the-road TEL, responding to the current economic downturn consistent with my expectations.

Implications

My work holds several important implications for the science. First, I believe this dissertation has shown the importance of looking at public policy decisions not only from a politico-economic standpoint but also from a neo-institutional perspective. Most studies tend to ignore or underestimate the link between how the formation of economic institutions can constrain the decision making process of elected officials and therefore have significant impacts on the economic policy outputs in the states. My work examines not only the political and economic foundations of these institutions but also how these institutions constrain political actors in their abilities to form policies that may impact state economic volatility. Additionally I believe that this work has shown evidence that state institutions do in fact matter by structuring the “rules of the game” and laying out the road map policymakers must follow when making policy decisions. This runs counter to the “institutional irrelevance” hypothesis.

Second, I believe I have made a strong case regarding why we should shift our focus when assessing state economic success to include the aspect of volatility in addition to growth. Volatility provides us with a more complete picture of the economic situation in addition to having important implications. For example studies have shown that growth and volatility are negatively related (Ramey & Ramey 1991,1995; Hnatkovska & Loayza 2003), high-volatility states are more likely to reward workers with an increased pay (Crain 2003), and states with greater volatility in their revenue streams are likely to experience worse conditions when encountered with an economic downturn than those with more stable streams (Garret & Wagner 2003).

Third, while a handful of studies exist examining what leads to volatile economies, these are few and far between and focus almost exclusively on a cross-national context. My work provides evidence for what accounts for volatility within the American states. I have shown evidence that specific adopted state institutions can have real impacts on legislative decision making which can result in either increased or decreased levels of volatility. I find that balanced budget rules tend to decrease volatility in the states while super-majority requirements and tax and expenditure limitations tend to increase it. Additionally, beyond my main institutional analyses, when looking at other rival explanations which could account for volatility I have found evidence for several political and economic determinants of volatility. Across the board I find evidence of direct democracy, citizen ideology, state unemployment, intergovernmental revenues, manufacturing, and the percentage of revenue coming from the sales tax all being correlated with volatility in the American states.

Finally, within the evidence that institutions have real impacts on volatility two things really stand out. First, institutions are humanly devised. They were put in place because the citizens of the state wanted them for various reasons. Given this, citizens and policymakers have the ability to change institutions. While this is often incredibly difficult to do, it can be done. Second, given this if citizens and policymakers collectively decide that volatility is a bad thing then we now know a little bit more about which economic institutions citizens and elected officials should manipulate if they want to reduce volatility. I do not make an argument in this work on whether volatility is good or bad. However, I believe most would agree with Crain (2003) when he notes "uncertainty is the enemy of efficiency."

Problems and Future Work

Several issues presented themselves when conducting this work. As with a lot of work in political science there are issues with my data. First, given the variables that needed to be included to avoid an omitted variables bias and control for several rival explanations in my statistical analysis the number of years I was able to include are somewhat limited. While my time-series is the most expansive in this vein of research I am still limited to the years 1969 to 2005. This gives me only about a decade of experience without most super-majority requirements and TELs before the Tax Revolt. Ideally I would have preferred to look at an equal number of years both post and prior to the Tax Revolt. Unfortunately, the data limitations did not allow for this. However, it would be incredibly interesting if the time series could be extended back to the beginning of the 20th century. This would allow both more time points before the Tax Revolt and allow a means for looking at how each of my institutional variables affects volatility in each era (budget, welfare, economy) as outlined by Hou (2006). The size and responsibilities of governments in the American states have changed dramatically over the years. A very large future project could include extending the time-series back to 1900 to see how and if revenue volatility is affected by fiscally constraining institutions in all eras, and if not, why.

Another issue with my data comes from measurement errors in my institutional variables, specifically balanced budget rules and TELs. To measure the strength of balanced budget rules I used the ACIR index. While I believe I have justified my rationale for doing so, I do also recognize the limitations. The ACIR index is outdated and recent work has found several issues in its formation. However, the ACIR index still serves as the best measurement method for my analyses. Given the nature of my research question, the ACIR is the only measurement that directly measures what I am interested in. Using either the NASBO or NCSL measures would only provide me with convoluted results and no real answers. However, future works should attempt to reconstruct and update the ACIR index.

A similar argument can be made for the TELs index. Indexes in general are suspect because they rely on the subjective assumptions of the one(s) forming the index. However, the TELs index created by Amiel, Deller, and Stallman (2009) is far and away the best measure available given the complex nature of tax and expenditure limitations. The other measures of TELs are less inclusive, and in many regards paint a false picture by assuming all TELs are all the same.

A second issue I encountered deals with the very complex nature of state governments. I have looked at each of these three institutions independently. However, there are at least six fiscally constraining institutions found in the American states which I do not address in this work. Given the size and scope of this dissertation the tractable number of institutions I address in this work was limited. The institutions I do examine provide a good starting point for future research. I examined balanced budget rules because they are the oldest and most widespread fiscally constraining institution found in the American states. I included super-majority requirements and TELs because they are, in many regards, the strongest and longest lasting institutions coming out of the Tax Revolt. In future works I would like to examine gubernatorial line-item vetoes, constitutional debt restrictions, indexed income tax laws, fiscal note review procedures, program evaluations, and sunset laws. Each of these institutions has theoretically intriguing underpinnings regarding how they can affect state revenue volatility.

Finally, while examining how institutions affect volatility I found that direct democracy consistently appears both statistically significant and positive. I believe there is a story here. Fiscally constraining institutions are meant to limit the actions of state legislatures. However, citizens are not constrained by these institutions, and in states that allow the initiative citizens can pass laws which bypass the state legislatures. Given this citizens have the ability to provide themselves with goods and services while making the legislature figure out how to pay for them. In future work I would like to examine this phenomenon in more detail and get a better understanding of how citizens have a direct impact on state economic success.

Conclusion

In this dissertation I have presented an in-depth analysis of how balanced budget rules, super-majority requirements, and tax and expenditure limitations impact state revenue volatility. To my knowledge this is the only work which goes into detail on the theoretical underpinnings of the adoption of each of these institutions and makes the connection on how these institutions are likely to impact state policy outputs, specifically revenue volatility. Additionally, I have presented strong evidence showing institutions have real impacts on a state's level of volatility. This is the first work, to my knowledge, that has looked directly at the correlates of volatility in the American states. Additionally, I have found other factors (political, economic, and environmental) which can help us get a better understanding of what leads towards a volatile economy.

However, the scope of this work is also limited. I have examined only three institutions of many found in the American states. Additionally, in doing so I have only examined the independent nature of each. In reality many of the American states have adopted several fiscally constraining institutions which come into play in the decision making process. What I have presented in this research is a good starting point for future research. Volatility has real consequences for the American states, and understanding how politics plays a part is crucial to our understanding of the problems and responses governments face.

Appendix A

Variables

Summary Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
4 year volatility	197507.80	342726.80	3352.07	5704952
8 year volatility	200432.40	291282.50	5537.20	4155173
12 year volatility	197221.40	266684.00	5234.02	3376751
BBR index	8.08	2.60	0	10
Supermajority score	0.53	0.06	0.51	0.75
TELs index	5.19	7.20	0	30
Republican governor	0.44	0.50	0	1
Unified GOP	0.16	0.36	0	1
Direct democracy	0.53	0.50	0	1
Citizen ideology	47.13	15.82	7.04	95.97
Population under 18	0.29	0.08	0.04	0.24
Population over 65	0.12	0.023	0.02	0.19
Population growth	1.83	3.90	-3.83	52.39
Federal unemployment	6.14	1.40	3.49	9.71
State unemployment	5.86	2.02	2	18
IGR	2883.70	5071.42	39	49555.93
Manufacturing	380309.70	410598.10	7351	2225545
% Property tax	0.02	0.04	0	0.53
% Sales tax	0.31	0.14	0	0.64
% Fuel tax	0.09	0.04	0.01	0.26
% Income tax	0.33	0.17	0	0.80

Volatility

The measure for volatility is based on the standard deviation of revenue growth for four, eight, and twelve year time periods. Before calculating the measure, revenue amounts were adjusted for inflation using the Consumer Price Index (CPI). Revenue data was retrieved from the US Census and CPI comes from the Bureau of Labor Statistics.

Numbers are presented in thousands of dollars.

BBR

The index for balanced budget rules comes from the ACIR. It ranges from 0 to 10.

Advisory Commission on Intergovernmental Relations. 1987. *Fiscal Discipline in the Federal System: National Reform and the Experience of the States:* Washington, D.C.

Super-majority score

The measure for super-majority requirements comes from the NCSL.

http://www.ncsl.org/issues-research/budget/legislative-supermajority-to-raise-taxes%E2%80%942008.aspx

TELs index

The measure for the stringency of tax and expenditure limitations comes the index created by Amiel, Deller, and Stallman (2009). It ranges from 0 to 30.

Amiel, Lindsay, Steven Deller, and Judith Stallman. 2009. "The Construction of a Tax and Expenditure Limitation Index for the U.S." Staff paper No.536. Department of Agriculture and Applied Economics, University of Wisconsin-Madison.

Republican governor

The measure for the partisan party of the governor comes from *The Book of the States*, published by the Council of State Governments. 1 represents a Republican governor.

Unified GOP

This measure comes from the *The Book of the States.* If the state had a Republican governor for a given year and a majority Republican upper and lower house it was coded as a 1.

Direct democracy

This variable is a dummy variable indicating whether a state has either the initiative or referendum. It comes from the Initiative and Referendum Institute. 1 represents the presence of direct democracy.

http://www.iandrinstitute.org/

Citizen ideology

This variable comes from the measure established by Berry et al (1998). The majority of the data (1969-1993) can be found at:

http://dvn.iq.harvard.edu/dvn/dv/wberry/faces/study/StudyPage.xhtml?globalId=hdl:1902.1/10383&studyListingIndex=0_667b2e6515b391505bc661acc2de

For years 1993-2005 David Primo was kind enough to share his data on extending the time series.

Population under 18, over 65, and growth

These measures come from the US Census. Growth rates are calculated by differences year to year state populations.

Federal and state unemployment

Federal and state unemployment levels come from the Bureau of Labor statistics.

IGR

Intergovernmental revenue comes from the US Census.

Manufacturing

The amount of state manufacturing comes from the National Association of Manufacturers.

http://www.nam.org

Tax measures

The percent of revenue provided by each tax type comes from the US Census. It is calculated as a ratio of tax revenue to total revenue in real dollars.

Appendix B

Methodology

In this dissertation I employ generalized estimating equations (GEE) to analyze my data. This method differs from standard OLS or pooled-OLS methods in a variety of ways. In this appendix I discuss the merits of using GEE over other, more standard estimating techniques such as fixed-effects (FE), random-effects (RE), and panel corrected standard errors (PCSE). While I attempt to lay out a logical argument of why this technique (GEE) best suits my research, I do not present the math on how GEE differs from OLS and the nuts and bolts of how GEE estimates covariance matrices. However, if you are interested in the math behind the method, it is most concisely explained in political science terms by Christopher Zorn (2001). Additionally, it is worth noting that political science does not often use GEE in quantitative analysis, however several authors have found the method appropriate. In a quick JSTOR search I found 130 articles from political science journals under a search of "GEE" which indicates that several authors found the method appropriate, but it has yet to gain widespread use. I find this method incredibly useful for political science analysis given the particular issues we deal with using real world data. At the end of this appendix I offer two tables which compare GEE estimates to that of PCSE.

When examining real-world issues and data political scientists often have to deal with correlated data. This often comes from panel studies or time-series cross-sectional analysis where there are repeated observations over time. This can cause the standard assumption that the data are conditionally independent to be called into question. There is a good deal of literature that addresses temporal correlations (Beck & Katz 1995; Beck, Katz, & Tucker 1998; Box-Steffensmeier & Jones 1997), but little that directly deals with how to deal with data when the interdependence is not temporal in nature. GEE is one method that has been gaining increasing use in other disciplines to deal with correlated data.

GEE is rooted in quasi-likelihood methods (GLM) introduced in the 1970s (Wedderburn 1974, Nelder & Wedderburn 1972, Zeger & Liang 1986). GLM differs from maximum-likelihood analysis because one needs to only "postulate the relationship between the expected value of the outcome variable and the covariates and between the conditional mean and variance of the response variable" (Zorn 2006, p.471) unlike MLE where one must specify the full conditional distribution of the dependent variable.

GEE employs a population-averaged approach when dealing with correlated data. Unlike conditional models which model the probability distribution of the dependent variable based on the covariates and a parameter specific to each cluster, marginal models model the population-averaged expectations of the dependent variable as a function of the covariates. For instance, FE methods estimate the cluster specific parameter concurrently with the model and provides within variation estimates while RE assumes this parameter to follow a stochastic distribution. What we find then is that conditional models present results that are subject specific. Marginal models, on the other hand, "model...average response over the sub-population that shares a common value of X" (Diggle, Liang, & Zeger 1994, p.131).

As Zorn (2006) argues, the choice of models should then be based on substance rather than on statistical convenience. He presents an example based on international relations. If a researcher was interested in the propensity of one state to go to war with another then a conditional model would be appropriate. However, if a researcher was more interested in the propensity of autocracies and democracies to engage in interstate conflict then a marginal model is more appropriate.

When looking at my own work it makes theoretic sense to use GEE as opposed to other methods. My research question revolves around the impact of specific fiscally constraining state institutions. Under a conditional model regression results would indicate how Y changes in relation to a change in X based on individual state observations. However, when using a population-averaged technique regression results provide me with how states with a specified institution change compared to the average state. I find this more substantively interesting and to be more closely tied to my research question.

Additionally, from a substantive standpoint there is not a lot of variation between analyzing my data using marginal or conditional techniques. As an example, I present two tables looking at how balanced budget rules impact state revenue volatility both under a marginal model using a population average and under a conditional model using panel corrected standard errors.

Volatility (BBR)

	Population Average		
Variable	4 year	8 year	12 year
BBR Index	-7791.12** (3444.02)	-9530.14*** (3065.85)	-11293.21*** (2324.90)
GOP Governor	18751.97** (8669.98)	-3722.53 (3617.16)	2173.17 (2425.57)
Unified GOP	-18347.26* (9794.91)	1517.01 (7418.11)	245.95 (4984.41)
Direct Democracy	51226.61*** (12734.72)	57786.73*** (12212.29)	54897.05*** (9306.57)
Citizen Ideology	-642.07** (280.88)	-319.89** (154.09)	-354.32*** (125.89)
Under 18	32459.85** (16464.06)	42817.89* (25991.92)	2836.86 (7833.58)
Over 65	-43912.88 (221701.80)	83630.16 (148265.00)	143563.30* (81757.82)
Population Growth	-170.30 (2700.95)	-3122.13 (2708.33)	-2056.94 (1585.89)
Federal Unemployment	-10386.78** (4504.53)	3426.69 (3053.86)	8857.02*** (3220.14)
State Unemployment	10647.43*** (3910.13)	6539.63*** (2133.78)	4977.01*** (1424.26)
IGR	39.26** (17.35)	33.74** (14.71)	27.06*** (11.40)
Manufacturing	.07 (.10)	.16** (.08)	.23*** (.06)
% Property Tax	-4366.36 (152302.10)	52397.84 (95241.66)	98882.43 (65168.24)
% Sales Tax	-387925.20*** (77548.11)	-230717.90*** (54424.03)	-123016.00*** (44235.04)
% Fuel Tax	-648367.00*** (180257.70)	-226927.70 (148224.30)	-9758.36 (118959.80)
% Income Tax	-244822.40** (102990.30)	-92867.93 (79634.49)	-19420.56 (65910.36)
Fixed	1.01*** (.10)	1.05*** (.10)	1.02*** (.09)
Constant	383278.60*** (84507.58)	147286.00** (69531.47)	48084.51 (58242.02)
R-Sq	--	--	--
N	1813	1813	1813

*p<.1, **p<.05, ***p<.01

	Volatility (BBR)		
	PCSE		
Variable	4 year	8 year	12 year
BBR Index	-7962.49**	-10935.12***	-12581.14***
	(3486.25)	(2373.93)	(1864.10)
GOP Governor	19534.55	-3427.00	2486.81
	(12136.92)	(6247.87)	(4100.87)
Unified GOP	-20061.36	-234.09	-28.31
	(17041.35)	(8746.62)	(5580.97)
Direct Democracy	30503.58***	45165.32***	42356.56***
	(11624.39)	(11216.54)	(11841.47)
Citizen Ideology	-792.37	-410.18	-367.61**
	(481.12)	(258.52)	(160.67)
Under 18	33410.51	46349.45**	4324.41
	(45968.95)	(22928.53)	(15678.54)
Over 65	-179346.50	43935.48	174347.70
	(320382.40)	(155054.60)	(107472.20)
Population Growth	3718.15	-2710.17	-2433.49
	(6605.29)	(3457.49)	(2257.03)
Federal Unemployment	-12607.73***	136.85	4807.89**
	(3539.52)	(2365.71)	(1897.05)
State Unemployment	12623.94***	7952.80***	5658.52***
	(3290.34)	(1774.40)	(1182.06)
IGR	36.80***	33.02***	29.49***
	(9.09)	(6.18)	(5.24)
Manufacturing	.09*	.19***	.23***
	(.05)	(.05)	(.04)
% Property Tax	43453.37	84786.01	111959.30***
	(109912.60)	(64479.88)	(41841.74)
% Sales Tax	-409433.60***	-238482.00***	-131761.8***
	(115030.40)	(53948.34)	(33707.37)
% Fuel Tax	-646312.70***	-238686.40*	-29014.34
	(183582.80)	(123786.90)	(93277.14)
% Income Tax	-200752.6***	-62800.77*	-6863.74
	(61703.93)	(34948.54)	(22410.24)
Fixed	.99***	.94***	.86***
	(.37)	(.28)	(.20)
Constant	391798.60***	162764.60***	79200.50***
	(77670.58)	(34418.62)	(30105.33)
R-Sq	.38	.40	.42
N	1813	1813	1813

*p<.1, **p<.05, ***p<.01

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VITA

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Tucker spent the next several years bouncing around the United States and Central America working odd jobs, surfing, and drinking beer. In 2007 he was accepted into the doctoral program in political science at the University of Missouri. There he focused on public policy and American politics. He has recently accepted a job as a visiting assistant professor at the University of Minnesota-Duluth.